

MANAGEMENT OF HABITAT AND LIVING RESOURCES

IMPAIRMENTS

Habitat loss, fragmentation, and degradation
Impaired commercial and recreational fisheries
Impaired coastal and terrestrial living resources and communities
Lack of public access

FACTORS CONTRIBUTING TO IMPAIRMENTS

Pollutant Loadings
Coastal development
Shoreline and aquatic habitat modification
Alteration of freshwater inputs
Human disturbance of natural habitats
Overharvesting
Insufficient/inadequate sites for public access

VISION *To establish and maintain a healthy and productive Harbor/Bight ecosystem with full beneficial uses.*

GOALS *To restore and maintain an ecosystem which supports an optimum diversity of living resources on a sustained basis.*
To preserve and restore ecologically important habitat and open space.
To encourage watershed planning to protect habitat.
To foster public awareness and appreciation of the natural environment.
To minimize erosion; to decrease soil and water loadings of sediment and pollutants to the Harbor/Bight.
To increase public access, consistent with maintaining the Harbor/Bight ecosystem.

OBJECTIVES **Comprehensive Regional Strategy**

H-1 Develop a comprehensive regional strategy to protect the Harbor/Bight watershed and to mitigate continuing adverse human-induced effects.

Focused Application of Existing Programs

H-2 Control point and non-point loadings of pollutants.

H-3 Manage coastal development.

H-4 Manage shoreline and aquatic habitat modifications.

H-5 Maintain healthy estuarine conditions by managing freshwater inputs.

H-6 Minimize human disturbance of natural habitats.

H-7 Preserve and improve fish, wildlife, and plant populations and biodiversity.

H-8 Increase public access consistent with other ecosystem objectives.

H-9 Increase public education, stewardship, and involvement on issues related to management of habitat and living resources.

H-10 Complete ongoing research and initiate special studies on habitat issues.

Geographically-targeted Special Efforts

H-11 Identify significant coastal habitats warranting enhanced protection and restoration.

H-12 Develop and implement plans to protect and restore significant coastal habitats and impacted resources.

INTRODUCTION

The complex geology and geography of the Harbor/Bight sustains a remarkable diversity of habitat types and species within a relatively small area. Several major river systems drain into the Estuary, merging into a network of tidal channels and bays, ultimately flowing into the Atlantic Ocean. This confluence concentrates marine, estuarine, and diadromous fish in the Harbor core area and New York Bight Apex. Within the Harbor core area alone, over 100 species of fish have been recorded.

The Harbor/Bight area lies on the Atlantic Flyway, a major pathway for migratory birds, providing both coastal migratory corridors and the north-south oriented migratory corridors of the Hudson Highlands region. Thus, coastal as well as overland migrating species are channeled through the region. The various habitats in the Harbor/ Bight area provide food and rest for these migratory birds. The Estuary also supports large and flourishing populations of aquatic birds. Today, heron populations in the New York-New Jersey Harbor represent up to 25 percent of all nesting wading birds along the coast from Cape May, New Jersey to the Rhode Island line, clearly a wildlife assemblage of regional importance.

Finally, the Harbor/Bight is blessed with an exceptionally diverse plant life on a landscape that varies from glacial outwash plains to unglaciated shores and uplands. On Staten Island alone, 178 historical sites of state and/or globally rare plant species have been recorded, 28 of which have recently been relocated and confirmed.

Recent water quality improvements (e.g., increased dissolved oxygen and decreased turbidity, biological oxygen demand, and bacterial indicators) have led to a waterfront renaissance -- a reawakening of the recreational and scenic potential of the Harbor/Bight shorelines. Shore recreation is a dominant component of the tourist economies of both New As previously noted, the New York-New Jersey Harbor Estuary and Bight together provide diverse

Jersey and New York. Public access to Estuary resources and to the large well-utilized public beaches on the ocean shores enhances public awareness of these rich natural resources and fosters increased appreciation and stewardship of fish and wildlife habitat. Opportunities to engage in shoreline activities and environmental improvements can contribute significantly to the quality of life of urban area residents and have great potential for economic benefits as well, by making the area surrounding the Harbor more desirable as a place in which to live and work.

The Hudson River, including the Harbor Estuary, is one of the few East Coast estuaries that retains viable populations of all of its historical indigenous aquatic species. The significant level of native biodiversity remaining in one of the world's most densely populated regions offers hope that people and natural resources can thrive in close proximity to each other.

The presence of critical habitat for rare and endangered plant and wildlife is a source of great pride to many local citizens and provides outstanding opportunities for educational and stewardship projects. The task of monitoring, protecting, maintaining, and, where appropriate, restoring these precious resources is a unique opportunity to promote and utilize government/civic partnerships.

In order to reflect the priorities of the residents of New York and New Jersey, this CCMP focuses on identifying important natural habitats still remaining in the Harbor/Bight watershed and uniting public and private interests to develop a Comprehensive Regional Plan. Consistent with HEP's vision, the objective of the Plan is to balance competing interests to sustain the overall health and welfare of the ecosystem and the general public, as well as to sustain local economies. These competing interests, such as public access, industry, and Port activities, as well as habitat protection, are considered in the development of actions throughout the CCMP.

IMPAIRMENTS

Habitat Loss, Fragmentation, and Degradation

habitats, including tidal rivers, salt and fresh tidal marshes, woodlands, shallow bays, barrier beaches,

and dune systems. Much of this natural habitat has been lost because of human activities, including: the filling of wetlands and water areas; alterations of shorelines including the construction of piers and platforms; dredging; smothering of marshland due to washups of floatable debris; and coastal development. Loss of natural habitats results in diminished local and regional biodiversity and negatively impacts the ecological integrity of the Harbor/Bight.

Coastal wetlands in the Harbor/Bight region, including salt and fresh tidal marshes, now cover about 180,000 acres in New Jersey and about 25,000 acres in New York. Most of this acreage is located in the back bays and tributary watersheds of the Bight, where productive fin and shellfisheries exist. In and around the Harbor, however, wetlands loss has been great. At least 75 percent of the historic tidal wetlands in each of New York City's five boroughs has been lost. For example, one-quarter of the land area of Manhattan Island was created by filling wetlands and shallow water areas. Similar losses have occurred in New Jersey counties of the Harbor core area. In addition, as much as 99 percent of New York City's historic freshwater wetlands may no longer exist. Dams on coastal rivers have blocked the reach of tidal waters and reduced estuarine habitats as well as spawning areas for certain fish. Although all of these examples of habitat loss and degradation are past events, development pressure remains a problem and continues to threaten remaining natural areas.

Most of the remaining wetlands have been modified or degraded through diking, impoundment, channelization, or toxic contamination. For example, Jamaica Bay, which was once a classic coastal back bay, has been dredged and modified by channel deepening, landfilling, wetland fill activities, airport construction, and other similar activities. Because of these modifications, residence time for water in the bay has increased from 11 to 35 days, magnifying the impact of pollutants entering the bay.

Much of the historic large-scale filling of wetlands and shallow water areas within the Harbor Estuary has decreased with the implementation of regulatory programs to control such activities. In recent years,

however, there have been proposals to extend development beyond inner Harbor shorelines on top of piers and platform structures. The environmental impacts of this type of development are uncertain, but the potential cumulative impact of many such projects presents a new threat to the environmental integrity of the ecosystem.

Marine and upland habitats in the region have also suffered significant losses, due to development and pollution associated with population increases. In the Harbor core area, particularly New York City, natural habitats are found almost exclusively in designated parklands, preserves, and other large land holdings of governments and institutions. Nearshore upland landscapes are significant to the estuarine ecosystem. These areas function as buffers against storm surges, sea level rise, and non-point source pollution, and serve as useful wildlife habitat.

Numerous functions and values are lost with shoreline modifications that involve the filling in or removal of wetlands. Wetlands provide essential habitat and food for fish and wildlife species. Many species of waterfowl and fish require wetland habitat for breeding, nesting, or rearing of their young, as well as for resting, migration, or overwintering areas. Wetlands also exhibit very high rates of plant productivity, supporting the food web in the surrounding estuarine environment. In addition, wetlands act as filters for the aquatic ecosystem, providing water quality protection through the processes of sediment trapping, chemical detoxification, and nutrient removal. Other functions provided by wetlands include storm water control, which can be important where surrounding areas are paved, and shoreline stabilization.

Recent water quality improvements in the Harbor/Bight have alleviated some of the chronic impairments to aquatic habitats. Contaminants in some bottom sediments, however, are still a major concern. In addition, chemical and oil spills remain a continuing threat to regional habitat and water quality.

Impaired Commercial and Recreational Fisheries

The Harbor/Bight system continues to support viable recreational and commercial fish populations and provides a major outlet to hundreds of thousands of the sportsfishing public. Today there remains a very large and active recreational fishery and party-charter boat fishery in Raritan Bay, Jamaica Bay, Sandy Hook Bay, the Navesink River, and Shrewsbury River for such species as striped bass, bluefish, fluke, and winter flounder. However, available information on commercial fishery landings shows a distinct decline in the abundance of fish and shellfish in the past 100 years. In colonial times, tens of thousands of bushels of oysters were collected per year, providing a staple food item for regional residents. Today, no commercial quantities exist. Atlantic sturgeon was once so abundant that it earned the title "Albany beef". Today there is only a modest commercial fishery in the Hudson River for American shad, and there is an even smaller commercial fishery for Atlantic sturgeon. In the Lower Bay area, commercial fisheries exist for species such as blue crab, winter flounder, menhaden, bluefish, weakfish, and baitfish.

Fisheries management in the Harbor/Bight region is under the authority of the Atlantic States Marine Fisheries Commission (in state waters) and the Mid-Atlantic Fishery Management Council (in federal ocean waters). Commercial fishery landings in the region decreased from 317,000 metric tons in 1957 to 72,600 metric tons in 1987. The human impacts (fishing mortality and environmental perturbation) are often difficult to identify and sort out from natural factors, but both, in combination or separately, have been responsible for declines in various fish stocks. Since many of the commercially and recreationally important species are migratory in nature and spend part of their time outside of the Estuary, overfishing and habitat loss in the New York Bight and Long Island Sound also affect population levels. Scientists from the National Marine Fisheries Service predict that the inshore fishery will crash in ten years without a concerted effort to preserve and restore coastal habitats. Despite these losses, the Hudson River remains one of the few East Coast rivers that retains viable populations of all its historic native species.

In addition to declining numbers, commercial fisheries within the Harbor core area are restricted due to toxic and/or pathogenic contamination. New York has closed its commercial fishery for striped bass in the Harbor, the Hudson River, and parts of the Bight due to concerns about PCB contamination. Commercial fishing for American eel and blue crabs is also prohibited due to toxic contamination in some areas of the Harbor. Recreational fishing is similarly restricted in the Harbor core area. Consumption advisories throughout the region provide warnings about locally caught fish. The most stringent advisories in New Jersey recommend no consumption of 1) crabs in the Newark Bay complex, 2) striped bass from all New Jersey tributaries to the Harbor (including those shared with New York), and 3) any fish from the Passaic River. New York recommends no, or limited, consumption of striped bass, American eel, white perch, white catfish, carp, and goldfish, and the hepatopancreas of lobsters and crabs from the entire tidal portion of the Hudson River, including the Harbor core area.

Pathogenic contamination primarily affects shellfish harvesting. Harvesting of shellfish in the Harbor for direct consumption is prohibited, but harvesting, for depuration or relay, is permitted in portions of the Lower Bay complex and in the Shrewsbury and Navesink Rivers. Direct harvesting is permitted in ocean waters.

Impaired Coastal and Terrestrial Living Resources

Coastal bird and mammal populations have also seriously declined in the Harbor/Bight region. A number of beach-nesting birds are now classified as endangered or threatened species; yet the region remains vital to the eventual recovery of their populations. Some recovery trends are noticeable -- the osprey, a fish-eating hawk, now nests in portions of the Harbor core area where it had been absent for decades. Ten percent of the nesting population of the federally endangered peregrine falcon, on the East Coast, is located in the New York-New Jersey metropolitan area. The Harbor Herons Complex, first documented in the industrial Arthur Kill waterway in the 1970s, has become a regionally significant heron and egret nesting rookery.

On the other hand, much of the native flora and fauna of the region has been lost or drastically reduced due to the loss of coastal upland habitats. The diversity and populations of both resident and migratory species are directly related to the area and quality of available habitat.

Limited Public Access

There are two issues associated with restricted public access: physical blockage of the shoreline and private ownership of the shoreline. The need for public access to the shoreline was rarely a consideration in the early development of New York City and the metropolitan areas of New Jersey; consequently, the Harbor shoreline is dominated by industrial and commercial uses, from shipping terminals and commercial ports to oil terminals and heavy industrial sites. In the less developed regions of the Harbor/Bight, public access is restricted by private ownership of the shoreline. Nevertheless, according to Public Trust doctrine, the states hold all underwater lands up to the tideline for the benefit of all citizens.¹

In the urban Harbor area, water access is frequently constrained by the placement of fill and privately owned shoreline structures, such as bulkheads, piers, revetments, and pile-supported platforms over the water. In addition, the shoreline has often been the site for placing railroad tracks and highways.

As population expanded and maritime uses declined, the waterfront was viewed as the greatest open space opportunity in the region, and pressure for improved public access for fishing, boating, biking, hiking, and passive recreation increased.

Recent efforts have been taken to improve proximity and visual access, such as walkways, greenways, and expanded ferry service. Public

parkland has been created in New York City at the World Financial Center and at Roberto Clemente and Riverbank State Parks. In New Jersey, efforts are underway to provide a public walkway, the Hudson Waterfront Walkway, along 18 miles of river and harborfront. Liberty State Park, an important urban recreational area, is a major component of the Walkway.

Direct contact with the shore and the ability to sunbathe, swim, boat, or engage in study and research, are limited by the lack of public lands. Even for shoreline areas that are technically "open to the public," the lack of necessary support facilities, such as transportation access and restrooms, effectively restricts public access. This problem is especially severe in the more densely populated portions of the Harbor core area and the larger Bight communities. Despite these constraints, both New York and New Jersey have a number of large public beach facilities, and, in fact, shore recreation is a dominant component of the tourist economies of both New Jersey and Long Island. It must also be recognized that many areas available for additional public access are also areas that offer opportunities to increase fish and wildlife populations and restore the regional ecosystem.

FACTORS CONTRIBUTING TO THE IMPAIRMENTS

Pollutant Loadings

Historic pollution, associated with human activities in the Harbor/Bight region, has profoundly affected the condition of the natural environment. Fishes, birds, and mammals that depend on rivers and estuaries are particularly vulnerable to the effects of these activities. For example, the destruction of once-abundant oyster beds in Raritan Bay can be linked to pollution and the smothering of seed beds. Pollution-induced low dissolved oxygen levels in the water can result in fish and shellfish mortalities. Likewise, studies have shown that the prevalence of fish and shellfish diseases is generally more widespread and severe in polluted

¹ In the Harbor/Bight system, one notable exception is Jamaica Bay which is held by the

federal government for the benefit of all citizens.

waters, particularly near inshore sewage outfalls. There are breeding colonies of birds which remain vulnerable to multiple toxic stressors. Trophic transfer studies which link concentrations of toxics in the birds with sources of toxics may clarify factors contributing to this problem.

Recent advances in pollution controls and the closure of ocean disposal sites have improved environmental conditions, including water quality, in the Harbor/Bight. Marine water quality improvements have been documented, some fisheries have rebounded from previously depressed populations, recovery trends have been observed for certain endangered bird populations, and fish and shellfish diseases declined significantly around 1973 (although the reasons for this last fact are unclear). The challenge ahead is to maintain these improvements and to enhance the environmental quality of the Harbor/Bight.

Of particular importance to habitat issues is the discharge of suspended solids and sedimentation. Poorly controlled runoff can carry significant quantities of sediment that impair living conditions for estuarine resources, from the shoaling of bays and channels and destruction of spawning areas to increases in turbidity. Sediments may also carry contaminants and add to dredging concerns. Implementation of storm water and non-point source controls is necessary to reduce the discharge of sediments.

Oil and chemical spills have been an historic problem, affecting the water and habitat quality in the Harbor core area. Following a 1990 rupture of its underwater pipeline in the Arthur Kill, which threatened a regionally significant heron rookery, and the resulting civil and criminal lawsuits, Exxon Corporation agreed to a \$15 million settlement. The involved federal, state, and local agencies are working together, as the New York-New Jersey Harbor Spill Restoration Committee, to oversee distribution of these and other future settlement funds for actions that will remediate environmental damage caused by such spills.

Coastal Development

Development of the metropolitan region of New York

and New Jersey has resulted in enormous reductions in the acreage and quality of natural habitats and a resulting decline in native wildlife populations in the region. This development has also blocked coastal access for the majority of the citizens of the region.

The post-industrial period of today provides both opportunities and continuing threats to the regional ecosystem. In some cases, such as the Jamaica Bay Wildlife Refuge in New York and Kearny Marsh in the Hackensack Meadowlands of New Jersey, habitat recovery in the urban environment is supporting the return of native wildlife, and these areas are vital components of a preservation and recovery strategy for the ecosystem. Liberty State Park, a former transport terminal and industrial/ commercial site, is another example of the potential for natural recovery of the inner Harbor landscape. However, as abandoned inner Harbor sites are turning wild, new sites are being developed at the outer reaches of the metropolitan area.

Land use decisions, both in the urban core and in outlying counties, remain a critical factor to the future well-being of the Harbor/Bight ecosystem. It is important that such decisions be made based on a thorough analysis of the true cost of waterfront development. Frequently, new coastal projects require massive public investment in area infrastructure: water supply and waste disposal; roads; and utilities; as well as shore erosion projects and damage repair after severe storms.

Shoreline and Aquatic Habitat Modification

New York-New Jersey Harbor has close to 1,000 miles of shoreline (576 miles in New York City alone), 75 percent of which consists of man-made structures, such as bulkheads, rip-rap, and piers.

Shoreline construction and modifications disrupt aquatic and terrestrial ecosystems. Obstructions on tidal rivers reduce available habitat for fresh and saltwater spawning fishes. Structures along the shoreline reduce public access to the coast and can reduce the migration of coastal habitats in the event of sea level rise. Construction-related impacts, such as loss of shallows and changes in salinity, as well as structures, such as riprap,

bulkheads, piers, and platforms, may degrade the value of estuarine habitat.

Another issue of great importance is coastal erosion. Natural shorelines are subject to cyclic erosion and accretion patterns depending on the prevailing currents, littoral drift, storms, and sea level changes.

This changing shoreline is integral to the maintenance of coastal habitat diversity. Construction or aquatic habitat modification activities, within the zone of dynamic coastal processes, may directly reduce coastal habitat and may also disrupt the process by which coastal habitats are maintained, affecting coastal areas well beyond the immediate construction site. As buildings are threatened by waves or erosion, additional investments in shoreline structures may be needed, leading to greater degradation of natural habitats.

Alteration of Freshwater Inputs

The natural mixing of freshwater with saltwater is one of the defining features of an estuary, creating an extremely productive environment for living resources. The estuarine environment of the Harbor/Bight has been measurably affected by the human alteration and use of its freshwater resources.

Water withdrawals from the Harbor/ Bight cause the salt wedge of tidal rivers to extend further upstream and the change in salinity between fresh and saltwater to be more abrupt. Dams also preclude the natural mixing of fresh and salt water that produces the salinities characteristic of riverine estuaries.

Coastal groundwater withdrawals may cause saltwater intrusion, upsetting established coastal freshwater habitats and contaminating coastal groundwater aquifers.

Human Disturbance of Natural Habitats

Human disturbance of the habitats of native wildlife populations can have a significant negative effect, even if the habitat areas are adequate. In the Harbor/Bight region, coastal habitats, particularly beaches and dunes, are among those most impacted by human activity. A number of coastal birds, such as terns (common, roseate, and least), black skimmer, and piping plover, are on state or federal lists of endangered or threatened species. Common threats to all these species are

disturbances by beachgoers, their pets, and introduced species.

Overharvesting

There are other impairments to living resources that are not strictly associated with habitat conditions. One of these is overharvesting of available fish or wildlife stocks. Much of the recent decline in East Coast fisheries can be attributed to overharvesting.

Insufficient/Inadequate Sites for Public Access

The region's shoreline is largely developed with privately owned residences or commercial facilities which block public access. There is also reserved natural habitat where human intrusion would be undesirable. Initial efforts to provide public parks or open space offer visual amenities, but few provide boat launches, fishing piers, or other facilities which enable direct contact with the water.

THE PLAN TO SOLVE THE PROBLEMS

Overview

The Habitat and Living Resources component of the CCMP is critical to the establishment and maintenance of a healthy and productive Harbor/Bight ecosystem with full beneficial uses. This component of the Plan has six goals:

- Ë To restore and maintain an ecosystem which supports an optimum diversity of living resources on a sustained basis.
- Ë To preserve and restore ecologically important habitat and open space.
- Ë To encourage watershed planning to protect habitat.
- Ë To foster public awareness and appreciation of the natural environment.
- Ë To minimize erosion; to decrease soil and water loadings of sediment and pollutants to the Harbor/Bight.
- Ë To increase public access, consistent with

maintaining the Harbor/Bight ecosystem. It is important to note that habitat and living resources issues were not initial priorities of HEP or the Bight Restoration Plan. The decision to include these issues as a primary focus of the Plan was based on public comments received at meetings on the Bight Restoration Plan and, later, at a coastal conference on behalf of HEP at Manhattan College, New York.

Due to this refocusing of program priorities, the analysis of habitat and living resources has been somewhat delayed relative to the other pollution-related environmental problems, which were identified early in the planning process. As a result, this CCMP recommends an iterative strategy for building a comprehensive plan to protect and enhance the Harbor/Bight watershed:

Ë To develop a comprehensive regional strategy to protect the Harbor/Bight watershed for the long term and to mitigate continuing adverse impacts of human development.

HEP has conducted an analysis of existing habitat-related programs and recommends a more focused application of those programs:

- Ë To control point and non-point loadings of pollutants;
- Ë To manage coastal development;
- Ë To manage shoreline and aquatic habitat modification;
- Ë To maintain healthy estuarine conditions by managing freshwater inputs;
- Ë To minimize human disturbance of natural habitats;
- Ë To manage fish and wildlife stocks;
- Ë To increase the number and quality of public access sites consistent with other ecosystem objectives;

COMMITMENTS AND RECOMMENDATIONS

- Ë To increase public education and involvement; and,
- Ë To complete ongoing research and initiate special studies.

HEP is currently in the process of identifying significant¹ coastal habitats warranting special protection and developing options to preserve and restore them. USEPA, on behalf of HEP, has entered into an Interagency Agreement with the U.S. Fish and Wildlife Service (USFWS) to use existing information to identify habitats, summarize their conservation status, and present recommendations for their preservation and restoration. In addition, HEP has undertaken studies to evaluate existing habitat quality, particularly in the most heavily developed portion of the Harbor core area (see Action H-10.3 below). Using the results of these and future studies, HEP recommends special geographically-targeted efforts:

- Ë To identify significant coastal habitats warranting enhanced protection; and,
- Ë To develop and implement plans to protect significant coastal habitats and improve water quality.

HEP anticipates that taking steps to improve existing programs and targeting geographic areas of the region for special protection will measurably benefit the regional ecosystem; however, these measures may not be sufficiently comprehensive to ensure long-term sustainability or to redress historic insults to the ecosystem.

Accordingly, HEP will assess the short-term actions identified in this section of the Plan to determine their sufficiency, and recommend additional steps.

¹ The use of the term "significant" to define coastal habitats is descriptive and different from the regulatory meaning accorded to it by New York State, except where noted.

Comprehensive Regional Strategy

OBJECTIVE H-1 *Develop a comprehensive regional strategy to protect the Harbor/Bight watershed and to mitigate continuing adverse human-induced effects*

ACTION H-1.1

Development of a Comprehensive Regional Strategy

HEP will develop a regional strategy to protect habitats in the Harbor/Bight watershed, including those identified in the USFWS report (see Action H-11.1 below).

To accomplish the following, HEP will encourage cooperative partnerships throughout the region to share resources on a coordinated basis.

Key components of the strategy are:

- HEP will identify regional and local habitats requiring special protection (see Objective H-11 below).
- The responsible resource management agencies, counties, and municipal governments will identify the most effective means of using their authorities, programs, and expertise to protect habitats and living resources.
- The strategy will recommend modifications to authorities and programs, as appropriate.
- HEP will build on existing programs to develop the comprehensive regional strategy. For example, the New Jersey Landscape Project has three phases to protect rare species populations: 1) mapping; 2) coordination of land management agencies; and 3) coordination of land use regulation and planning (see Action H-11.2 below).
- HEP will coordinate with the New York-New Jersey Harbor Spill Restoration Committee Natural Resources Restoration Plan for Oil and Chemical Releases in the New York-New Jersey Harbor Estuary, and other natural resources damages

accounts as appropriate.

- HEP will identify the need for additional geographically-targeted sub-planning (see Action H-12.2 below).
- In developing the regional strategy, HEP will work closely with local governments and grassroots organizations in the region through the watershed planning coordinating subcommittee of the Habitat Work Group (see Action H-1.2 below).

ACTION H-1.2

Outreach and Technology Transfer for Watershed Planning and Habitat Conservation

HEP and NJDEP will actively foster, through various specific activities, the transfer of information and tools which will enhance and encourage watershed planning and habitat conservation throughout the region. HEP will work through county and local governments and grassroots organizations in these efforts. HEP will establish a watershed planning coordinating subcommittee of the Habitat Work Group to coordinate actions at the local government and grassroots levels. HEP's activities will serve the dual purposes of:

- Fostering the exchange of information on successful local planning and conservation tools to other areas, and incorporating these tools into the Comprehensive Regional Strategy (Action H-1.1).
- Fostering a regional watershed perspective in local planning to protect Harbor/Bight habitats from unplanned and fiscally or environmentally unwise development.

Specific activities may include, but are not limited to:

Conduct regional and watershed workshops and meetings for information exchange. For example, in connection with the "Habitat Options Guide" (see Action H-9.1 below), results of HEP studies will be shared, such as the USFWS significant coastal habitats report (see Action H-11.1 below) and the piers and platforms study (see Action H-10.3 below), as well as NJDEP's Landscape Project (see Action H-11.2 below).

- Enlist services of city and/or county governments to bring regional planning to the local level through grants and other incentives (see Action H-2.5 below).
- Encourage and develop pilot projects for integrated watershed planning (see Actions H-2.1 and H-2.2 below).
- Develop a long term data management strategy (see Objective M-4 below) by considering establishment of one or more coordinated regional information management and data resource centers for habitat and other environmental information.

ACTION H-1.3

Implementation Agreements

Upon completion of the Comprehensive Regional Strategy and its endorsement by the Management Conference, HEP will seek establishment of memoranda of understanding, or other formal mechanisms, among federal natural resource agencies, states, and county and municipal governments, to implement the recommendations, to the extent legally permissible and appropriate.

Focused Application of Existing Programs

OBJECTIVE H-2 Control point and non-point loadings of pollutants

The sections of the Plan on the management of toxic contamination, dredged material, pathogen contamination, floatable debris, nutrients and organic enrichment, and rainfall-induced discharges present numerous commitments to control pollutant inputs to the Harbor/Bight system. These actions to control pollutant inputs will improve conditions by enhancing water quality and fostering the overall health of the regional coastal ecosystem. This objective expands the pollution reduction actions by addressing human-induced increases in turbidity and sedimentation in the Harbor and Bight. This objective also includes an emphasis on utilizing natural drainage features and functions, rather than more expensive sewer infrastructure, to ensure that

surface water runoff associated with development is minimized.

ACTION H-2.1

New Jersey Sediment Control Pilot Project -- Whippany River

As part of a joint strategic plan, USEPA and NJDEP have agreed to implement programs for the control of non-point source runoff in several Harbor/Bight watersheds impacted by non-point source pollution (see Actions NPS-1.1 and 1.2 below). One such watershed in the Harbor drainage area is the Whippany River, a tributary of the upper Passaic River located in Morris County, NJ. NJDEP will supplement this program to address sediment export. HEP supports this effort as a potential model for additional projects elsewhere in the Harbor/Bight region.

- NJDEP will develop a pilot project to minimize the export of sediment from the Whippany River Basin to the Harbor Estuary.

ACTION H-2.2

New York Sediment Control Pilot Project

New York State is also in the process of developing a pilot project for non-point source pollution control within the Harbor/Bight watershed.

- NYSDEC will select, develop, and implement a pilot project to minimize sediment export from a sub-watershed of the Hudson River or in the watersheds in the Bronx draining to the Harbor.

ACTION H-2.3

Basin-Wide Program

HEP, building upon the state pilot projects and programs, will develop a targeted basin-wide program to minimize sediment export to the Harbor Estuary.

ACTION H-2.4

Staten Island Watershed Actions

Southern Staten Island, the least developed area of New York City, is also the largest area of the City that is unsewered. New York City is implementing a strategy that will utilize and preserve existing drainage features to reduce the need for expensive sewer infrastructure. HEP supports this low technology, moderate cost approach to watershed protection and runoff control.

- NYCDEP will invest in stream corridor and wetland acquisitions and other watershed protection actions in the Staten Island Bluebelt, in conjunction with limited storm sewer infrastructure. This action supports the incorporation of natural systems into traditional infrastructure programs.

ACTION H-2.5

Local Watershed Planning to Limit Surface Water Runoff associated with Development

- HEP will seek funding to encourage city and county governments across the region to bring regional watershed planning to the local level through grants and other incentives.
- Regional Environmental Planning Councils in Monmouth County, New Jersey, which have been established on a watershed basis, are coordinating with individual local governments to ensure that surface water runoff associated with new development is minimized. (NJDEP has provided \$100,000 in base program funding to Monmouth County for its watershed management planning.)

ACTION H-2.6

Non-structural, Low Technology, and Low Maintenance Means to Reduce Runoff and Pollutant Inputs

- HEP encourages the use of non-structural, low technology, and low maintenance means to reduce runoff and pollutant inputs associated with environmentally responsible development, pollution abatement (e.g., CSO and storm water abatement),
- NYSDOS, in cooperation with local governments, will develop regional coastal management plans

and remediation (e.g., landfill closure). Such projects should emphasize the use of natural features and systems. HEP, acting through the Habitat Work Group, will encourage, develop, and seek funding for appropriate projects. For example:

- HEP will encourage projects through ongoing technology transfer and outreach activities (see Action H-1.2).
- HEP will develop and seek funding for a program of pilot studies for nitrogen reduction through innovative means (see Action N-3.6 below).
- HEP will encourage projects recommended under geographic plans which currently exist or are under development (see Objective H-12 below).

OBJECTIVE H-3 Manage coastal development

- HEP will encourage efforts in connection with the Harlem River Restoration.

The current regulatory mechanism to control development in coastal regions is the federal Coastal Zone Management Program, which in New York and New Jersey is administered by the states. A complementary program is the Coastal Non-point Pollution Program. New York State has established a two-tiered boundary for the coastal non-point program: the coast boundary is the first tier; the second tier is the watershed area, where coterminous. New Jersey administers its Coastal Zone Management Program through separate regulatory vehicles that cover the highly developed metropolitan area coastline and the less developed bay and ocean shores. These programs are the basis for better coastal zone management, ecosystem protection, and the achievement of development/ redevelopment needs.

ACTION H-3.1

Regional Coastal Development Plans and Programs

The states will develop and utilize regional coastal management plans and programs to manage coastal development.

for New York City and for Long Island's south shore.

-- NJDEP will continue administering its coastal zone program through a number of regulatory authorities:

- \$ Coastal Area Facilities Review Act (CAFRA) in the outer coast and bay shores from Monmouth through Cape May Counties
- \$ Waterfront Development Law
- \$ Wetlands Act of 1970
- \$ Hackensack Meadowlands Development Commission's Special Area Management Plan (SAMP)

-- NYSDOS and NJDEP will coordinate with other ongoing planning efforts, such as the New Jersey State Development and Redevelopment Plan and the New York City Comprehensive Waterfront Plan, to steer development and redevelopment toward areas with existing adequate infrastructure, and to promote conservation of the region's natural resources.

-- Under the authority of Section 309 of the Clean Air Act, which establishes the Clean Waters Program, USEPA will take into account HEP issues as part of its responsibility to comment on the environmental impacts of any federal action within the Harbor/Bight area.

ACTION H-3.2

Special Protection of Habitats through Consistency Reviews

NYSDOS, NYSDEC, and NJDEP will ensure that coastal habitats are afforded protection through the consistency review process of the Coastal Zone Management Program.

-- NYSDOS has established regulatory designations of Significant Coastal Fish and Wildlife Habitats and will update them in coordination with the applicable local waterfront revitalization program (see Action H-11.5 below).

-- NJDEP has identified areas which are afforded special protection and is developing a proposal to use the designations in the New Jersey State Development and Redevelopment Plan in the consistency review process; NJDEP will update buildings on existing or newly created pilefields,

site designations as appropriate (see Action H-11.5 below).

ACTION H-3.3

Comprehensive Planning

The state Coastal Zone Management Programs will encourage and support local comprehensive plans for habitat protection, along with zoning codes to enforce them.

-- With support from NYSDOS, New York City is redrafting its Waterfront Revitalization Program to make its policies reflect the priorities of the New York City Comprehensive Waterfront Plan (1992). This will be a regional coastal management program that will recognize local characteristics and habitat concentrations of the New York City region.

ACTION H-3.4

Regional Cooperation

HEP, through the watershed planning coordinating subcommittee, will identify projects and issues requiring regional cooperation and will facilitate that

OBJECTIVE H-4 *Manage shoreline and aquatic habitat modifications*

cooperation (see Action H-1.2).

Human activities are directly responsible for shoreline and aquatic habitat modifications and degradation of important upland habitats. Such activities are regulated by both federal and state legislation, as well as by local zoning and codes. One of the most important federal programs that protects shoreline and aquatic habitats is Section 404 of the Clean Water Act, which regulates disposal of dredged and fill material in "waters of the U.S."

A significant emerging issue, with continued development pressure on the shoreline of the Harbor, concerns the use of pile-supported structures. Developers are proposing to erect

because of the resistance by regulators to permit

further landfilling of underwater lands. HEP has partially funded a research study to evaluate habitat conditions of piers, pile fields, and pile-supported platform structures in the urbanized Hudson River waterfront. HEP recommends that federal, state, and local government regulatory agencies use the results of this study to improve habitat management (see Action H-10.3 below).

ACTION H-4.1

Memoranda of Agreement on the Tidal and Freshwater Wetlands Programs

The responsible state and federal agencies will, as legally permissible and appropriate, develop Memoranda of Agreement to coordinate surveillance, inspection, permitting, and enforcement activities for regulated wetlands and upland areas.

ACTION H-4.2

Freshwater Wetlands

The states should ensure that proposed actions involving less than one acre of fill receive individual agency review.

- HEP recommends that NYSDEC evaluate the need for, the environmental significance of, and workload associated with water quality certification for freshwater wetland fill projects affecting less than one acre and identify actions necessary to protect them.
- NYSDEC, in order to permit regulatory protection of wetlands through the water quality certification process, will consider development of water quality standards for wetlands.
- Through its Hudson River Estuary Management Program, NYSDEC will analyze wetland regulatory programs to improve protection of Hudson River wetlands and shallow water habitat, and to identify gaps in statutory protection. Part of the analysis will examine more comprehensive protection to Hudson River wetlands by extending the reach of the

New Jersey will use its existing authority to regulate development adjacent to wetlands within

state's tidal wetlands program to the entire tidal portion of the Hudson River (to the Troy Lock and Dam).

- Through its delegated freshwater permits program, NJDEP will individually review general permit applications for projects that affect less than one acre of non-tidal wetlands.
- HEP recommends that New York State amend its Freshwater Wetlands Law to require permits for wetlands less than 12.4 acres. Presently, only locally significant freshwater wetlands less than 12.4 acres, in addition to all wetlands greater than 12.4 acres, are protected under this law.

ACTION H-4.3

Designation of Regulatory Buffer Zones

Wetlands and other aquatic habitats can be adversely affected by human activities even when those activities take place above the upland border of the wetland. Accordingly, the following commitments recognize the need to regulate activities within the upland zone immediately adjacent to wetland edges.

- When NYSDEC next proposes changes to tidal wetlands land use regulations, the issue of the definition of "adjacent area" (i.e., regulatory boundary, setback requirement) will be considered. Current regulations prohibit structures within 30 feet of the shoreline within a regulatory boundary of 150 feet within New York City, and a setback of 75 feet for structures within a 300-foot regulatory boundary in the rest of the marine district.
- NYSDEC will consider expanding the scope of the state's regulatory authority to issue water quality certificates to include all projects adjacent to wetlands or those that exceed a minimum size. Currently activities beyond state jurisdiction, such as in previously built-up shoreline areas, are exempted from water quality certification.

the Harbor Estuary. The buffer will vary depending on the classification of the wetlands and the proximity to tidal waters. NJDEP will explore changes in statutory authority to regulate buffers adjacent to watercourses. The intent would be to

prohibit development in the buffer zone of a wetland unless it can be demonstrated that the proposed development will not have a significant adverse impact, and that it will cause minimum feasible adverse impact on the wetland.

ACTION H-4.4

Net Increase in Aquatic Habitat

HEP, acting through participating agencies, will seek to ensure that relevant actions, in the aggregate, result in a net increase in both quality and quantity of aquatic habitat within the Harbor/Bight, including upland buffer areas.

Special emphasis will be placed on key habitat types, such as submerged aquatic vegetation. This policy will be implemented through actions identified under Objective H-12 below.

- New York State will increase the quantity and quality of tidal wetland resources and, when feasible and desirable, its freshwater wetland resources. New York State will also explore a policy for enhanced protection of all other marine and estuarine habitats.
- New Jersey will work to ensure that actions impacting habitat in the Harbor core area, in the aggregate, result in a net increase in the acreage and quality of aquatic habitat where feasible and appropriate.
- HEP and the participating agencies will examine opportunities to increase habitat and habitat value. One means to implement this action is through Section 1135 of the Water Resources Development Act of 1986 (see discussion on page 45), in which the USACE can study and implement habitat restoration measures in areas previously impacted by water resources projects. Another means is through the beneficial use of

Habitat impairment caused by overuse and abuse of fragile coastal dunes and wetlands is generally not noticed by an uneducated public. Environmental

OBJECTIVE H-5 Maintain healthy estuarine conditions by managing freshwater inputs

clean dredged material.

Preservation of estuarine habitat requires maintenance of adequate freshwater flows to coastal waters.

ACTION H-5.1

Freshwater Withdrawal Controls

To protect estuaries, HEP recommends that the states recognize the impacts that upstream freshwater withdrawals, and other hydrologic changes, may have on salinity levels and consider these impacts in the states' water supply and wastewater planning processes.

ACTION H-5.2

Water Conservation Strategies

State and local authorities will develop and implement water conservation strategies as components of their water supply programs, to maintain the adequacy of their water supplies, to keep wastewater flows within the capacity of operating treatment plants, and to reduce or delay the need for additional projects that may impact

OBJECTIVE H-6 Minimize human disturbance of natural habitats

estuaries.

- New York City initiated a water conservation program in 1986, which, to date, has reduced citywide demand by 110 million gallons per day.
- Since 1981, NJDEP has implemented a water conservation program.

education opportunities, however, are limited by a lack of public access to the water's edge. Coastal shorebird populations are particularly vulnerable to disturbance by beachgoers, beach vehicles, and recreational boaters. Unfortunately, the human population density of the region and the demand for open space and recreational pursuits create conflicts in satisfying requirements for new access opportunities (see Objective H-8 below) and protection of natural habitat areas. HEP supports

efforts to retain sufficient habitat areas free of human disturbance to perpetuate viable populations of coastal species, emphasizing protection for those recognized as threatened, endangered, or of special concern. HEP will promote a balance of competing interests for the overall good of the general public and the natural ecosystem.

ACTION H-6.1

Workshops on Protection of Habitat Values

HEP will sponsor workshops on the protection of habitat values for federal, state, and local land management agencies, other appropriate agencies, and other large land owners, that administer parks, beaches, and other open space lands. The workshops will develop mechanisms to assist these managers in protecting habitat values.

ACTION H-6.2

Protection for Beach-nesting and Coastal Species

Responsible federal, state, and local authorities are engaged in efforts to minimize human disturbance to beach-nesting and coastal species which appear on federal and state endangered and threatened species lists. The majority of these efforts concentrate on birds, and HEP recommends that these efforts extend to other species, including turtles and plants, wherever possible. These programs are especially important when the habitat areas are close to active recreation or planned public access improvements. HEP recommends continued and expanded funding for these efforts and closer coordination between agencies providing public access and those seeking to protect habitat and natural resources.

- The U.S. Fish and Wildlife Service and the U.S. National Park Service of the Department of the Interior, and the National Marine Fisheries Service of the Department of Commerce, directly and in cooperation with local and state agencies, will continue to monitor and protect sensitive coastal wildlife populations.
- USACE, in performing shoreline protection, beach renourishment, or inlet dredging projects, will cooperate with other agencies and local conservation groups to incorporate coastal habitat enhancements wherever possible.
- NJDEP, in cooperation with The Nature

Conservancy and the U.S. Fish and Wildlife Service, is expanding piping plover protection with funds from a natural resources damages account, and will: continue to support beach-nesting bird colonies along the ocean shore from Sandy Hook to Cape May, New Jersey; monitor and manage osprey and peregrine falcon nests; and conduct a five year inventory of colonial waterbird (e.g., herons, egrets, gulls, and terns) breeding locations.

- NYSDEC will continue to monitor coastal endangered species populations in the metropolitan area to ensure their continued viability. An inventory of colonial waterbird breeding locations has been completed.
- Within New York City, the City Department of Parks and Recreation and the U.S. National Park Service maintain programs to protect beach-nesting piping plovers. The Park Service also monitors and manages osprey nests. NYCDEP, in cooperation with NYSDEC, monitors and manages peregrine falcon nests.

ACTION H-6.3

Educational Efforts to Reduce Human Disturbance to Coastal Species

HEP encourages appropriate state, local, and private sponsors to implement programs to educate the general public with regard to reducing human disturbance to sensitive coastal species.

- NYSDEC, in partnership with the Aquarium for Wildlife Conservation (Coney Island Aquarium), will conduct its "Tidal Wetlands Education Course", a course to educate violators of the New York State Tidal Wetlands Law on how to minimize adverse impacts to coastal resources, and explore expansion of the course to include shorefront owners, local municipalities, students, and other interested groups.
- NYSDEC and the YMCA will fund the Aquarium to conduct this course for children. The Aquarium will seek additional funding to expand the course.
- HEP will encourage additional efforts by state, local, and private sponsors to promote public education with regard to reducing human disturbance to sensitive coastal species.

OBJECTIVE H-7 *Preserve and improve fish, wildlife, and plant populations and biodiversity*

A number of federal and state agencies have a basic authority to manage species populations and habitats. In addition, efforts have been undertaken to coordinate species management on a regional and national scale.

ACTION H-7.1

Biodiversity Initiatives

New York State has established the Biodiversity Research Institute, jointly run by the Departments of Environmental Conservation and Education and the Office of Parks, Recreation, and Historical Preservation. Funded through the State's Environmental Protection Fund, the Institute's primary activity is the development of a statewide database for fish and wildlife populations (coordinated by the Natural Heritage Program), including establishment of an entomological clearinghouse, protection of state-owned under(fresh)water lands, and identification of species and groups of organisms which may act as indicators of environmental quality. The Institute will also prepare a computer-based inventory of 1) scientists knowledgeable about New York's biological resources and 2) collections of biological specimens located around the state.

ACTION H-7.2

Fisheries Management Plans

Appropriate agencies will comply with and adopt fisheries management plans.

-- The States of New York and New Jersey will maintain full compliance with fisheries management plans approved by the Atlantic States Marine Fisheries Commission.

-- The States of New York and New Jersey will

HEP supports the continuing implementation of the North American Waterfowl Management Plan to enhance and protect high quality wetland habitat in North America that supports a variety of wetland-dependent and recreational uses. The plan is a broad policy framework that identifies problems

implement fishery management measures which are compatible with applicable provisions of federal Fishery Management Plans prepared by regional Fishery Management Councils and approved by the U.S. Department of Commerce.

ACTION H-7.3

Restoration of Anadromous Fishery Habitat

HEP has provided partial funding to the New York-New Jersey Harbor Baykeeper (American Littoral Society) in support of a project to restore and improve habitat in the Harbor core area for anadromous herring species. In cooperation with community groups and volunteers, the Baykeeper conducted debris removal from banks and channels, in areas including several small tidal tributaries to the Arthur Kill. This effort helped reduce obstructions to anadromous fish and to foster bank stabilization and revegetation for improved riparian habitat. No heavy equipment was used during the operation. Involvement by local residents helped to educate them about the environmental resources in their communities, the threats to those resources, and the public health issues related to contaminants in the environment. The Baykeeper will continue project activities as funding sources are found. The habitat improvement measures will be monitored, and follow up activities will include dam bypasses and fish stocking, or "herring heaves", to carry migrating fish past physical obstructions.

-- HEP will continue to support efforts to restore the anadromous fishery (including habitats and abundance) to Harbor/Bight tributary rivers and streams. In so doing, HEP will ensure that public health risks associated with exposure to contaminants are minimized.

ACTION H-7.4

Implementation of the North American Waterfowl Management Plan

facing waterfowl populations, sets general guidelines for addressing problems, and establishes population and habitat goals for waterfowl in North America. The plan is a partnership effort based on the joint venture concept including private, local, state, and federal interests.

- New York State has made it a top priority to implement the Long Island South Shore Focus Area Plan, a component of the North American Waterfowl Management Plan.
- NJDEP will use state waterfowl stamp program funds to continue habitat acquisition efforts; this will both support the expansion of the Forsythe National Wildlife Refuge and help meet the goals of the North American Waterfowl Management Plan. A combined total of over 10,000 acres is expected to be acquired within the next 10 years and various waterfowl habitat improvement projects will be undertaken.

ACTION H-7.5

Natural Resources Inventory Funding

- States will maintain funding levels for their Natural Heritage Programs to document occurrences of sensitive species in the region, as well as habitats that are vital to their continued survival.
- HEP will investigate opportunities to enhance other ongoing programs and will encourage Natural Heritage Programs to include greater coverage of marine systems and species.

ACTION H-7.6

Agency Regulatory Reviews

- Federal agencies and New York State will consider species and habitats recognized as significant by HEP (e.g., in the USFWS report, Species of Special Emphasis in the New York Bight Region), in agency regulatory reviews (see Action H-11.1 below).
- NJDEP will consider species and habitats recognized as significant by HEP (e.g., in the USFWS report, Species of Special Emphasis in the New York Bight Region), in agency regulatory reviews.
- New York State, in its Plan for the Development and Management of Artificial Reefs in New York's Marine and Coastal District, will seek funding to develop new artificial reefs in appropriate areas of New York waters to increase fishing opportunities. Plans have been developed to construct reefs in the Atlantic Ocean off Cholera

reviews, to the extent legally permissible and appropriate.

ACTION H-7.7

Implementation of Artificial Reef Programs

Construction of artificial reefs along the generally sandy bottom of the Atlantic Ocean off Long Island and New Jersey can enhance regional marine habitat. Reefs can be created by strategic placement of sunken ships and barges, large rock rubble, concrete blocks, or other types of clean construction material on the ocean bottom. Reefs can provide shelter for many marine fish and mobile invertebrates, and the hard surfaces of the sunken structures provide attachment points for a variety of sessile organisms. Reefs also increase opportunities for fishing, a regionally important recreational activity, and provide sites for scuba diving. Both states currently have active artificial reef programs. HEP does not recognize artificial reefs as a means of waste management.

- New Jersey, during the last 11 years, has established a network of 14 reef sites, evenly spaced along the coast, over 23.7 square miles of sea floor. This program is supported by two non-profit organizations, the Artificial Reef Association and the Sportfish Fund. Three new reef sites were planned for 1994, at Barnegat Light Reef, Great Egg Reef, and Wildwood Reef.
- Since 1993, USACE, at the request of NJDEP, has diverted blasted rock, created during the construction of deeper navigation channels in the Kill Van Kull and Newark Bay, to an artificial reef site off Sea Bright, New Jersey. This action not only has produced valuable habitat at no added cost, but it also has provided for beneficial use of dredged material that would otherwise have been programmed for ocean disposal.

Bank, Shinnecock Inlet, Jones Inlet, and Great South Bay to supplement existing reefs in seven areas.

Note that, in addition to the above programs, NJDEP is implementing a plan for the protection of rare species in New Jersey, known as the Landscape Project (see Action H-11.2 below).

**OBJECTIVE H-8 Increase public access
consistent with other ecosystem
objectives**

There is a public demand for open space opportunities along the coastline. Providing public access can meet this need while building a constituency for enhanced protection of natural habitat and species populations. But these benefits will not be forthcoming unless access to the shore is coupled with the right kind of space to accommodate different uses: places to fish, places to swim, places close to wildlife habitat for observation, safe places for boating including support facilities, and places to walk along the water. HEP recognizes that access must not be an afterthought. People must be able to enjoy and appreciate a cleaned up estuary for there to be continuing support for further investments to improve water quality and coastal habitats. HEP supports maintaining a balance between the needs and opportunities for public access and the requirements for sustaining living resources.

Special planning efforts are necessary to require all new development to provide public access and to ensure implementation of permit requirements, public guides, and improved opportunities on existing sites. Both states' coastal programs make public access a priority and encourage localities to incorporate public access into building and zoning codes.

ACTION H-8.1

Public Access Improvements

HEP recommends that federal, state, county, and municipal governments ensure improved public access to Harbor/Bight waters by:

- Fully implementing existing projects, including:
 - \$ Hudson River Greenway
 - \$ Hudson Waterfront Walkway
 - \$ NYC Greenway Plan
 - \$ NYSDEC Hudson River Access Plan
 - \$ NYSDEC Marine Recreational Fishing Access Plan
 - \$ Greenways to the Arthur Kill
 - \$ Hackensack Meadowlands public walkway;
- Employing the Intermodal Surface Transportation Efficiency Act (ISTEA) program to fund public access improvements (see Action SW-1.5 below);
- Identifying additional projects, including the Bight, as necessary;
- Enhancing enforcement of existing regulatory programs; and
- Encouraging grass roots work projects (e.g., through the Youth Corps).

ACTION H-8.2

Public Access Guides

HEP recommends that the states develop user-friendly public access guides for the major components of the Harbor/Bight system.

- NJDEP, with partial funding from USEPA, has developed a public access guide for the Hudson Waterfront Walkway, a proposed 18-mile public accessway along New Jersey's Hudson River waterfront from Fort Lee to Bayonne.
- HEP recommends that the States of New York and New Jersey develop additional guides as necessary.

ACTION H-8.3

Public Access Infrastructure

HEP recommends that state, regional, and local authorities develop and maintain the support facilities necessary to promote public access in targeted areas. New York City's Greenway Plan proposes to increase public use of the waterfront through development of a series of inter-connecting bicycle and pedestrian paths in all five City boroughs.

ACTION H-8.4

Waterfront Zoning Regulations

New York City will implement waterfront zoning regulations mandating public access via waterfront paths and upland connections in new residential and commercial development, in addition to view corridors for visual access to the waterfront.

OBJECTIVE H-9 Increase public education, stewardship, and involvement on issues related to management of habitat and living resources

Public education is important to habitat protection because it provides an understanding of the human link to the regional ecosystem and the responsibilities that people have for maintaining that ecosystem. In many cases, the public has actively promoted wise stewardship of living resources and is seeking constructive opportunities for personal involvement. HEP supports efforts to fulfill these needs.

ACTION H-9.1

Habitat Options Guide

-- HEP will develop and distribute a "Habitat Options Guide," prepared by the Habitat Work Group, which is designed to facilitate the consideration of habitat values within the framework of local government and private land use decisions. This non-regulatory approach will complement regulatory programs to protect, maintain, and enhance environmental values across the region.

(Note: HEP will seek additional funds to assist production and distribution of the Guide).

-- HEP will hold workshops to ensure widespread exposure to the principles in the Habitat Options Guide, in conjunction with habitat value workshops.

ACTION H-9.2

Support for Habitat Laws and Programs

HEP recommends that appropriate agencies educate potential users and the general public on the impacts of lifestyle on habitat and living resources, as well as the availability of habitat information. HEP will encourage agencies to:

- Enlist advocacy and local user groups, and educational institutions, to develop new habitat protection education programs. Topics should include wetlands values and functions, as well as shoreline values and shoreline dynamics.
- Initiate and support ongoing pilot programs, such as those conducted by the Youth Conservation Corps, to conduct habitat enhancement or restoration activities and to focus efforts on watershed-scale approaches to conserve biodiversity.
- Support the enforcement potential of citizen habitat "watchdog" groups.

ACTION H-9.3

Education Programs

HEP recommends that state and local authorities, with federal support through environmental education grants, encourage the integration of educational materials and opportunities into school programs at all levels.

ACTION H-9.4

New York City Environmental Fund

In 1994, through a negotiated settlement of environmental violations with the Consolidated Edison Utility Company, NYSDEC established a New York City Environmental Fund in cooperation with the Hudson River Foundation (HRF).

-- NYSDEC, in cooperation with HRF, will use the fund to provide grants to a wide range of community, educational, and volunteer organizations, to support environmental restoration, cleanup, education, interpretation, and related projects in New York City and Westchester County.

ACTION H-9.5

Availability of Habitat Report

Given sufficient funds for production, HEP will provide copies of the USFWS report on regionally significant coastal habitats (see Action H-11.1 below) to libraries, local planners, and other interest groups in the Harbor/Bight region.

OBJECTIVE H-10 Complete ongoing research and initiate special studies on habitat issues

The CCMP contains recommendations and commitments to maintain, preserve, and restore habitat and living resources based on our current understanding and knowledge of the regional ecosystem. At the same time, HEP recognizes that this understanding is incomplete and must be supplemented by additional studies. Continued inventory and monitoring efforts will serve as a critical link to allow for an adaptive management approach to habitat improvement.

ACTION H-10.1

Identification of Significant Coastal Habitats

Given additional funding, HEP, acting through federal natural resources agencies and the states, and in partnership with local stewardship groups, will conduct field studies and produce documentation to develop a more comprehensive record of significant coastal habitats throughout the Harbor/Bight region. For example, in New Jersey this effort may enhance the Landscape Project (see Action H-11.2 below).

ACTION H-10.2

Continuation of Studies on Aquatic and Coastal Habitat Values

Federal and state agencies should fully evaluate data gaps on the value of the existing aquatic and

coastal habitats in the Harbor/Bight system and conduct additional studies accordingly. The studies would be used to:

- Identify habitat types warranting special protection and restoration.
- Refine and augment the HEP-funded report on significant coastal habitats (see Action H-11.1 below).
- Identify priority sites for restoration and acquisition.
- Evaluate enhancement and restoration technologies.
- Estimate the cumulative impacts of individual projects on the quantity and quality of existing habitats.

ACTION H-10.3

Piers and Platforms Study

After years of sporadic studies, scientists still do not fully understand the effects of pile-supported structures on the value of the habitat in the Harbor. HEP and NYSDEC collaborated with HRF, NMFS, and Rutgers University to fund a research study to determine the effects of pile-supported structures on the growth and survival of recently settled (i.e., juvenile) fishes, along the developed Hudson River shoreline. A two year study was conducted that included both fish trapping and holding fish in caged enclosures to analyze growth. Results from the trapping study helped provide a synoptic picture of habitat use at the selected sites; growth studies reflected variability in habitat quality. Though analysis is continuing, preliminary findings indicate that underpier areas provide poor habitat for juvenile winter flounder and tautog, specifically, and probably for most benthic fish, in general.

- HEP will convene a work group, consisting (at a minimum) of federal, state, county, and municipal agencies that have the authority to control shoreline development, to develop recommendations to identify appropriate regulatory tools to manage habitat.

- USACE plans to extend this study to examine fish and wildlife use of abandoned and deteriorated structures, including pile fields and ship/barge "graveyards". The study will examine the use and mitigation needs of areas in the Arthur Kill and Kill Van Kull slated for potential drift removal or stabilization under the Harbor Drift Removal Program.
- HEP recommends appropriate follow up research to assess more fully the effects of piers, platforms, and pile fields on habitat quality.

ACTION H-10.4

Assessment of Past Restoration Efforts

HEP will review the success of past habitat restoration efforts in the Harbor/Bight system in order to develop appropriate criteria and protocols for the selection of new projects -- with a maximum likelihood of success.

ACTION H-10.5

Investigation on Restoring Flood Plains and Erosion Areas

Federal and state authorities should examine opportunities to restore natural flood plains, coastal erosion hazard areas, and other natural features and functions that have been degraded by previous development. Federal actions will be guided, in part, by Executive Order 11988, Floodplain Management (May 24, 1977), which charges federal agencies to: 1) avoid floodplain development where practicable; 2) reduce flood hazards; 3) minimize flood impacts on human welfare; and 4) restore and preserve natural values of floodplains.

- Consistent with the New York State Governor's Task Force Report, NYS will, given adequate funding, identify feasible opportunities and evaluate the cost effectiveness of buying out homeowners in disaster prone areas.
- New Jersey will update its existing shore protection master plan that addresses the restoration of flood plains and coastal erosion hazard areas.
- NYSDOS and USACE will implement a physical coastal erosion monitoring program for the south shore of Long Island (from Montauk Point to

Coney Island) primarily, and, secondarily, along Long Island Sound and the south shore of Staten Island.

- USACE, in cooperation with local sponsors, will continue to execute its responsibility regarding beach erosion projects, including an assessment of the habitat impacts of such projects, with appropriate remedial measures.

ACTION H-10.6

GIS Inventory of Habitats

Building on existing efforts, HEP recommends that federal and state agencies develop a Geographic Information System (GIS)-based inventory of Harbor/Bight habitats to aid in management planning. The USFWS coastal habitat inventory funded by HEP (see Action H-11.1 below) will be the basis for the development of a GIS-based system.

ACTION H-10.7

Turbidity and Total Suspended Solids Studies

HEP recommends studies of the effects of total suspended solids on water quality (e.g. clarity, transparency) and on changes in physical characteristics of aquatic sites due to sediment deposition. These studies could be used to develop strategies to improve habitat for rooted aquatic plants that require good water clarity, to enhance habitat value for benthic organisms by providing more stable bottom sediments, and to produce a side benefit of reducing the sedimentation rate in areas requiring dredging. Improved water quality may also lead to greater algal growth; this relationship must be better understood.

Geographically-targeted Special Efforts

OBJECTIVE H-11 Identify significant coastal habitats warranting enhanced protection and restoration

ACTION H-11.1

Significant Coastal Habitat Study

HEP has funded the U.S. Fish and Wildlife Service to produce a report, based on available information, which identifies significant coastal habitats warranting special protection, summarizes their conservation status, and presents recommendations for their preservation and restoration. The geographic extent of the report includes the entire coastal watershed of New Jersey and Long Island and the lower Hudson River watershed below the Troy Lock and Dam. Interim products that have been completed include:

- \$ Species of Special Emphasis in the New York Bight Region, a comprehensive list of species of special emphasis, including federal trust species, state species of concern, and an array of commercially, recreationally, or ecologically important fish, wildlife, and plant species in the project area; and
- \$ a draft report on regionally significant coastal habitats.

- USFWS, with HEP review, will complete the report on significant coastal habitats warranting special protection.
- HEP will supplement the USFWS report, as appropriate, through additional studies identified in Objective H-10, and through the New Jersey Landscape Project (see Action H-11.2 below), to improve our understanding of habitats and the coastal ecosystem and to focus actions for their protection.

ACTION H-11.2

New Jersey Landscape Project

NJDEP is implementing a plan for the protection of rare species in New Jersey, known as the Landscape Project. This effort focuses on the relationships between organisms and their environment, emphasizing the larger region, or landscape, in which these communities occur. Although New Jersey has large parcels of public land and strong regulatory protection, it recognizes that there are current weaknesses in the long term preservation of rare species that the landscape project must address. These include: 1) incomplete information on rare species occurrences and habitat requirements; 2) fragmentation of habitats; 3) lack of coordinated land management among governmental agencies; and 4) lack of a

mechanism to incorporate rare species habitat protection into local land use planning.

- NJDEP will conduct the Landscape Project in two delineated areas, Cape May County and a small portion of the Passaic River watershed in the northern Highlands region (e.g., Passaic, Morris, Somerset, Hunterdon, and Sussex Counties). NJDEP has committed \$800,000 for these efforts.
- With additional funding, NJDEP will conduct mapping and rare species surveys, coordinate land management practices, and coordinate land use regulation and planning in the Harbor Estuary and coastal Bight area in New Jersey.

ACTION H-11.3

Inventory of Potential Habitat Restoration Projects within Significant Regional Habitats

HEP will, given sufficient funding, identify and inventory sites within the designated boundaries of significant coastal habitats, as defined in the USFWS report, which have physical and institutional characteristics which indicate the potential for restoration of habitat values. Such sites may include former landfills, industrial sites, and transport terminals. In developing the inventory, HEP will build on existing programs including state priority lists. Note: HEP and others will also identify and implement restoration projects in other areas of the Harbor/Bight (see Action H-12.4 below).

ACTION H-11.4

Protection of Locally Significant Habitats

Although HEP's focus has been on habitats of regional significance, HEP recognizes the importance of conserving habitats of local significance. There are a number of areas in the Harbor core area that are fragments of formerly contiguous habitat areas, or that are recovering from previous intensive use. These sites may be vital to the overall Harbor ecosystem, either for their existing or potential future values, in particular, collectively.

- HEP will identify and inventory sites using readily available information. The USFWS report and an effort being conducted by NJDEP's Division of Fish, Game, and Wildlife (see below) are among the information sources expected to be useful in

this effort. In

addition, a number of such sites were brought to HEP's attention at recent public meetings.

- The NJDEP Division of Fish, Game, and Wildlife is conducting a Wildlife Assessment and Restoration Project (NJ WARP), which is a wildlife inventory of terrestrial and aquatic species in the bi-state tributaries of the Harbor core area. Data will be gathered from a variety of sources to be entered into NJDEP's computerized Geographic Information System and made available through NJDEP's Bureau of Geographic Information Analysis. The information will be used in natural resources damages assessments and may also be useful for identifying potential restoration projects in Harbor tributaries, such as the Rahway and Woodbridge Rivers and other Arthur Kill tributaries.
- HEP will seek opportunities to protect, enhance, and acquire such sites, using existing programs, authorities, and funding sources. This will be done in coordination with affected state and local governments and local stewardship groups.

ACTION H-11.5

Adjustment to Significant Habitat Designations within State Coastal Zone Boundaries

Based on the USFWS report, and other studies of regionally and locally significant habitat, including those noted above:

- NYSDOS will adjust its designation of significant coastal fish and wildlife habitats in the coastal zone, as necessary.
- NJDEP will consider species and habitats recognized as significant by HEP (e.g., in the Significant Coastal Habitat Study) in agency regulatory reviews and special area designations

Jamaica Bay is the westernmost bay on the south

in the coastal zone, to the extent legally permissible and appropriate.

OBJECTIVE H-12 Develop and implement plans to protect and restore significant coastal habitats and impacted resources

There are a number of geographically-targeted efforts underway within the Harbor/Bight region that aim to promote coordinated and comprehensive planning, including the protection, acquisition, and restoration of natural habitats. Many of the environmental protection goals of these planning efforts support the HEP CCMP, and offer a ready-made opportunity to implement CCMP goals and objectives at the local and sub-regional levels. Following are descriptions of a number of these ongoing planning efforts. Note that not all aspects of these plans have been reviewed by HEP nor have they necessarily been endorsed by all HEP participants. HEP does, however, hope to build on these efforts and foster the implementation of aspects of the efforts which support HEP goals. Further review of these efforts, and initiation of new ones, will be part of HEP's continuing planning process.

Jamaica Bay

shore of Long Island, lying primarily within the two New York City boroughs of Brooklyn and Queens. Hosting a population of 2 million people within a 5-mile radius, Jamaica Bay's wetlands and open water habitat has been reduced from 25,000 to 13,000 acres, including a 75 percent loss of wetlands. With these changes and population impacts, Jamaica Bay suffers from chronically degraded water quality. NYCDEP (with a Jamaica Bay Steering Committee) has prepared a draft watershed management plan aimed both to protect

the remaining natural habitats of the bay and to reduce structural costs for water pollution abatement by 50 percent (\$1.1 billion vs. \$2.2 billion for the structural alternative). Other plans for this area which are more specifically targeted to habitat acquisition and restoration, and which are complementary to the watershed management plan, are the Buffer the Bay initiative and the New York State Jamaica Bay Restoration Plan. New York State has made Jamaica Bay a priority area for environmental restoration. The U.S. National Park Service has significant ownership and management responsibility for the lands and waters of Jamaica Bay pursuant to the establishment of the Gateway National Recreation Area in 1972.

Hackensack Meadowlands

The Hackensack Meadowlands District is a 32 square mile area covering portions of 14 municipalities in Bergen and Hudson Counties, New Jersey. The resident population of the District is slightly over 15,000, with close to 2 million people living in the immediately surrounding areas. The Meadowlands, once an almost unbroken expanse of coastal wetlands, has suffered at least a 50 percent loss of those wetlands and severe alteration and degradation of most of the remaining wetlands. However, of the remaining undeveloped areas within the District, approximately 8,000 acres are wetlands; these remaining wetlands are under substantial development pressure.

The Special Area Management Plan (SAMP) is an interagency environmental initiative among USACE, USEPA, NOAA, HMDC, and NJDEP, which targets pollution remediation, natural resource protection, and reasonable economic growth in the District.

Harbor Herons/Greenways to the Arthur Kill

The Harbor Herons Project and the Greenways to the Arthur Kill are two independent, but compatible, habitat management strategies for opposite sides of the Arthur Kill, a bi-state Harbor waterway separating New Jersey from Staten Island, New York.

The Harbor Herons Project, an effort of the Trust

for Public Lands and the New York City Audubon Society, is named for a complex of heron nesting colonies on three islands in the Arthur Kill. The colonies are supported, in part, by foraging areas in the northwestern quadrant of Staten Island, an area covering about 10 square miles. This habitat preservation plan identifies existing habitats important to the nesting herons and other urban wildlife, as well as the conservation status of those habitats. Of particular importance are more than 1,000 acres of tidal and freshwater wetlands within the study area. Recommendations are being implemented by the New York-New Jersey Harbor Spill Restoration Committee. To date, 26 acres in the vicinity of Goethals Bridge Pond, a critical wetland area, have been acquired and salt marshes along the Arthur Kill have been restored.

The Greenways to the Arthur Kill project, coordinated by the New Jersey Conservation Foundation, encompasses the entire New Jersey watershed of the Arthur Kill, an area of about 130 square miles, including six tributary rivers and creeks. The watershed has 690,000 residents which, at a density of 5,300 per square mile, is nearly five times the density for New Jersey as a whole, the nation's most densely populated state. Although heavily developed, the watershed retains a large amount of varied and valuable wildlife habitat, including wetlands, floodplain and swamp forests, and upland forests. Some of these habitats are protected in county and municipal parks, but many are fragmented pieces of an urban and suburban landscape.

The focus of the Greenways Plan is to protect the stream corridors for their values related to water quality, flood prevention, natural habitat, public recreation, and aesthetics, all of which provide economic benefits to the watershed communities. Portions of this plan are also being implemented through the New York-New Jersey Harbor Spill Restoration Committee.

Barneгат Bay

Barneгат Bay, a 75 square mile back bay ecosystem, is an environmentally sensitive estuary, replete with aquatic vegetation, shellfish beds,

finfish habitats, waterfowl nesting grounds, and scenic vistas. Yet the Bay is relatively shallow throughout, with slow mixing and flushing. The Bay drains a coastal watershed of approximately 450 square miles, parts of which contain densely developed residential areas. The watershed is home for nearly 450,000 residents, and this population doubles during the summer season.

Recent (post-1950) and continuing land use changes are causing significant degradation of Barnegat Bay water quality, which stimulated the New Jersey State Legislature to initiate the Barnegat Bay Study. The study resulted in the Barnegat Bay Watershed Management Plan in 1992, which provides a series of actions to preserve the values and resources of Barnegat Bay. Most recently, Barnegat Bay has been accepted into the National Estuary Program, and a separate CCMP will be developed for the Bay over the next three years.

Hudson River Estuary

In 1987, the New York State Legislature passed the Hudson River Estuary Management Act, which directed NYSDEC to develop a management program for the estuary and its shoreline. The purpose of the program is better coordination of management activities both within the Department as well as with other government agencies responsible for the estuary's resources. NYSDEC is issuing the final Hudson River Estuary Management Plan and an Action Plan which highlights priority actions. The Action Plan contains commitments and recommendations for water quality improvement, management of water resources, protection of biodiversity and habitat, open space management, monitoring, and other concerns.

Long Island South Shore Reserve

Several enforcement actions in the Harbor region have resulted in natural resources damages assessment accounts that can be used for natural resources protection and restoration. One account, resulting from a 1990 oil spill at the Exxon Bayway

One of the more recent regional planning efforts in the Harbor/Bight area is the Long Island South Shore Estuarine Reserve. Similar to Barnegat Bay, Long Island's South Shore Bays have had tremendous population growth over the last 40 years; in fact, the majority of Long Island's 2.6 million residents are located in close proximity to the South Shore. Water quality impairments are severe in some areas, and most of the coastal habitat, including at least 30 percent of historic tidal wetlands, has been lost. This effort, to be patterned after the National Estuary Program, is in the first phase of a two-phase planning effort.

Actions to protect, preserve, and restore habitat areas and values have a number of potential funding sources, including the following:

Section 1135 of the Water Resources Development Act (WRDA) of 1986

Section 1135 of WRDA (1986), Section 204 of WRDA (1993), and various project-specific authorizations allow the USACE to study and implement habitat restoration measures in areas previously impacted by water resources projects. Federal funds are cost-shared with state and local sponsors to plan, design, and construct habitat restoration projects employing the broad principles of ecosystem-based planning. Many areas throughout the Harbor and Bight have been adversely impacted by federal water resources projects and could be eligible for funding through this program. Currently, the USACE is negotiating with NYSDEC, NYSDOS, and NYCDEP to initiate detailed studies for restoration projects within the lower Hudson River and in Jamaica Bay.

Natural Resources Damages Assessment Accounts

refinery in the Arthur Kill, is administered by a committee of two federal agencies, the U.S. Department of the Interior and the National Oceanic and Atmospheric Administration; two states, New York and New Jersey; and New York City (New York-New Jersey Harbor Spill Restoration Committee), which is developing a plan known as the Natural Resources Restoration Plan for Oil and

Chemical Releases in the New York-New Jersey Harbor Estuary. Another account will help remediate environmental damage in Jamaica Bay and areas of Staten Island and the Bronx affected by illegal dumping at sanitary landfills. A third fund, the New York City Environmental Fund, will support public education and outreach efforts, natural resource restoration, and grass roots environmental improvement projects (see Action H-9.4).

ACTION H-12.1

Incorporation of Recommendations into CCMP Implementation Schedule

HEP will independently review the recommendations of ongoing geographically-targeted efforts, which seek the preservation and restoration of habitat and living resources, and recommend their implementation by appropriate members of HEP.

- HEP will complete an expedited review of NYC's Comprehensive Watershed Management Plan and other Jamaica Bay initiatives (e.g., see Action H-12.3 below).

ACTION H-12.2

Additional Geographically-targeted Plans

HEP will ensure the development and implementation of additional geographically-targeted plans.

- Upon completion of the HEP-sponsored USFWS report on significant coastal habitats, HEP will identify priority areas warranting protection beyond the focused application of existing programs.
- HEP will coordinate with the New York-New Jersey Harbor Spill Restoration Committee Natural Resources Restoration Plan for Chemical Releases in the New York-New Jersey Harbor Estuary.
- HEP will seek state and local sponsors for the development and implementation of geographically-targeted plans for priority habitat areas.
- HEP will evaluate the extent to which additional measures are necessary to protect significant upland habitats.

ACTION H-12.3

Special Efforts to Restore Habitat and Improve Water Quality in Jamaica Bay

- New York City Audubon Society, with a demonstration project grant from HEP, has undertaken a coastal habitat restoration project at Dubos Point Wetlands Sanctuary and Bayswater State Park, along the southern shoreline of Jamaica Bay. The project accomplished the following tasks: trash and debris removal; removal of concrete and rubble; security fencing to protect nesting terrapins and birds; vegetation control to favor native species; community education activities; monitoring surveys of birds, marine invertebrates, plankton, butterflies, dragonflies, flora, and water quality; and photo documentation.
- NYSDEC will develop a habitat restoration plan to use approximately \$8 million available from a successful natural resources damages claim to support special efforts to restore habitat in Jamaica Bay. Pelham Bay in the Bronx and Staten Island are also sites eligible for restoration funding.
- New York City will finalize an agreement with USACE for a cost-shared feasibility study to investigate alternatives and develop detailed plans to implement a habitat restoration project for Jamaica Bay, including measures to address water quality problems related to poor flushing and other hydrological alterations. NYSDEC is cooperating in the feasibility study and will cost-share (with the \$8 million in settlement funds) in the construction of recommended habitat restoration plans, making it a comprehensive and integrated federal, state, and local effort.
- NYSDEC will seek an agreement with USACE, NYCDEP, and the U.S. National Park Service Gateway National Recreation Area to develop a comprehensive Jamaica Bay Plan to integrate all activities associated with water quality improvement; habitat protection, restoration, and acquisition; public access; and educational opportunities. (Note: HEP will complete an expedited review of Jamaica Bay initiatives as stated in Action H-12.1).

ACTION H-12.4
Hudson River Restoration Efforts
USACE, in cooperation with NYSDEC and
NYSDOS, has prepared a reconnaissance report

recommending priority habitat restoration sites and goals for the Hudson River Estuary.

- USACE, with the cooperation of NYSDEC and NYSDOS, will finalize a plan of study that will lead to a cost-shared feasibility study to investigate restoration alternatives and develop detailed plans to implement recommended habitat restoration measures throughout the lower river, from Troy to New York City.
- Following the feasibility study, the three agencies will enter into a cost-share agreement to fund construction of recommended measures.

ACTION H-12.5

Habitat Acquisition and Restoration Projects

Appropriate federal and state agencies will identify and facilitate the implementation of habitat acquisition and restoration projects, with priority given to projects that:

- § Provide maximum ecosystem benefits, based on research results.
 - § Can be accomplished largely through the restoration of natural coastal processes (e.g., restoring tidal flow, shoaling of dredged areas, allowing natural plant succession).
 - § Can be implemented as part of urban/suburban redevelopment efforts.
- HEP will identify potential habitat restoration projects and techniques, encourage entities with regulatory authority to implement the projects, and facilitate implementation.
 - HEP will encourage use of funds available through the Intermodal Surface Transportation Efficiency Act (ISTEA) program to implement appropriate habitat restoration (see Action SW-1.5).
 - USACE will continue to seek funding under Section 1135 (WRDA, 1986) and Section 204 (WRDA, 1992), as well as individual project authorizations, to implement habitat restoration measures in areas adversely impacted by past water resources projects. In addition to the

ACTION H-12.8

Acquisition of Habitats in New Jersey

- studies targeting Jamaica Bay and the Hudson River, consideration is being given to the Hackensack and Raritan Rivers, the Arthur Kill, Raritan Bay, and Moriches and Great South Bays on Long Island.
- USACE, in cooperation with NYSDEC, NYSDOS, NJDEP, and other federal, state, and local resource and planning/regulatory agencies, will continue to evaluate habitat restoration as part of ongoing studies under Section 216 of the River and Harbor and Flood Control Act, as well as Sections 306 and 307 of WRDA, 1990. Restoration opportunities will be identified, cost estimates will be developed, and local non-federal cost-sharing partners will be sought to implement these measures as part of, or independently of, the ongoing study.
 - HEP will coordinate with the New York-New Jersey Harbor Spill Restoration Committee Natural Resources Restoration Plan for Oil and Chemical Releases in the New York-New Jersey Harbor Estuary for qualifying habitat acquisition and restoration projects.

ACTION H-12.6

Public Private Partnerships

HEP recommends the establishment of a mechanism for public/private partnerships to preserve and restore habitat. An ecosystem-based Harbor Habitat Conservancy could be incorporated within appropriate local conservancies, such as the Hackensack River Land Conservancy, to negotiate appropriate techniques to preserve the significant habitats identified by USFWS. The Conservancy would work cooperatively with existing agencies and organizations to develop funding and support to implement local conservancies.

ACTION H-12.7

Amendment to New York Open Space Plan for Habitat Acquisition

NYSDEC, in consultation with its Region II Open Space Acquisition Committee, will amend, as appropriate, the acquisition recommendations of the New York State Open Space Plan to include newly identified, significant habitats.

NJDEP will seek opportunities for acquisition of significant upland habitats (e.g., areas within the

Rahway River watershed).

ACTION H-12.9

Restoring and/or Increasing Land and Water Conservation Funds

HEP advocates the funding of federal and New York State land and water conservation funds, which could be used for implementation of protection and restoration projects or elements of the regional strategy (see Objective H-1).

COSTS OF IMPLEMENTING THIS PLAN

Many of the commitments and recommendations in the Habitat and Living Resources component of the CCMP can be accomplished through the effective use of base program resources. In fact, full implementation of the CCMP relies, in large part, on continued operation, and funding at current levels, of existing programs to meet habitat and living resources needs. The Habitat and Living Resources component of the CCMP describes 41 new HEP-driven commitments to be accomplished using base program resources.

These actions represent a major commitment to CCMP implementation.

The Habitat and Living Resources component of the CCMP also includes 23 significant commitments and recommendations that entail enhanced program funding. As shown in Table 3(hc) below:

- Ē The Plan includes 7 actions for which a total of \$6,995,500 has been committed by the responsible entities.
- Ē The Plan includes 13 actions for which increased funding of \$1,073,900 plus \$550,000 per year is recommended.
- Ē The Plan also includes three additional recommendations for action for which cost estimates will be developed during the continuing planning process.

This CCMP component includes 16 additional actions that require implementation costs for special projects. As shown in Table 4(hc) below:

- Ē The Plan includes 5 actions for which a total of \$15,596,000 has been committed by the responsible entities.
- Ē The Plan includes 2 additional actions for which a total of \$500,000 plus \$1 million per year are recommended.
- Ē The Plan includes 9 additional commitments and recommendations for action for which cost estimates will be developed during the continuing planning process.

Table 3(hc). Enhanced Program Costs for Management of Habitat and Living Resources

ACTION	COMMITMENTS		RECOMMENDATIONS	
	Cost	Cost/Year	Cost	Cost/Year
ACTION H-2.1 Enhance pilot project for Whippany River sediment control.	\$100,000			
ACTION H-2.5 Encourage watershed planning at the local level.				\$50,000
ACTION H-6.3 Conduct/expand educational efforts to reduce human disturbance to habitats.	\$15,000		\$10,000	
ACTION H-7.5: Enhance natural resources inventories.			*	
ACTION H-8.1: Enforce public access programs.				\$150,000
ACTION H-8.2: Produce Hudson River Public Access Guide.	\$32,500			
ACTION H-8.2: Produce additional public access guides.			\$50,000	
ACTION H-9.1: Distribute Habitat Options Guide.			\$18,900	
ACTION H-9.2: Initiate pilot programs for habitat restoration.				\$100,000
ACTION H-9.4: Provide environmental education and stewardship grants through the NYC Environmental Fund.	\$5,000,000			
ACTION H-9.5: Distribute USFWS report on coastal habitats.			\$25,000	
ACTION H-10.1: Continue habitat inventory field studies.				\$150,000
ACTION H-10.2: Continue studies of coastal habitat values.				\$100,000
ACTION H-10.3: Complete study of piers/platforms habitat value.	\$208,000			
ACTION H-10.3: Continue research on piers/platforms habitat value.			*	
ACTION H-10.5: Investigate flood plain and coastal erosion area restoration.			\$50,000	
ACTION H-10.5: Implement coastal erosion monitoring program for Long Island.	\$1,400,000			
ACTION H-10.6: Develop GIS inventory of habitats.			\$200,000	
ACTION H-10.7: Study effects of total suspended solids.			*	
ACTION H-11.1: Identify habitats warranting special protection.	\$240,000			
ACTION H-11.2: Conduct NJ Landscape Project.			\$670,000	
ACTION H-11.3: Identify and inventory potential habitat restoration projects.			\$50,000	
TOTAL	\$6,995,500		\$1,073,900+ [*]	\$550,000/yr ¹

Table 2001 Project Implementation Costs for Management of Habitat and Living Resources

ACTION	COMMITMENTS		RECOMMENDATIONS	
	Cost	Cost/Year	Cost	Cost/Year
ACTION H-2.1: Implement full-scale project for Whippany River sediment control.			\$500,000	
ACTION H-2.2: Implement full-scale project for Hudson sub-basin or Bronx sediment control.			*	
ACTION H-2.4: Implement watershed protection in Staten Island (NYC).	\$6 million			
ACTION H-2.6: Implement projects using non-structural means to reduce runoff.			*	
ACTION H-7.3: Support Baykeeper to restore spawning habitat. **	\$170,000			
ACTION H-7.3: Implement additional fishery habitat restoration.			*	
ACTION H-8.1: Implement existing public access programs.			*	
ACTION H-8.3: Provide public access infrastructure.			*	
ACTION H-12.3: Implement restoration in Jamaica Bay.				
-- HEP grant to NYC Audubon.	\$26,000			
-- NYSDEC natural resources damages account.	\$8 million			
-- NYC cost-share to federal, state, local projects.	*			
ACTION H-12.4: Implement restoration in Hudson River.	*			
ACTION H-12.5: Use available federal funding for restoration (e.g., Section 1135 of WRDA, ISTEA).	*			
-- Coordinate with natural resources damages accounts for qualifying projects.	*			
ACTION H-12.8: Implement upland habitat protection/acquisition.	\$1,400,000			
ACTION H-12.9: Revive land and water conservation funds.				\$1 million
TOTAL	\$15,596,000 ¹ + *		\$500,000 ¹ + *	\$1,000,000/yr

* Project implementation costs to be developed as part of the continuing planning process.

** Project is incrementally funded; commitments for full project funding have not yet been acquired.

¹ Notation (+ *) indicates cost plus additional costs to be determined.

BENEFITS OF IMPLEMENTING THIS PLAN

Full implementation of the commitments and recommendations in the Habitat and Living Resources component of the Plan, including the development and implementation of a comprehensive regional strategy, would result in

- the preservation and restoration of the region's ecosystem;
- effective management of living resources;
- regulation and minimization of erosion and sedimentation; and
- enhanced opportunities for public access and coastal recreation.

As noted in the opening part of this section, however, we are a long way from reaching these endpoints. Nevertheless, through the focused application of existing programs and the geographic targeting of habitat areas for special protection, the Program will achieve:

- incremental progress toward ecosystem goals on a system-wide basis; and
- restoration and protection of selected ecosystem components and habitat types.

This effort will foster the consideration of ecosystem needs at every level of government and among the public so that the economic progress of the region no longer comes at the expense of the natural ecosystem. Quantifiable benefits of the measures identified in this Plan must be identified on a case-by-case basis and in consideration of past, present, and future impacts of human activity in the region. It is important to recognize that many of the benefits of ecosystem protection are non-quantifiable and range from aesthetic considerations to the maintenance of a healthful environment for the human population.

Table 5(hs). SummaryC Management of Habitat and Living Resources

ACTION	RESPONSIBLE ENTITY ¹	TARGET DATE	ESTIMATED COST	STATUS ²
OBJECTIVE H-1: Develop a comprehensive regional strategy to protect the Harbor/Bight watershed and to mitigate continuing adverse human-induced impacts.				
<p>ACTION H-1.1: Develop a comprehensive regional strategy. (Note: In developing the strategy, HEP will need to involve other agencies and local/county governments, in addition to those listed. HEP will work to gain the commitment of these entities.)</p> <p>ACTION H-1.2: Foster information transfer and tools to enhance and encourage watershed planning.</p> <p>-- Establish a watershed planning coordinating subcommittee of the Habitat Work Group.</p>	<p>HEP, USACE, USEPA, NOAA, USFWS, NYSDEC, NYSDOS, NJDEP, NYC</p> <p>HEP & NJDEP</p> <p>HEP, including NJDEP</p>	<p>Draft: Dec 1996 Final: June 1997</p> <p>Ongoing</p> <p>Feb 1996</p>	<p>Base program</p> <p>Base program</p> <p>Base program</p>	<p>C/N</p> <p>C/N</p> <p>C/N</p>
<p>-- Conduct workshops and meetings with local governments and grassroots organizations.</p> <p>-- Develop pilot projects for integrated watershed planning.</p> <p>ACTION H-1.3: Seek establishment of memoranda of understanding, or other formal mechanisms, among agencies to implement recommendations, to</p>	<p>HEP, acting through the watershed planning coordinating subcommittee & NJDEP</p> <p>HEP, acting through the watershed planning coordinating subcommittee & NJDEP</p> <p>HEP</p>	<p>Beginning Feb 1996</p> <p>Dec 1996</p> <p>By Dec 31, 1997</p>	<p>Base program</p> <p>Base program</p> <p>Base program</p>	<p>C/N</p> <p>C/N</p> <p>C/N</p>

¹ Responsible entities may accomplish the actions directly or via contract or grant.

² C/O - An ongoing commitment, not driven by the HEP CCMP
 C/N - A new commitment, driven by the HEP CCMP
 R - Recommendation

ACTION	RESPONSIBLE ENTITY ¹	TARGET DATE	ESTIMATED COST	STATUS ²
the extent legally permissible and appropriate.				
OBJECTIVE H-2: Control point and non-point loadings of pollutants.				
ACTION H-2.1: Minimize sediment export from the Whippany River Basin through NJ pilot project.				
-- Develop pilot project.	NJDEP	Jun 30,1996	Base program	C/N
-- Enhance pilot project.	NJDEP	Jun 30, 1996	Enhanced program cost - \$100,000	C/N
-- Implement full scale project.	NJDEP	By Dec 31, 1998	Project implementation cost - \$500,000	R
ACTION H-2.2: Minimize sediment export from a sub-watershed of the Hudson River or in the Bronx through NY pilot project.				
-- Select pilot project.	NYSDEC	Jun 1996	Base program	C/N
-- Develop and conduct pilot project.	NYSDEC	Jun 1997	Base program	C/N
-- Implement full scale project.	NYSDEC	By Dec 31, 1997	Project implementation cost to be estimated by NYSDEC in 1996	R
ACTION H-2.3: Building upon the state pilot projects and programs, develop a targeted basin-wide program to minimize sediment transport to the Harbor Estuary.	HEP	Post-CCMP	Base program	C/N
ACTION H-2.4: Invest in watershed protection to minimize impacts from development in Staten Island.	NYCDEP	By Dec 31, 1996	Project implementation cost - \$6 million over 3 yrs	C/O

ACTION	RESPONSIBLE ENTITY ¹	TARGET DATE	ESTIMATED COST	STATUS ²
ACTION H-2.5: Minimize runoff associated with development through local watershed planning.				
-- Coordinate watershed planning with local governments.	Monmouth County, Regional planning councils	Ongoing	Base program (NJDEP has provided \$100,000 in base program funding to Monmouth County for its watershed management planning.)	C/O
-- Seek funding to encourage watershed planning regionwide at the local level.	HEP	Post-CCMP	Enhanced program cost - \$50,000/yr	R
ACTION H-2.6: Encourage the use of non-structural, low-tech, and low maintenance means to reduce runoff and pollution associated with environmentally responsible projects.				
-- Develop projects.	HEP	Ongoing through Dec 1996	Base program	C/N
-- Implement projects.	HEP & other sponsors	Beginning by Dec 31, 1996	Project implementation cost estimate to be developed	R
OBJECTIVE H-3: Manage coastal development.				
ACTION H-3.1: Develop and utilize regional coastal management plans and programs.				
-- Develop regional plan for New York City.	NYS DOS & local	By Dec 31, 1996	Base program	C/N

¹ Responsible entities may accomplish the actions directly or via contract or grant.

² C/O - An ongoing commitment, not driven by the HEP CCMP
C/N - A new commitment, driven by the HEP CCMP
R - Recommendation

ACTION	RESPONSIBLE ENTITY ¹	TARGET DATE	ESTIMATED COST	STATUS ²
	governments			
-- Develop regional plan for the Long Island South Shore.	NYSDOS	By Dec 31, 1997	Base program	C/O
-- Utilize elements of coastal program to manage growth.	NJDEP	Ongoing	Base program	C/O
-- Coordinate ongoing planning efforts, promote conservation of natural resources, and encourage redevelopment in areas where infrastructure is in place.	NYSDOS & NYSDEC	Ongoing	Base program	C/O
-- Coordinate ongoing planning efforts, steer development and redevelopment toward areas with existing infrastructure, and promote conservation of the region's natural resources.	NJDEP	Ongoing	Base program	C/O
-- Consider HEP issues in commenting on the environmental impacts of federal actions in the Harbor/Bight area.	USEPA	Ongoing	Base program	C/O
ACTION H-3.2: Ensure that Significant coastal habitats are afforded protection through the consistency review process of the Coastal Zone Management Program.	NYSDEC, NYSDOS, NJDEP	Ongoing	Base program	C/O
ACTION H-3.3: Encourage and support local comprehensive plans for habitat protection.	NYSDOS & NJDEP	Ongoing	Base program	C/O
ACTION H-3.4: Identify projects and issues requiring regional cooperation; facilitate cooperation.	HEP	Ongoing	Base program	C/N
OBJECTIVE H-4: Manage shoreline and aquatic habitat modifications.				
ACTION H-4.1: Develop memoranda of agreement,	USEPA, USACE,	By Dec 31, 1996	Base program	C/N

ACTION	RESPONSIBLE ENTITY ¹	TARGET DATE	ESTIMATED COST	STATUS ²
as legally permissible and appropriate, to coordinate surveillance, inspection, permitting, and enforcement activities in tidal wetlands.	NYSDOS, NYSDEC, NJDEP			
ACTION H-4.2: Ensure regulation of proposed actions involving less than one acre of fill in freshwater wetlands.				
-- Consider issuing individual water quality certificates for projects that affect < 1 acre of freshwater wetlands.	NYSDEC	Ongoing	Base program	R
-- Consider development of water quality standards for projects affecting wetlands.	NYSDEC	Ongoing	Base program	C/N
-- Take steps to improve protection of Hudson River freshwater wetlands.	NYSDEC, through Hudson River Estuary Mgmt. Program	Ongoing	Base program	C/O
-- Require individual reviews of general permits for projects that affect < 1 acre of non-tidal wetlands.	NJDEP	Ongoing	Base program	C/O
-- Amend the NYS freshwater wetlands law to cover wetlands less than 12.4 acres.	NY government	By Dec 31, 1996	Base program	R
ACTION H-4.3: Use existing authorities to regulate activities in upland buffer areas that impact adjacent wetlands.	NYSDEC & NJDEP	Ongoing	Base program	C/N
ACTION H-4.4: Ensure that actions impacting habitat in the Harbor core area, in the aggregate, result in a net increase in the acreage and quality of aquatic habitat, where feasible and appropriate. Emphasize key habitat types such as submerged	HEP, NYSDEC, NYSDOS, NJDEP	Ongoing	Base program	C/N

¹ Responsible entities may accomplish the actions directly or via contract or grant.

² C/O - An ongoing commitment, not driven by the HEP CCMP
C/N - A new commitment, driven by the HEP CCMP
R - Recommendation

ACTION	RESPONSIBLE ENTITY ¹	TARGET DATE	ESTIMATED COST	STATUS ²
aquatic vegetation.				
OBJECTIVE H-5: Maintain healthy estuarine conditions by managing freshwater inputs.				
ACTION H-5.1: Consider impacts of freshwater withdrawals and other hydrologic changes on estuarine salinity.	NYSDEC & NJDEP	Post-CCMP	Base program	R
ACTION H-5.2: Continue to implement water conservation programs.	NYSDEC, NYCDEP, NJDEP, local NJ authorities	Ongoing	Base program	C/O
OBJECTIVE H-6: Minimize human disturbance of natural habitats.				
ACTION H-6.1: Sponsor workshops to encourage federal, state, and local land management agencies, other appropriate agencies, and other large land owners to protect habitat values.	HEP	By Dec 31, 1996	Base program	C/N
ACTION H-6.2: Protect vulnerable beach-nesting and coastal species.				
-- Monitor and protect federally-listed beach-nesting and coastal species populations.	USFWS, USDOI/NPS, NMFS	Ongoing	Base program	C/O
-- Incorporate enhancement into coastal civil works projects.	USACE, with local sponsors	Ongoing	Base program, plus project-specific enhancements by local sponsors	C/O
-- Protect coastal species from Sandy Hook to Cape May, NJ.	NJDEP	Ongoing	Base program	C/O
-- Protect coastal species along Long Island shore.	NYSDEC	Ongoing	Base program	C/O
-- Protect coastal species in NYC.	NYCDPR, USDOI/NPS, NYCDEP, NYSDEC	Ongoing	Base program	C/O

ACTION	RESPONSIBLE ENTITY ¹	TARGET DATE	ESTIMATED COST	STATUS ²
ACTION H-6.3: Conduct and expand educational efforts to reduce human disturbance to coastal species.				
-- Conduct planned course on environmental sensitivity.	NYSDEC & Coney Island Aquarium	Ongoing	Base program	C/O
-- Extend course to children.	NYSDEC, Coney Island Aquarium, YMCA	Mar 1996	Enhanced program cost - \$15,000	C/N
-- Seek additional funding to expand the course to a wider audience.	NYSDEC, Coney Island Aquarium	Beginning by Dec 31, 1996	Enhanced program cost - \$10,000	R
-- Encourage additional efforts to promote environmental sensitivity to coastal species.	HEP	Beginning by Dec 31, 1996	Base program	C/N
<i>OBJECTIVE H-7: Preserve and improve fish, wildlife, and plant populations and biodiversity.</i>				
ACTION H-7.1: Develop statewide database of fish and wildlife populations through the Biodiversity Research Institute.	NYSDEC	Ongoing	Base program	C/O
ACTION H-7.2: Comply with and implement fisheries management plans.				
-- Maintain full compliance with plans approved by ASMFC.	NYSDEC & NJDEP	Ongoing	Base program	C/O
-- Implement measures compatible with federal plans approved by USDOC.	NOAA, NYSDEC, NJDEP	Ongoing	Base program	C/O
ACTION H-7.3: Support efforts to restore anadromous spawning fishery habitat.				
-- Support Harbor Baykeeper efforts in NJ	HEP & Harbor Baykeeper	Ongoing	Project	C/N

¹ Responsible entities may accomplish the actions directly or via contract or grant.

² C/O - An ongoing commitment, not driven by the HEP CCMP
C/N - A new commitment, driven by the HEP CCMP
R - Recommendation

ACTION	RESPONSIBLE ENTITY ¹	TARGET DATE	ESTIMATED COST	STATUS ²
tributaries and Staten Island, NY.			implementation cost - \$170,000 over 2 yrs (includes \$26,000 commitment of HEP funds)	
-- Identify additional projects.	HEP	Completed	Base program	C/N
-- Implement additional projects.	To be determined	Post-CCMP	Project implementation costs to be estimated by Dec 1996	R
ACTION H-7.4: Implement the North American Waterfowl Management Plan.	Private, local, state, federal interests	Ongoing	Base program	C/O
ACTION H-7.5: Support natural resources inventories.				
-- Maintain funding levels for natural heritage programs.	NY & NJ	Ongoing	Base program	C/O
-- Investigate opportunities to enhance other natural resources inventory programs, and encourage natural heritage programs to include greater coverage of marine systems and species.	HEP	Ongoing	Base program	C/N
ACTION H-7.6: Conduct agency regulatory reviews.				
-- Consider significant HEP species and habitats in regulatory reviews.	USEPA, USACE, NYSDEC, NYSDOS, NYC Dept. of City Planning	Post-CCMP	Base program	C/N
-- Consider significant HEP species and habitats in regulatory reviews, to the extent legally	NJDEP	Post-CCMP	Base program	C/N

ACTION	RESPONSIBLE ENTITY ¹	TARGET DATE	ESTIMATED COST	STATUS ²
permissible and appropriate.				
ACTION H-7.7: Implement artificial reef programs.	NY & NJ	Ongoing	Base program	C/O
OBJECTIVE H-8: Increase appropriate public access.				
ACTION H-8.1: Federal, state, and local governments should implement existing programs to ensure improved public access.				
-- Fully implement existing projects.	Federal, state, & local governments; regulated community	Ongoing	Project implementation costs to be developed	R
-- Identify additional projects, as necessary.	HEP	Beginning Feb 1996	Base program	C/N
-- Enhance enforcement of existing regulatory programs.	State & local governments	Post-CCMP	Enhanced program costs - \$150,000/yr	R
ACTION H-8.2: Develop public access guides.				
-- Develop guide for Hudson Waterfront Walkway.	NJDEP	Completed	Enhanced program cost - \$32,500	C/N
-- Develop guides for Harbor/Bight system.	NYSDEC & NJDEP	By Dec 31, 1996	Enhanced program cost - \$50,000	R
ACTION H-8.3: Develop infrastructure necessary to support public access.	NY, NJ, local governments	By Dec 31, 1997	Project implementation costs to be developed	R
ACTION H-8.4: Implement waterfront zoning regulations mandating public access via waterfront paths, upland connections, and view corridors.	NYC Dept. of City Planning	Completed	Base program	C/O

¹ Responsible entities may accomplish the actions directly or via contract or grant.

² C/O - An ongoing commitment, not driven by the HEP CCMP
C/N - A new commitment, driven by the HEP CCMP
R - Recommendation

ACTION	RESPONSIBLE ENTITY ¹	TARGET DATE	ESTIMATED COST	STATUS ²
<i>OBJECTIVE H-9: Increase public education, stewardship, and involvement on issues related to management of habitat and living resources.</i>				
ACTION H-9.1: Develop and distribute a "Habitat Options Guide".				
-- Develop guide.	HEP	By Dec 31, 1996	Base program	C/N
-- Distribute guide.	HEP	By Dec 31, 1996	Enhanced program cost - \$18,900	R
-- Sponsor workshops to ensure exposure to guide.	HEP	By Dec 31, 1996	Base program	C/N
ACTION H-9.2: Educate the public on the impacts of lifestyle on habitat and living resources.				
-- Encourage local user groups and educational institutions to develop education programs.	NYSDEC, NYSDOS, NJDEP, local governments	Post-CCMP	Base program	R
-- Initiate pilot programs to conduct habitat enhancement or restoration activities.	NYSDEC, NYSDOS, NJDEP	Post-CCMP	Enhanced program cost - \$100,000/yr	R
-- Support citizens habitat "watchdog" groups.	HEP, USEPA, USACE, NOAA, NYSDEC, NYSDOS, NJDEP	Post-CCMP	Base program	R
ACTION H-9.3: Encourage the integration of habitat educational materials into local school curricula.	NY & NJ	Post-CCMP	Base program	R
ACTION H-9.4: Program New York City Environmental Fund for public education/outreach.				
-- Provide grants to support environmental education and stewardship.	NYSDEC & Hudson River Foundation	Apr 1996	Enhanced program cost - \$5 million	C/N
ACTION H-9.5: Provide copies of the USFWS report on aquatic and coastal habitat values to libraries and other interested parties in the Harbor/Bight area.	HEP	Mar 1996	Enhanced program cost - \$25,000	R

ACTION	RESPONSIBLE ENTITY ¹	TARGET DATE	ESTIMATED COST	STATUS ²
OBJECTIVE H-10: Complete ongoing research and initiate special studies on habitat issues.				
ACTION H-10.1: Continue field studies to develop a comprehensive record of coastal habitats throughout the Harbor/Bight region.	HEP, USFWS, NYSDEC, NJDEP, NOAA/NMFS	Post-CCMP	Enhanced program cost - \$150,000/yr	R
ACTION H-10.2: Continue studies on coastal and aquatic habitat values.	USEPA, USACE, NOAA, NYSDEC, NYSDOS, NJDEP	Post-CCMP	Enhanced program cost - \$100,000/yr	R
ACTION H-10.3: Continue assessment of the habitat values of piers and platforms.				
-- Complete 2-yr study of effects of piers and platforms.	NYSDEC & HEP	Completed	Enhanced program cost - \$208,000	C/N
-- Continue research effort, as appropriate.	HEP	Post-CCMP	Enhanced program cost to be determined	R
-- Convene a work group consisting (at a minimum) of federal, state, and local authorities that have authority to control shoreline development.	HEP	By Dec 31, 1996	Base program	C/N
-- Develop recommendations.	HEP	Jul 1996	Base program	C/N
-- Examine fish and wildlife use of abandoned shoreline structures within reviews for harbor drift removal projects.	USACE	Ongoing	Base program	C/N
ACTION H-10.4: Assess the success of past habitat restoration efforts.	HEP	By Dec 31, 1996	Base program	C/N
ACTION H-10.5: Investigate feasibility of restoring				

¹ Responsible entities may accomplish the actions directly or via contract or grant.

² C/O - An ongoing commitment, not driven by the HEP CCMP
C/N - A new commitment, driven by the HEP CCMP
R - Recommendation

ACTION	RESPONSIBLE ENTITY ¹	TARGET DATE	ESTIMATED COST	STATUS ²
flood plains and coastal erosion hazard areas.				
-- Identify feasible opportunities and evaluate the cost effectiveness of buying out homeowners in disaster prone areas.	NYS	By Dec 31, 1996	Enhanced program cost - \$50,000	R
-- Develop a shore protection master plan that will address the restoration of flood plains and coastal erosion hazard areas.	NJDEP	Sep 30, 1996	Base program	C/O
-- Implement a physical coastal erosion monitoring program for the south shore of Long Island.	NYSDOS & USACE	Ongoing through 2001	Enhanced program cost - \$1.4 million	C/O
ACTION H-10.6: Building on existing efforts, develop GIS-based inventory of Harbor/Bight habitats.	HEP & appropriate federal and state agencies	By Dec 31, 1996	Enhanced program cost - \$200,000	R
ACTION H-10.7: Study effects of turbidity and total suspended solids.	HEP	Jun 1996	Enhanced program costs to be estimated by Jun 1996	R
OBJECTIVE H-11: Identify significant coastal habitats warranting enhanced protection and restoration.				
ACTION H-11.1: Prepare a report of regionally significant coastal habitats warranting special protection.	USFWS	Draft report: Completed Final report: Apr 1996	Enhanced program cost - \$240,000	C/N
ACTION H-11.2: Implement New Jersey Landscape Project.				
-- Conduct project in Cape May County and Highlands region.	NJDEP	Cape May - Dec 1997; Highlands - Jun 2000	Base program	C/O

ACTION	RESPONSIBLE ENTITY ¹	TARGET DATE	ESTIMATED COST	STATUS ²
-- Conduct project in NJ Harbor/Bight area excluding Cape May and Highlands.	NJDEP	Jun 1997	Enhanced program cost - \$270,000	R
-- Coordinate land management practices in Harbor/Bight.	NJDEP	Beginning by Dec 31, 1996	Enhanced program cost - \$200,000	R
-- Coordinate land use regulation and planning in Harbor/Bight in NJ.	NJDEP	Beginning by Dec 31, 1996	Enhanced program cost - \$200,000	R
ACTION H-11.3: Identify and inventory potential habitat restoration projects within the boundaries of significant coastal habitats as defined in the USFWS report.	HEP	Jun 1997	Enhanced program cost - \$50,000	R
ACTION H-11.4: Identify and protect locally significant habitats in the Harbor area.				
-- Identify sites using readily available information.	HEP	Dec 1995 and continuing	Base program	C/N
-- Conduct Wildlife Assessment and Restoration Project (NJ WARP).	NJDEP	Ongoing	Base program	C/O
-- Seek opportunities to protect, enhance, and acquire sites.	HEP	Beginning by Mar 1996	Base program	C/N
ACTION H-11.5: Based upon report, adjust designation of significant coastal habitats, as appropriate.	NYSDOS & NYSDEC	By Dec 31, 1996	Base program	C/N
	NJDEP	By Dec 31, 1999	Base program	C/N
OBJECTIVE H-12: Develop and implement plans to protect and restore significant coastal habitats and impacted resources.				
ACTION H-12.1: Review ongoing geographically targeted initiatives and incorporate them in the CCMP, as appropriate.	HEP	Ongoing; Complete Jun 1997	Base program	C/N

¹ Responsible entities may accomplish the actions directly or via contract or grant.

² C/O - An ongoing commitment, not driven by the HEP CCMP
C/N - A new commitment, driven by the HEP CCMP
R - Recommendation

ACTION	RESPONSIBLE ENTITY ¹	TARGET DATE	ESTIMATED COST	STATUS ²
-- Complete expedited review of NYC's Comprehensive Watershed Management Plan and other Jamaica Bay Initiatives	HEP	Dec 1996	Base program	C/N
ACTION H-12.2: Ensure the development and implementation of geographically targeted plans.				
-- Identify priority areas warranting protection beyond focused application of existing programs.	HEP	Mar 1996	Base program	C/N
-- Seek sponsors to develop and implement plans for priority habitat areas.	HEP	Post-CCMP	Base program	C/N
-- Evaluate the extent to which additional measures are necessary to protect significant upland habitats.	HEP	Post-CCMP	Base program	C/N
ACTION H-12.3: Implement special efforts to restore habitat and improve water quality in Jamaica Bay.				
-- Support NYC Audubon Restoration Project.	HEP	Completed	Enhanced program cost - \$26,000	C/N
-- Develop and implement habitat restoration plan.	NYSDEC	Initiated 1994	Project implementation cost - \$8 million	C/O
-- Develop and implement cooperative comprehensive restoration plan.	USACE, NYSDEC, NYCDEP	Initiated Dec 1995	Project implementation cost to be determined	C/N
-- Seek agreement to develop a comprehensive Jamaica Bay Plan to integrate all activities associated with water quality improvement; habitat protection,	NYSDEC working with USACE, NYCDEP & USDOJ/NPS, Gateway NRA	Ongoing	Base program	C/N

ACTION	RESPONSIBLE ENTITY¹	TARGET DATE	ESTIMATED COST	STATUS²
restoration, and acquisition; public access; and educational opportunities.				
ACTION H-12.4: Implement Hudson River restoration efforts.	USACE, NYSDEC, NYSDOS	By Dec 31, 1996	Base program	C/O
-- Finalize plan of study to investigate restoration alternatives.	USACE, NYSDEC, NYSDOS	Completed	Base program	C/O
-- Enter cost-share agreement to fund recommended actions.	USACE, NYSDEC, NYSDOS	By Dec 31, 1997	Project implementation cost to be determined	C/O
ACTION H-12.5: Identify and facilitate implementation of habitat acquisition and restoration projects.				
-- Identify potential habitat restoration projects, and encourage and facilitate implementation.	HEP	Ongoing	Base program	C/N
-- Utilize funds available under WRDA and ISTEA to implement habitat enhancement and restoration projects.	USACE, NYSDEC, NJDEP, NYSDOS	Ongoing	Project implementation cost to be provided by USACE	C/O
-- Evaluate habitat restoration and improvement factors as part of all federal navigation maintenance and beach restoration projects.	USACE, NYSDEC, NJDEP, NYSDOS	Ongoing	Base program	C/O
ACTION H-12.6: Establish a mechanism for public/private partnerships to preserve habitat.	HEP	Post-CCMP	Base program	R
ACTION H-12.7: Amend and implement open space plan to include significant habitats.	NYSDEC	Post-CCMP	Base program	C/O

¹ Responsible entities may accomplish the actions directly or via contract or grant.

² C/O - An ongoing commitment, not driven by the HEP CCMP
C/N - A new commitment, driven by the HEP CCMP
R - Recommendation

ACTION	RESPONSIBLE ENTITY ¹	TARGET DATE	ESTIMATED COST	STATUS ²
ACTION H-12.8: Seek opportunities for upland habitat acquisition.	NJDEP	Post-CCMP	Project implementation cost - \$1.4 million	C/O
ACTION H-12.9: Restore land and water conservation funds.	Federal & NYS governments	By Dec 31, 1996	Project implementation cost - \$1 million/yr	R
