US Army Corps of Engineers

US Army Corps of Engineers®
New York District

Final Revision to the 1999
Programmatic Environmental Impact Statement (PEIS)
PEIS Appendices

August 2008

Dredged Material Management Plan for the Port of New York and New Jersey

In partnership with

THE PORT AUTHORITY OF NY & NJ

New Jersey Department of Environmental Protection

New York State Department of Environmental Conservation

United States Environmental Protection Agency

New Jersey Department of Transportation Office of Maritime Resources

U.S. Army Corps of Engineers
New York District

Dredged Material Management Plan for the Port of New York and New Jersey

PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT

2000

Preface to the 1999 Final Programmatic Environmental Impact Statement

In 1999, the US Army Corps of Engineers, New York District (NYD), circulated the Draft Programmatic Environmental Impact Statement (PEIS) for the Dredged Material Management Plan (DMMP). As part of that review, the NYD received a number of comments, many of which were either incorporated in main text or in Appendix D of the final PEIS. At that time, the Final PEIS was never distributed for its final public review, although the NYD had begun implementing the recommendations of the DMMP, which was also finalized in 1999.

Since 1999, the NYD has prepared periodic DMMP updates most recently in 2008. These updates highlighted specific projects involving the handling of dredged material executed by the NYD, as well as the Port Authority of New York and New Jersey (PANY/NJ), the states of New York and New Jersey and the City of New York. The NYD has distributed the 2008 Update Report to the public to provide review of the progress these agencies have made in meeting the goals of the DMMP. The 1999 Final PEIS is also being published at this time to complete the process initiated a decade ago.

The 1999 Final PEIS, like the draft, is a programmatic document designed to identify the alternatives to be considered, the range of impacts to be evaluated and the existing information available to ensure appropriate site-specific work would be undertaken prior to the implementation of any project action. The PEIS does not analyze specific site plans, but rather identifies the process to be followed in analyzing impacts from implementing a given alternative at a specific site.

As the 1999 Final PEIS closes out the National Environmental Policy Act (NEPA) process from that time period, the document itself was not updated to reflect:

- Recent information on existing conditions in the Harbor including updated bacteriological data, changes to the Federal Threatened and Endangered Species List, commercial shipping volumes/statistics (post 2005), wetland loss in the Harbor (specifically in Jamaica Bay);

- Recent status of ongoing Harbor programs including Contaminant Assessment Reduction Program (CARP), USEPA/NJDOT Decontamination Technology Program, specific regional restoration efforts (e.g., Hudson River Park, Lower Passaic River Restoration Project) and Public Processing Facility;

- Recent placement volumes for the HARS and non-HARS material and new permitted upland placement sites receiving dredged material;

- Current changes to regulatory standards for air and water quality;

- Name changes including: MOTBY to Peninsula at Bayonne Harbor, Interstate Sanitation Commission to the Interstate Environmental Commission, and Consolidated Technologies to Clean Earth; and

- Update of the 2003 Fish and Wildlife Coordination Act Report.

Although the above information was not included in this 1999 PEIS, the Corps has taken these, and other regulatory issues, into consideration in the various projects that have been recently implemented and are planned for the future.

As individual projects are initiated, project specific NEPA documents (i.e. Environmental Assessments and/or Environmental Impact Statements) have been, and will be, prepared by the implementing entity in support of all necessary permit applications in accordance with current regulations and guidelines. Furthermore, additional updates to both the DMMP and the PEIS will be posted on the District's DMMP web page.

The Corps and it Non-Federal Sponsor, the PANY/NJ, along with our project stakeholders will continue to comply with all existing environmental regulations as is outlined in this document. In order to maximize input to this process, the Corps has extended the comment period for this Final PEIS to April 3, 2009 from the original posted date in the Federal Register of December 12, 2008.

L. Houston

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February 2008

FINAL PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT FOR THE DREDGED MATERIAL MANAGEMENT PLAN

EXECUTIVE SUMMARY

The attached document is the final Programmatic Environmental Impact Statement (PEIS) for the Dredged Material Management Plan (DMMP) for the Port of New York/New Jersey (Port). The Port plays a vital role in the economic well-being of the region, and the DMMP presents a comprehensive plan to manage dredged material to maintain and deepen navigation channels and berthing areas in the Port. Comments from the public, Federal and state elected officials and agencies, municipalities, and concerned groups were all considered in the promulgation of this final PEIS.

The National Environmental Policy Act (NEPA) requires a detailed statement of the environmental impact of a proposed major Federal action. This final EIS is programmatic and therefore not the end of the NEPA process, but rather a statement of expected generic impacts of the DMMP, which is a plan rather than a proposed action. Specific projects arising from the DMMP will require additional NEPA documentation as appropriate, and may be required to obtain permits from Federal, state and local authorities before project construction.

As required by NEPA, this final PEIS discusses a full range of alternatives, including a No Action Plan, a Economically Preferred/Base Plan, an Environmentally Preferred Plan, and a Recommended Plan. In compliance with NEPA requirements, PEIS alternatives that are least preferred are also included to give the reader a comprehensive view of the potential impacts. A Programmatic EIS is not a Federal action but rather a planning tool for decision makers to consider in planning future actions. NEPA documentation will be prepared for individual, site-specific projects.

The final DMMP consists of two volumes. The first volume contains an updated Implementation Report, the final PEIS, a Technical Appendix, Appendix A – Fish and Wildlife Coordination Act Section 2(b) Report, Appendix B – Coastal Zone Management Report, and Appendix C – Cultural Resources Correspondence. The second volume contains the PEIS Appendix D – Public Involvement Appendix, which documents the comments received, and the responses and revisions.

The United States Army Corps of Engineers (USACE), New York District (NYD), along with its cost-sharing partners (the states of New York (NY) and New Jersey (NJ) and the Port Authority of New York/New Jersey (PANYNJ)), should select alternatives from the DMMP, for authorized projects, that are environmentally acceptable. In order for the plan to be successful, the DMMP must have support from regional stakeholders and incorporate Port planning efforts, which may affect the volumes of dredged material and time frames for implementation of selected options.

The DMMP was designed as a flexible plan to be modified over time following periodic review by involved agencies and organizations. Periodic changes in the plan may be expected because some preferred management options are either technically limited (e.g., by capacity, material type, life span, etc.) or under development. Additionally new techniques or options may evolve in the future.

The accompanying Implementation Report focuses on the Recommended Plan. Port partners concur that the elements of this plan, when combined, constitute the most appropriate way to proceed to accomplish the economic and environmental goals for the Port. The Recommended Plan was developed to meet the dual goals of the DMMP, which is to keep the Port open to meet the new generation of waterborne commerce (50-foot draft vessels) and to restore the environment of the estuary. These goals will be accomplished by dredging, treating non-HARS materials, where appropriate and fiscally responsible, finding beneficial use for dredged material, minimizing long-term adverse impacts, and producing positive benefits for the estuary as a whole. The plan is divided into two time periods, short term (2005–2014) and long term (2015–2065).

The plan for the next 10 years takes into consideration all planned and existing deepening projects as well as anticipated maintenance volumes of dredged material required to keep the existing or improved channels/berthing areas open. The 10-year plan relies exclusively on preferred options. The selection process stressed beneficial use of dredged material, especially those with environmental restoration potential. A substantial amount of suitable material such as rock and sand is available for creation of habitat (e.g., fishing reefs) and restoration of salt marsh (e.g., in Jamaica Bay). These types of beneficial use provide opportunities to create habitat that is rare or disappearing.

The long-term plan covers the Port's needs for the 50 years following completion of the majority of the channel deepening projects and other Port improvements. It is primarily aimed at managing maintenance-related dredged material. This plan assumes that contaminant reduction programs will have been implemented, reducing the volume of material produced from maintenance dredging that is unsuitable for placement at the Historic Area Remediation Site (HARS). Similar to the short-term plan, the long-term plan relies heavily on beneficial use such as land remediation, decontamination methods, and remediation of the HARS.

The final PEIS has changed slightly from the draft PEIS published in 1999. These changes reflect a shift in emphasis in placement of dredged material, away from aquatic deposition and toward land-based placement. This shift applies to dredged material whether or not it is suitable for ocean disposal. Various techniques for the processing of dredged material containing contaminants continue to be developed and substantial progress has been made since the draft PEIS was disseminated. This progress has allowed for a substantial increase in beneficial use of dredged material, including creation of base material for conversion of brownfields for redevelopment. Progress toward the use of dredged material in coal mine restoration also continues.

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ACRONYMS & ABBREVIATIONS

AQCR	Air Quality Control Region
BMPs	Best Management Practices
BOD	Biological Oxygen Demand
CAD	Confined Aquatic Disposal (Subaqueous Aquatic Site)
CARP	Contaminant Assessment and Reduction Project
CCMP	Comprehensive Conservation Management Plan
CDF	Confined Disposal Facility
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	Carbon monoxide
COA	Clean Ocean Action
CPIP	Comprehensive Port Improvement Plan
CSO	Combined Sewage Outfall
CT	Connecticut
CWA	Clean Water Act
CY	Cubic Yard
DDT	Dichloro-diphenyl-trichloroethane
Dioxin	2,3,7,8 Tetrachloro-dibenzo-dioxin
DMMIWG	Dredged Material Management Integration Work Group
DMMP	Dredged Material Management Plan for the Port of New York and New Jersey
DO	Dissolved Oxygen
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
ER	Engineer Regulation
ESDC	Empire State Development Corporation
FHWA	Federal Highway Administration
FMC	Fishery Management Council
ft	Feet
g	Gram
Harbor	New York and New Jersey Harbor
HARS	Historic Area Remediation Site
HEP	New York/New Jersey Harbor Estuary Program
HDP	New York/New Jersey Harbor Deepening Project
i.e.	*Id Est* – That Is
IEC	Interstate Environmental Commission
km	Kilometer
m	Meter
m^3/sec	Meters cubed per second
µg/l	Micrograms/liter
mg/l	Milligrams/liter
mi	Mile
MCY	Million Cubic Yards

ACRONYMS & ABBREVIATIONS (CONTINUED)

MOTBY	Military Ocean Terminal, Bayonne, New Jersey
MPRSA	Marine Protection, Research and Sanctuaries Act
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
MSRC	Marine Science Research Center
NAAQS	National Ambient Air Quality Standards
NBCDF	Newark Bay Confined Disposal Facility
NEPA	National Environmental Policy Act
NJ	New Jersey
NJDEP	New Jersey Department of Environmental Protection
NJDOT/OMR	New Jersey Department of Transportation / Office of Maritime Resources
NJMR	New Jersey Maritime Research
NJSD	New Jersey SCUBA Diver
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
Non-HARS	Historic Area Remediation Site unsuitable
NOX	Nitrogen oxides
NRHP	National Register of Historic Places
NY	New York
NYCDPR	New York City Department of Parks and Recreation
NYCEDC	New York City Economic Development Corporation
NYCLPC	New York City Landmarks Preservation Commission
NYD	United States Army Corps of Engineers, New York District
NYECL	New York Environmental Conservation Law
NYSDEC	New York State Department of Environmental Conservation
O3	Ozone
PA	Pennsylvania
PADI	Professional Association of Diving Instructors
PAH	Polycyclic Aromatic Hydrocarbons
PANY/NJ	Port Authority of New York and New Jersey
Pb	Lead
PCB	Polychlorinated biphenyl
PEIS	Programmatic Environmental Impact Statement
PIA	Public Involvement Appendix
PM-10	Inhalable particulates
Port	Port of New York and New Jersey
ppb	Parts per billion
ppm	Parts per million
ppt	Parts per thousand
PWP	Priority Waterbody Problems
RCRA	Resource Conservation and Recovery Act
RDT	New York/New Jersey Harbor Regional Dredging Team
SEIS	Supplemental Environmental Impact Statement

ACRONYMS & ABBREVIATIONS (CONTINUED)

SHPO	State Historic Preservation Office
SPI	Sediment Profile Imagery
SO2	Sulfur dioxide
States	States of New York and New Jersey
SVOC	Semi-Volatile Organic Compound
TCLP	Toxicity Characteristic Leaching Procedure
TSP	Total Suspended Particles
TSS	Total Suspended Solids
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WES	Waterways Experiment Station
WRDA	Water Resources Development Act
YR	Year

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1.0 SUMMARY

1.1 MAJOR FINDINGS AND CONCLUSIONS

a. The Port of New York/New Jersey (Port) plays a vital role in the economy of the New York City metropolitan region. The Port infuses $25 billion a year into the economy and supports 229,000 direct and indirect Port-related jobs. Many of the Port's channels are too shallow to allow efficient operation by Port users without maintenance dredging. In addition, the current trend toward vessels with deeper draft requires even deeper channels. Unless action is taken to maintain currently authorized channel depths and deepen others, there is a strong likelihood that the Port will cease to be a primary destination for shipping.

b. Lightering of deep draft cargo ships is used as an interim measure when navigation channels and berths have not been dredged to the level required by a vessel. During lightering, a vessel in deep water has its cargo (currently limited to oil and other petroleum products) transferred to a shallow draft vessel or barge that can safely berth at the shallower depths of cargo handling facilities. Currently, general cargo in containers that have drafts too deep for the Port are diverted to other ports. The larger vessels, which draw less water in a 'lightered' state, often can then access the shallower facilities as well. However, double handling of cargo increases the chance of accidents and spillage, and greatly increases the cost of shipping. The dependence on such practices as lightering is an incentive to major shipping lines to move to other ports with channels deep enough to avoid such costly practices.

c. The amount of material that needs to be dredged encompasses the volume necessary to bring Federal channels to their authorized depths, as well as the volume to maintain and improve individual Port berthing areas and non-Federal channels (Dredged Material Management Plan [DMMP] – Implementation Report, Table 1-1). There are several authorized and planned increases in depth of channels to accommodate the deeper draft of present and future vessels. The final Feasibility Report for the New York and New Jersey Harbor Navigation Study (USACE 1999a), evaluated future Port navigation needs using existing Port facilities with selected landside improvements.

d. This study (USACE 1999a) recommended deepening several channel "pathways" in the Port to maintained depths of 50 feet. Given these possible future depths, a corollary effort designated as the Comprehensive Port Improvement Plan (CPIP) was initiated. This effort was lead by the Office of New Jersey Maritime Research (NJMR), Empire State Development Corporation (ESDC), the Port Authority of New York/New Jersey (PANY/NJ), and New York City Economic Development Corporation (NYCEDC), in coordination with the United States Environmental Protection Agency (USEPA), the United States Army Corps of Engineers (USACE) – New York District (NYD), and the Federal Highway Administration (FHWA). The goal of the CPIP was to evaluate landside and waterside improvements and expansions that may be needed to maintain the long-term viability of the Port.

e. The development of a comprehensive plan to manage dredged material for all of these maintenance and deepening activities is the subject of this Dredged Material Management Plan

(DMMP), which includes an Implementation Report, this Programmatic Environmental Impact Statement (PEIS), and a Technical Appendix. The PEIS is incorporated by reference into the DMMP – Implementation Report and Technical Appendix because it is a part of the overall report on dredged material management for the Port. Incorporation by reference is authorized by 40 Code of Federal Regulations (CFR) 1500.4 subsection (j) and in subsection (k), which allows inclusion of the National Environmental Policy Act (NEPA) document with other documents. These provisions were promulgated in an effort to reduce paperwork and reduce redundancy within Federal documents.

f. In accordance with each organization's authority, the NYD, the states of New York and New Jersey (States), and the PANY/NJ, have the responsibility to select and utilize environmentally acceptable options for inclusion into the DMMP. For the plan to be successful, it must have support from the regions' stakeholders and incorporate the findings of the various Port planning efforts that may affect the volumes of dredged material and time frames for implementing the selected options. These studies include the following:

- PANY/NJ Major Port Improvement Study
- NYCEDC Cross Harbor Freight Movement Major Investment Study
- NYCEDC Strategic Plan for the Redevelopment of the Port of New York
- NYD's NY/NJ Harbor Navigation Study

g. The DMMP – Implementation Report, Technical Appendix, and PEIS are combined in one volume for ease of understanding and referencing. The Implementation Report describes the planning process and presents alternatives and a recommended course-of-action. The PEIS addresses generic impacts of the options evaluated in the Implementation Report. This information was used as a basis for selecting among the different options for inclusion in the DMMP's recommendations. The Technical Appendix provides supporting information and the results of agency coordination. A second volume, the Public Involvement Appendix (PIA), is included as required by regulation.

h. Harbor dredging is needed to avoid the problems and costs associated with shallow channels and berthing areas, and to accommodate a new class of larger vessels. A plan for the disposal of dredged material is needed to accommodate the large volumes of dredged material and long duration of dredging operations in an environmentally acceptable and cost effective manner. The DMMP has evaluated options that encompass a wide range of technologies where feasible and necessary and many potential disposal sites. In conjunction with long-term programs to reduce contaminants at their source and to reduce sediment dredging needs, a recommended course-of-action that treats dredged material as a resource for beneficial use applications has emerged as the preferred approach to dredged material management. Beneficial use options such as ocean remediation (e.g., at the Historic Area Remediation Site, HARS), habitat creation, enhancement and restoration, and land remediation (including landfills, brownfields, and mined land) are combined with decontamination technologies in the recommended course-of-action. In recognition of the uncertainties associated with the estimates of volumes of dredged material, the timing of dredging projects and the timely availability of specific recommended options, confined aquatic disposal (CAD) facilities have been identified as a contingency to be used if beneficial use options do not meet disposal needs.

i. The DMMP was designed as a flexible plan that would be modified over time following periodic reviews by involved agencies and organizations in the DMMP working group. Because important preferred management options are either technically limited (e.g., capacity, material type, life span, etc.) or are under development and because new techniques or options may evolve in the future, changes to the plan can be expected. The recommended plan is divided into a short-term time interval (2005–2014), which encompasses major ongoing and proposed channel improvements, and a long-term time interval (2015–2065) during which maintenance dredging is the primary need and contaminant reduction efforts are expected to increase the amount of HARS-suitable material.

1.2 RELATIONSHIP TO ENVIRONMENTAL REQUIREMENTS

a. Table 1-1 presents the environmental statutes that have applicability to the options under consideration. Because this document describes a broad environmental assessment of the spectrum of management options for the purpose of aiding in the selection of options that would go into the plan, site-specific details are not available to fully assess impacts of specific options at specific locations. As specific options and their resultant permit reviews are implemented, additional site-specific NEPA documentation and assessments will be necessary to complete environmental compliance.

1.3 AREAS OF CONTROVERSY

a. Areas of concern have been articulated by members of the public, environmental groups, and government agencies at public information and scoping meetings (through use of prepared statements, taped transcripts and written forms), and in letters commenting on past DMMP documents, including: the Interim Report (USACE 1996a), Progress Report (USACE 1997), Beneficial Use Report (USACE 2001a), and Siting Criteria Report (USACE and WES 1998) (see Chapter 6 for details of the Public Involvement). In addition, concerns also have been raised during the numerous meetings of the Dredged Material Management Integration Work Group (DMMIWG) as well as other agency and public forums. These concerns have been addressed in the DMMP by the addition of design and/or operational controls to some of the options, by incorporation into siting analyses, and by recommending more environmentally beneficial options. Despite this attention, areas of concern persist.

b. The single greatest area of comment concerned the use of the Raritan/Lower Bay complex. Many commenters felt that the overall quality of Raritan Bay has been improving and fish and shellfish are once again becoming abundant. Thus, many do not want any dredged material they characterize as toxic placed in the bay because of their perception that it would harm the bay by spreading into the water column during placement, or escaping from the facility after placement and contaminating fish and shellfish. Many commenters are opposed to having “toxic” material from elsewhere in the Harbor disposed of in the Raritan Bay area. Their preference was to leave the material where it is, treat it, or build an island confined disposal facility (CDF) in Newark Bay. This concern arose during the preliminary site screening for aquatic disposal options that identified a zone for an island CDF or new subaqueous CAD facilities within Lower Bay (adjacent to Raritan Bay), and a second zone for new CAD facilities in Raritan Bay. The concern with CAD facilities includes the loss of contaminants (spread) and the loss of habitat, although loss during spread would only be temporary until the pit was filled. Many commenters view an island CDF as especially detrimental and unwarranted because of the potential loss of hundreds of acres of bay bottom habitat.

c. Commenters urged in oral and written responses that upland disposal was acceptable. Some qualified their comments by saying that only non-toxic material should be placed in upland landfills, and that toxic material should be stockpiled until decontamination technology can be developed. Other members of the public and their elected officials strongly opposed the use of most of the upland sites specifically identified in a preliminary site screening presented in the Interim Report. Comments on capping indicated a lack of confidence in the technique, because of associated environmental health hazards and loss of property values. The concern was voiced that contaminants would be volatilized during disposal; few written comments on capping or contaminant dispersal were received.

d. Numerous commenters stated that treatment/decontamination technologies should be used as the primary means to manage dredged material, with strong support for contaminant reduction as a means of avoiding less favorable containment options (island CDFs and nearshore fills).

e. A substantial number of citizens verbally commented on their desire to have additional public hearings held, with formal presentations and an official stenographic transcript of testimony. A few written comments also expressed this desire.

f. Regarding the scoping for the PEIS, several comments objected to the Interim Report, erroneously believing that this report was the decision-making document. Many inquired about when the PEIS would be finished and about the roles of the States in the decision-making process. Many of these same concerns were expressed at three public meetings held in April of 1998.

1.4 UNRESOLVED ISSUES

a. Issues that remain unresolved at this time include the following:

- The HARS will be remediated at some time in the future and will no longer be able to accept material. Should a new ocean disposal or remediation site for suitable material be designated, and if so what steps would be necessary to so identify and implement this site? The need for a new ocean disposal site also depends on the feasibility of other, and potentially environmentally superior, beneficial use options.
- If sub-channel CAD facilities are used, should they be actively capped or be allowed to passively fill with sediment from upstream sources?
- Mitigation is unresolved as to the scope, amount and kind. (Note the agencies agreed at the Interagency scoping meeting held on May 1, 1998 that out-of-kind mitigation would be the only plausible solution for certain options.)

- Current knowledge of ecological functions and socioeconomic values of existing borrow pits in the Hudson Raritan Estuary is only partially understood. Some pits have been intensively studied and determined to be ecologically degraded (e.g., Norton Basin/Little Bay); others have been incompletely studied and indicate that are not significantly degraded (e.g., Lower Bay pits) or at least partially degraded (e.g., Grassy Bay); still others have not been adequately studied (e.g., Shellbank Basin, Mill Creek, Bergen Basin).
- How can contaminants be kept from spreading outside pit areas during disposal and after closure? These are 2 completely different issues. There is little evidence from any field test that “contaminants” escape from properly capped borrow pits anywhere in the world. There is some inevitable release of sediment-associated contaminants when contaminated dredged material is disposed into a pit, but the amount dispersed and the potential for that material to cause biological harm has been shown to be small, though variable. Construction impact minimization has been and can be incorporated into the project design to contain the vast majority of placed sediments, and the dispersal of resuspended sediments from degraded pit bottoms can be minimized with proper placement practices.

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2.0 PURPOSE AND NEED FOR ACTION

2.1 STUDY AUTHORITY

a. The legal authority to conduct navigation studies, implement navigation improvement projects, and maintain such projects, stems from a series of acts of Congress based upon resolutions of the House Transport and Infrastructure Committee and the Senate Energy and Public Works Committee. The most recent authority supporting study of possible navigation improvements in this geographical area is Section 435 of the Water Resources and Development Act (WRDA) of 1996 (P.L. 104-303). The most recent authority supporting implementation of navigation improvements in this geographical area is Section 101(a)(2) of WRDA 2000 (P.L. 106-541). Statues relevant to the scope of management measures that may be employed with respect to dredged material include Section 10 of the Rivers and Harbors Appropriation Act of 1899, Section 404 of the Clean Water Act (CWA), and Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (MPRSA). With respect to the preparation of the DMMP, the USACE planning guidance (Engineer Regulation [ER] 1105-2-100) (USACE 2000) requires each USACE district to prepare long-term plans to maintain the projects authorized in accordance with the mission defined in the above documents. The plans must also consider non-Corps dredging and management needs.

2.2 PROBLEMS AND OPPORTUNITIES

a. Two major problems are associated with dredging in the Port. First, the Port has an average natural depth of about 19 ft. Vessel draft for many years has exceeded this depth, making dredging necessary. Second, the draft of modern vessels continues to increase. The newest vessels, which will come into general service soon, require depths of 50 ft when fully loaded. For the Port to accommodate these ships, it is necessary to deepen channels even further. After required depths are reached, the estimate of average annual dredging to maintain the channel system during the 2005–2065 interval is 2.44 million cubic yards (MCY)/year (YR). (See DMMP – Implementation Report, Table 1-1 and DMMP – Technical Appendix, Table B-2-1 in Appendix B, for a detailed breakdown of volume projections.) The Port is a vital economic and environmental resource for the region and the nation. Dredging must occur for the Port to remain viable in the future. Failure to do so risks the loss of some 229,000 jobs and $25 billion in commerce per year.

b. When contamination occurs in dredged material, it often has a human source, such as industrial activity in the Port watershed that adds pollutants to the water that can accumulate in Port sediments. The contaminants vary in concentration. Generally, dredged material has low concentrations of contaminants. “Low concentrations” of contaminants is a phrase used to distinguish these levels from higher levels of contaminants that are classified as hazardous or toxic waste under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Resource Conservation and Recovery Act (RCRA) guidelines. Though not designated as hazardous, much dredged sediment does contain one or more contaminants at levels such that their placement in the ocean is not acceptable, primarily because of potential effects on the biota. This results in requirements for special sites and handling to manage the dredged material to protect the marine and estuarine environment and biota at designated ocean placement sites. Sediments are tested to determine if contaminants are present and if so, in what concentrations so as to determine best dredging and management options. Best Management Practices (BMPs) are employed to minimize impacts. Presently, a variety of contaminants may exist at elevated levels in material that would be dredged in the Port. Their removal from the environment would help to eliminate contaminants from benthic sediments where biota could be exposed.

c. "Best engineering management practices" is a general description of measures that may be employed, as appropriate, in specific dredging and disposal operations. Because their use is project-specific, and the DMMP is a generic document describing the wide range of dredging and dredged material management options, the DMMP will not describe each practice in detail. A description of the types of best engineering management practices can be found in existing USACE Engineer Regulations, Circulars, and Letters (see website below). Best engineering management practices are also found in publications resulting from studies performed by the USACE Waterways Experiment Station (WES) (e.g., Dredging Research Program, Environmental Effects of Dredging Program, and Dredging Operations). The application and uses of these practices at specific sites will be documented in project specific documents and permit applications for each dredging job. Useful USACE web sites for gathering more information on this subject include the following:

http://www.wes.army.mil/el/dots/ and http://www.usace.army.mil.

d. An opportunity exists not only to develop plans for safe placement of dredged material, but also to investigate opportunities to protect and restore the Port estuary.

2.3 PUBLIC CONCERNS

a. Public perception of all dredged material continues to be negative because dredged material sometimes contains metals, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and 2,3,7,8 tetrachloro-dibenzo-dioxin (dioxin). Although much of this material does not meet requirements for ocean placement, it generally falls below the criteria that would make it subject to hazardous waste regulations (RCRA), and would not normally be considered hazardous waste under either USEPA or state regulations.

2.3.1 ORGANIZATION OF STAKEHOLDERS

a. The DMMIWG convened periodically during the development of the draft and final DMMP. DMMIWG members included representatives from Federal and state agencies, including Federal regulatory and resource agencies, the States, PANY/NJ, the City of New York, Port users, and environmental and other stakeholder organizations. Its purpose is to provide a forum to discuss and coordinate harbor issues related to dredging and the environment, including the DMMP. The DMMIWG also reported to the Management and Policy Groups of the New York/New Jersey Harbor Estuary Program (HEP) to aid in implementing its Comprehensive Conservation and Management Plan (CCMP), a plan endorsed by all the major agencies with responsibilities for the Port and its environment.

Currently, the NY/NJ Harbor Regional Dredging Team (RDT), composed of representatives from the PANY/NJ, NYD, the States, New Jersey Department of Transportation – Office of Maritime Resources (NJDOT/OMR), and USEPA, meets monthly to discuss future needs and disposal/management options for the long term. Other meetings have been held with local interested parties. These have included meetings with working groups assembled by the borough presidents of Brooklyn and Staten Island. Formal public meetings were held for the DMMP Interim Report (USACE 1996a), DMMP Progress Report (USACE 1997), and Draft DMMP – Implementation Report, PEIS, and Technical Appendix (USACE 1999b).

2.3.2 SCOPING PROCESS

a. Scoping is used to inform the public and other agencies of a contemplated Federal action and potential consequences of the action, and to obtain agency and public comments and suggestions for incorporation into the final decision document. Public meetings, including poster sessions, were held to publicize the various options and the overall DMMP planning process starting in 1997. Scoping meetings that included posters explaining the scope of the EIS, followed by question/answer periods and the opportunity to make taped statements, were held during February, March and April of 1998. Written comments were also solicited and gathered at these meetings and after their conclusion.

b. More than 2,000 notices of the public meetings held in 1997, 1998, and 1999 were sent out to Federal and state agencies, public officials, document repositories, and members of the public. Additionally, a Notice of Intent to produce a PEIS, including an outline of its scope, was published in the Federal Register on February 24, 1998.

c. As part of continuing public involvement under NEPA, four public meetings were held in November 1999 to receive comments on the draft PEIS and the DMMP. The comments at the meetings and the written comments were taken into account in the promulgation of this final PEIS. Written comments and the NYD responses are contained in the PIA (Appendix D) that accompanies this volume.

2.4 DMMP STUDY OBJECTIVES

a. The objectives of the DMMP are to identify how much material needs to be dredged to maintain Federal and non-Federal channels and how this dredged material will be managed in an economically and environmentally acceptable manner. The options considered in the DMMP and evaluated in this PEIS provide the building blocks of a long-term plan of action for managing disposal of dredged material for the Port through 2065. This plan includes the use of "contingency" options to allow for unimpeded dredging of the Port should preferred options fail to meet specified goals.

b. A programmatic approach has been used in this document to allow decision makers a means of assessing the environmental impacts of potential options in keeping with the current level of planning. This approach allows decision makers to evaluate different dredged material disposal options with full knowledge of potential environmental consequences. The PEIS is an umbrella document that considers generic impacts of options and, where available, general sites.

The PEIS serves as one of the major inputs to the DMMP, and, along with that plan, will help decision makers select the options to develop and implement in assembling the plan to manage dredged material in the near term (2005–2014) and over the long term (2015–2065). The PEIS is the first tier of a "tiered" NEPA document process. The second tier will be the NEPA documents that address implementation of site-specific options recommended in the DMMP.

2.5 OTHER RELATED PORT PROJECTS

a. In addition to the management of dredged material, NYD is involved with numerous other navigation-related studies and projects. This final PEIS for the DMMP – Implementation Report is related to these other efforts in that much of the dredged material addressed in the DMMP would be placed as a result of these other actions, or ongoing/future maintenance of the channels. Improvements to Federal channels to accommodate deeper draft vessels were considered in a comprehensive Port study of existing Federal channels (NY/NJ Harbor Navigation Study [USACE 1999a]). That study included an EIS that identified and compared the impacts associated with deepening these channels.

b. The States, the PANY/NJ, and NYCEDC developed a CPIP to address the needs of the Port's infrastructure in response to growing markets. The plan will be followed closely to identify changes in volumes of dredged material or timing, which could influence which DMMP options need to come on line. The periodic updates to the DMMP will take the CPIP measures into account.

3.0 OPTIONS

3.1 INTRODUCTION

a. Scoping and extensive agency coordination completed since the late 1990's have produced an array of options to be considered for managing dredged material. The general categories of options evaluated in this PEIS are the following: sediment contaminant reduction; sediment reduction; beneficial use for ocean remediation, habitat creation, restoration, and enhancement, land remediation, processing facilities, beach nourishment, and construction related materials; decontamination; CAD facilities (subaqueous aquatic sites); and CDFs (upland, nearshore, island). Some of these basic options contain a number of suboptions for managing dredged material. The DMMP is intended to be a comprehensive, flexible plan that identifies multiple options and sites and will be subject to revision not only from changes in projected volumes of dredged material, but also as different techniques and sites become available or are removed from consideration. For this reason, additional site-specific NEPA documents will be required and state permits needed before any options, other than those already in use or permitted, can be implemented.

b. The descriptions of the options below are summaries of the options that appeared in past NYD reports (USACE 1996a, 1997, and 1999b) and have been updated to their current status. This section is not intended to present or compare impacts of the options, but to provide background information to help develop a clear understanding of the impact assessment of each option in Chapter 5. This chapter also is not intended to provide a detailed description of each option. For such detailed descriptions, costs, and comparisons of options the reader is referred to the DMMP – Implementation Report and Technical Appendix (provided with this document). The summary tables of the DMMP provide convenient reference to the options. All options considered during the development of the DMMP have been included in this PEIS, even those no longer being proposed for use, in order to present the Port planners with a comprehensive understanding of the full range of evaluated options, and to better compare impacts among all options. The DMMP screened and ranked of all options for dredged material management. (See DMMP – Implementation Report, Sections 1.5 and 1.6 for a discussion of the evaluation process and the ranking of options.) This PEIS analyzes all options, but emphasizes the preferred options.

c. The options are grouped into alternatives, which are plans for dredged material management. The need for multiple options is emphasized because no single option can provide for all the dredged material that will be produced during the next 60-year planning period. Four alternatives were developed for consideration:

- No Action
- Recommended Plan
- Environmentally Preferred Plan
- Base Plan (Economically Preferred Alternative)

d. Although the 2005 DMMP – Implementation Report and accompanying Technical Appendix present only the Recommended Plan, discussion of the No Action, Environmentally Preferred, and Base Plans is retained in this final PEIS. The assessment of the impacts of each alternative (as opposed to individual options) is presented in the cumulative impact section (Section 5.6 Cumulative Impacts of Alternative Plans). The Recommended Plan alternative is divided into two time periods: a short-term component (2005–2014), in which substantial new dredging will occur in the New York/New Jersey Harbor (Harbor) as part of the New York/New Jersey Harbor Deepening Project (HDP), along with maintenance dredging, and a long-term component (2015–2065), in which dredged material will primarily result from maintenance of facilities in place by 2014, assuming no further need to deepen channels for deeper draft vessels is required.

3.2 MANAGEMENT OPTIONS

a. The NYD and other government and private entities have investigated management options for dredged material since the 1990's. Options cover an array of possibilities, ranging from contaminant reduction to construction of an island CDF. Due to the large volume of dredged material projected to require placement, implementation of the DMMP will involve multiple options either sequentially or concurrently. For the most part, selected options emphasize beneficial use and back-up options emphasize safe containment. Large scale options that do not lend themselves to beneficial use or contingency implementation (such as islands) have not been selected as part of the DMMP, but are still included here to provide a foundation for the analysis and comparison of impacts in Chapter 5.

3.2.1 SEDIMENT REDUCTION

a. Sediment reduction focuses on reducing the amount of sediment that settles within the navigation channels that must be subsequently removed. Sediment reduction would reduce the frequency of dredging and disposal operations necessary to maintain channels at authorized depths. Sediment reduction strategies take four forms: watershed sediment management controls, channel design optimization, advanced maintenance dredging and structural modification.

b. Watershed sediment management controls are specific strategies to reduce the amount of sediment reaching a waterbody. Techniques include the implementation of BMPs that are designed to reduce the volume of sediment laden runoff from developed lands, redirecting runoff to collection basins or to pervious surfaces where infiltration to the groundwater can occur, and protecting and reinforcing steep slopes and stream banks.

c. Channel design optimization (realignment) decreases the sedimentation rate within a channel by straightening and/or reconfiguring the cross-sectional area of the channel. This increases water velocities resulting in increased entrainment of sediment in the water column causing decreased sedimentation within the optimized channel. Suspended sediment loads may be displaced to other areas (possibly other navigation channels) so hydrodynamic and sediment transport modeling of proposed realignment designs need to be undertaken.

d. Advanced maintenance dredging is a means of reducing dredging cost and frequency over the short term by dredging below the authorized channel depth. Sediment settling in the channel will eventually fill the channel to the authorized depth, but the time between required maintenance dredging will be increased. A reduction in the frequency of deployment of dredging equipment reduces costs. The volume of dredged material could actually be decreased, if done upstream/uptide of the reach where reduction in sedimentation is desired.

e. Structural modifications are physical or mechanical devices designed to keep sediment moving through (instead of settling in) a channel, or even to prevent sediment from entering the channel or berth area. Typical structures include flow training dikes and sills, gates and curtains, pneumatic sediment suspension systems, and sedimentation basins.

3.2.2 CONTAMINANT REDUCTION

a. Contaminant reduction is a regionally (watershed-wide) based initiative with the goal of lowering contaminant levels in the sediments and biota of the New York/New Jersey estuary. Dredged material that fails to meet USEPA criteria for use at the HARS (designated “non-HARS material” or “HARS unsuitable material” in the DMMP) is generally more costly to manage. The NYD has found that much of the dredged material from maintenance dredging projects will not meet the criteria for HARS. As a result, the cost per cubic yard (CY) to dispose of dredged material has increased substantially in recent years. However, as the industry for processing and placement of this dredged material develops, and processes become more efficient, and economies of scale should reduce costs. In the long term, reducing or eliminating the input of contaminants to sediments would reduce the need for processing and upland placement, thereby decreasing the high costs associated with this option, assuming evaluation criteria for open water placement do not become proportionately more stringent.”

b. Sediments are contaminated as a result of a complex history of pollution events in the watersheds that have occurred over decades. The volume of Federal and non-Federal maintenance material that is unsuitable for HARS averages approximately 1.55 MCY/YR assuming no changes due to contaminant reduction and no changes in HARS testing protocols.

c. Dramatic decreases in sediment contamination from 1960s levels have been documented in some areas of the Harbor. If trends toward cleaner sediments were to continue, or if reductions were duplicated in other areas of the Harbor, significant reductions in the amount of non-HARS dredged material would be realized. This in turn would affect the cost of dredging, selection and siting of management options, Port planning decisions, and environmental restoration efforts. Section A-2 of the DMMP – Technical Appendix provides the information and references that form the basis for this position.

d. Data are currently insufficient to reliably characterize changing surficial sediment contaminant concentration distribution for the entire Harbor. The inability to accurately predict future contaminant levels constrains the ability to plan and budget for future needs. The contaminant reduction program looks to address this need through a comprehensive data gathering effort to identify sources of pollution. Bi-state monitoring and source track down programs coordinated through the Contaminant Assessment and Reduction Program (CARP) of HEP began in the summer/fall of 1998. Most of the data collection effort was completed by the summer of 2001 and analyzed and validated by 2003. The Hudson River Foundation who is over-seeing the CARP effort anticipates that the contaminant fate and transport model will be calibrated and validated for a number of contaminants by the end of 2005. A detailed summary of the CARP initiative and its current status is provided in the DMMP – Implementation Report.

e. An accurate assessment of how much dredged material is unsuitable for HARS is essential to a successful dredged material management program. The collection and analysis of additional data would provide the basis for more reliable estimates and would provide an important management tool for ongoing DMMP work.

f. Estimates of material unsuitable for the HARS could, in turn, facilitate the implementation of shorter term and lower capital cost dredged material management options compared to the currently recommended DMMP alternative. As new information on contaminant sources and distributions becomes available, it will be incorporated into the contaminant reduction program and the DMMP. Because this program can increase the percentage of dredged material that can be used beneficially, often at reduced cost, this option is strongly supported as a keystone of the DMMP.

g. To meet the contamination reduction goals, existing enforcement and improved remediation programs will be needed. Four main techniques have been identified to reduce contaminants: (1) elimination of point source discharges, (2) control and treatment of combined sewer overflows, (3) sewage treatment plant upgrades, and (4) removal or isolation of contaminated sediment hot spots.

3.2.3 BENEFICIAL USE OF DREDGED MATERIAL

3.2.3.1 OCEAN REMEDIATION

3.2.3.1.1 Historic Area Remediation Site

a. USEPA closed the Mud Dump Site as of September 1, 1997, and simultaneously designated it as part of the HARS. The HARS consists of the former Mud Dump Site and surrounding areas that have been impacted by previous disposal actions (Figure 3-1).

b. HARS remediation is accomplished through the use of dredged material that will not cause significant undesirable effects through bioaccumulation or unacceptable toxicity. USEPA is now performing a public and scientific peer review process of the HARS dredged material testing evaluation framework. Although this may result in the revision of standards, for the purposes of the DMMP, the current criteria for the suitability of dredged material for HARS is assumed constant through the DMMP timeframe. However, periodic updates to the DMMP will consider any changes to the HARS criteria, which would then be integrated into the updated plan.

c. At least 1-meter of remediation material will be used to cap the entire Priority Remediation Area of the HARS. Due to factors such as consolidation, the amount of material required to actually achieve at least 1-meter cap is uncertain. As of March 2005, approximately 22.5 MCY of remediation material had been placed at the HARS since its designation. However, it is anticipated that full remediation will require millions of cubic yards of suitable material in addition to what has already been placed at the HARS. Upon making the determination that the HARS is fully remediated, the USEPA will de-designate the HARS as a remediation site.

3.2.3.1.2 Additional Ocean Remediation

a. As contaminant reduction progresses, the volume of HARS suitable material will increase. A portion of this material may be appropriate for other beneficial use alternatives such as beach nourishment, or nearshore and inland habitat restoration. However, in time, the volume of HARS suitable material might exceed the capacity for these beneficial uses.

b. In response to such an increase and the successful use of dredged material for remediation at the HARS, consideration may need to be given to the identification of other potentially degraded ocean areas of the Bight for remediation with suitable material, where studies indicate that placing a cap of suitable material (as determined appropriate for each potential site) on the site would be feasible and effective. However, it is not unreasonable to speculate that funding for beneficial use of dredged material for habitat creation, enhancement and restoration projects may, coupled with the fact that some restoration sites will need maintenance material over the long term, increase demand to the point that there could be a long term shortage of appropriate dredged material for that use. Certainly, there are many more degraded sites in the estuary than in the NY Bight that could be improved through the use of dredged material. In that case, the need for additional ocean disposal sites for dredged material would be less urgent or even nonexistent.

3.2.3.2 HABITAT CREATION, ENHANCEMENT, AND RESTORATION

a. Many types of dredged material from the Port can be used for upland and aquatic habitat improvement. Although these beneficial uses may not have the capacity for handling all of the dredged material generated by Port dredging, the volume used (if all feasible applications were exploited fully) is significant. Detailed site evaluation would be undertaken to determine capacity suitability. Implementation would be pursued only if analyses determined that a net habitat benefit would result from an application (i.e., that placement site ecological function and/or socioeconomic value could be measurably demonstrated).

b. Potentially feasible habitat applications in and near the estuary include:

- Upland habitat creation, enhancement and restoration (e.g., bird use, landfill cover, landfill intermediate fill, brownfield remediation and mine and quarry reclamation).
- Bathymetric recontouring of borrow pits, basins, channels, intertidal flats and other aquatic areas, including capping of contaminated sediments.
- Beach fill.

- Wetland creation, enhancement and restoration (including constructed treatment wetlands).
- Artificial reef creation and enhancement
- Breakwaters and jetties and groins for joint shoreline stabilization and habitat creation and enhancement purposes.
- Creation, enhancement and restoration of oyster and other shellfish habitat.
- Creation, enhancement and restoration of SAV habitat.

c. These options provide an important opportunity to improve and restore environmental resources that have been severely impacted by 400 years of human manipulation of local ecosystems. Areas to be considered for restoration would first be evaluated to measure the level of degradation. If sufficient evidence were found that a site is not functioning to support natural fauna/flora, to desired levels, then methods to use dredged material to improve the site would be evaluated and implemented if feasible. Monitoring after implementation would provide information on degree of success and additional measures that could be undertaken to raise the net habitat value of the site.

d. The restoration of borrow pit sites in Jamaica Bay has the potential to beneficially use a large volume of dredged material, but for most pits the potential environmental impacts need to be further determined, as well as the environmental benefits (Figure 3-2). As part of a three-phase demonstration projection, studies to verify that Norton Basin and Little Bay are degraded sites (Phase 1) were recently completed. In October 2004, New York State Department of Environmental Conservation (NYSDEC) issued a findings statement based on research conducted by an Interagency Technical Committee that these sites suffered significant impairments and could be characterized as degraded. As a result of these findings, the Interagency Technical Committee has recommended that the NYSDEC and the NYD proceed with hydrodynamic and water quality modeling to evaluate the potential net environmental benefits from recontouring these pits to various depths using HARS suitable dredged material. The first phase of construction involves recontouring the Little Bay pit with HARS suitable dredged material. During this phase an extensive monitoring program would be conducted to determine the success of the restoration project, including the establishment of a well oxygenated, high-quality benthic habitat and associated benthic community. Only after the monitoring results are fully evaluated, and can substantiate that such an operation can be accomplished in an environmentally safe and beneficial manner, would proposals (phase 3) be considered for bathymetric recontouring of other candidate borrow pits and excessively deep abandoned channels, which would all also be intensively monitored for environmental impact and level of restoration success.

3.2.3.3 LAND REMEDIATION

a. Land remediation combines the beneficial use of processed (solidification/stabilization) non-HARS material with the environmental and economic restoration of degraded lands. Land remediation would use processed dredged material for landfill and brownfield cover, and for reclamation of quarries and abandoned mines such as coal mines in Pennsylvania (PA). Brownfields are former industrial/commercial facilities where expansion or redevelopment is complicated by environmental contamination. The use of processed dredged material could render these properties developable and/or eligible for ecological restoration. Successful examples include the NJ Garden Mall site in Elizabeth, NJ, and the Seaboard site in Kearny, NJ. The reclamation of mined lands in PA is a potential option that could use a large volume of dredged material, as are landfills in Bayonne, Hackensack Meadowlands, and Jamaica Bay.

b. Land remediation is a desirable option for several reasons: (1) it would target sites that in their present condition pose a risk to the environment and human health (e.g., sites that are a source of contaminants to Harbor sediments); (2) it would lead to a reduction in material that would otherwise be disposed of without beneficial use; and (3) the dredged material would be confined to a site that is already impacted and that is monitored for water quality and other environmental parameters. In addition, these sites generally incorporate other environmental controls, such as leachate collection systems, slurry walls and pump and treat systems, as part of an overall remediation plan.

c. Due to the inherent high water content of some dredged material, it may require processing to lower the amount of water in the material. Methods to accomplish this include natural drying, mechanical drying, and amending with binding agents (e.g., fly ash, kiln dust, concrete, etc). The use of binding agents also minimizes the loss of contaminants. Other additives may improve the ability of the material to meet design criteria if the site is to be developed after remediation is complete. Remediation with processed dredged material requires a finishing layer over the dredged material, such as topsoil for vegetation or construction fill appropriate for parking lots and building foundations.

d. The use of quarries has been investigated as part of the land remediation aspect of beneficial use. These types of sites have substantial capacities because of large excavated areas at most locations. Six potential quarry sites were located along the Hudson River between New York City and Albany, but these sites had permitting and environmental limitations that relegated them to non-preferred status.

3.2.3.4 PROCESSING FACILITIES

a. Regional dredged material managers have been considering the economic benefits of constructing a public processing facility to handle material unsuitable for HARS placement. The interest in investigating the feasibility of constructing such a facility arose out of concern that the privately developed processing facilities may not be economically viable or sustainable in the long-term once the deepening projects are complete, or if various large real estate developments projects (e.g., landfills and/or brownfields) exhausted their capacity for dredged material. A Harbor-wide processing facility could help to reduce current costs for stabilization and transportation by maximizing the volumes of dredged material to be processed. After the 50-foot deepening project is complete, reducing the cost of maintenance dredging operations will be critical in response to the expected increase in shoaling rates in some of the deeper channels, which may increase the frequency of maintenance dredging (USACE 1999c). The NYD, in conjunction with Port stakeholders, is currently evaluating the feasibility and economic costs/benefits of a Harbor-Wide Public Processing Facility (PPF) to support all types of proposed dredging in the Port.

3.2.3.5 OTHER BENEFICIAL USE

a. Beach nourishments projects have been on-going within the Harbor to replenish sand eroded from beaches during storms and from regular tidal forces. Currently, sand used for beach nourishment is dredged from Jamaica Bay, Sandy Hook Channel, and East Rockaway Inlet. Material is placed at various sites as needed, which could be as often as every 2 years at some sites and 20 years at others.

b. Dredged material also has the potential for wide application in construction projects that require fill material. In most applications, fill material requires certain specific geotechnical properties. To enhance the geotechnical properties of dredged material, it is amended with additives such as Portland cement, coal fly ash, or incinerator ash, which absorb excess water and produce a more stable and compactable soil-like product. The amount and type of additives mixed with dredged material is dependent on the application, which may require specific geotechnical properties per construction regulations. In other construction applications, dredged material has been used as the raw material for blocks, tiles, and bricks. In such a case the dredged material is mixed with various additives and processed to meet American Society for Testing and Materials (ASTM) geotechnical standards for building materials.

3.2.4 DECONTAMINATION TECHNOLOGIES

a. The goal of decontamination technologies is the reduction, destruction or immobilization of contaminants contained in sediments. This may be achieved through physical, chemical, thermal and/or biological processes. Material that is unsuitable for placement at the HARS does not necessarily require decontamination. Waste material (such as from a Superfund site) that poses a greater threat to the environment or human health than non-HARS material are often safely managed in properly permitted containment facilities rather than being decontaminated. Decontaminated dredged material, however, generally has broader applications at a wider variety of placement sites than processed dredged material.

b. Developing decontamination technologies that are cost-effective is challenging because of the high-energy requirements needed to remove contaminants from sediment. Solidification/stabilization processes by contrast require only the addition of admixtures to bind-up the contaminants, which is a relatively simple and inexpensive process. Examples of decontamination processes include solvent extraction, sediment washing, and thermal destruction processes. Expanding the scope of a process beyond small-scale pilot studies can help reduce costs. Dredged sediment that has been decontaminated often has market value (e.g., as a lightweight construction aggregate), which can offset the decontamination costs. Other concerns related to this option include the ability to treat and use the large volumes of dredged material in a manner compatible with the environment and acceptable to the local communities where facilities would be located.

c. The USEPA – Region 2, NJDOT/OMR, and the PANY/NJ are conducting test programs on sediment decontamination technologies. In late 1999, NJDOT/OMR commenced pilot testing and a demonstration of five selected technologies. The volume target set by

NJDOT/OMR is to treat and stabilize up to 500,000 CY/YR. This is the same target set for the USEPA and NYD under the WRDA Section 405 program, which is coordinating closely with the NJDOT/OMR effort. The PANY/NJ is currently evaluating treatability studies of four processes that produce construction materials such as aggregate and flowable fill.

d. The decontamination option will generally require a treatment facility and storage/ handling areas to hold material while it awaits processing or before it is shipped to its final use destination. Decontamination facilities can be sited at or near dredging sites and could be portable or permanent. A permanent facility provides for a greater processing capability and would be expected to offer the most cost-effective operation.

3.2.5 CONFINED AQUATIC DISPOSAL (CAD) FACILITIES (SUBAQUEOUS AQUATIC SITES)

a. A CAD facility is a depression excavated into the bottom of a body of water for the purposes of disposing and confining dredged material. This option includes the construction of CAD facilities either outside channels or within channels (sub-channel CAD facilities) (Figures 3-3, 3-4, and 3-5).

b. The NYD draft siting report of potential zones for the use of CDFs and CADs applied four major factors for determining zones that reduced risks (USACE and WES 1998). The factors used were physical, chemical, biological, and institutional. Physical parameters considered included surface capacity area, shape, water depth, bottom slope, distance from the dredged area, hydrodynamics, and seismic activity. Chemical siting factors included the volume of in-place contaminated sediments. Biological siting factors considered included threatened and endangered species, submerged aquatic vegetation, benthic habitat, abundance of benthic organisms, benthic biomass, plume fronts, fisheries value, and presence of commercial/recreational fisheries. Institutional factors evaluated included infrastructure, aesthetics, recreational use, cultural resources, jurisdictional considerations, and special sites. These factors were then evaluated using a GIS overlay process. The results of this effort led to the establishment of zones where impacts would be relatively low, while still being feasible from an engineering perspective.

3.2.5.1 CAD FACILITIES OUTSIDE OF CHANNELS

a. Sequencing the use of CAD facilities over many years instead of excavating one large pit could provide the flexibility to respond to shortfalls in the availability of other options, as well as responding to changes in sediment quality that may come about as a result of contaminant reduction and habitat restoration. This approach would ensure that the area disturbed was kept to a minimum and that the recovery of each site after capping would be underway as additional sites are added on an as-needed basis. The first such facility in the Harbor was constructed in Newark Bay by the PANY/NJ and the initial capacity was estimated to be 1.8 MCY of non-HARS material. Two other smaller facilities were permitted, but have not yet been constructed.

b. Other areas have been identified with a potential added capacity of up to 7 MCY for Upper Bay sites outside channels, while in Newark Bay, the potential capacity for out-of-channel sites is 16 MCY. Establishing CAD facilities in nearshore areas such as these can help contain contamination currently available for uptake and keep contaminated sediments close to their existing source. For this reason they serve as contingency option in the event one or more of the preferred beneficial use options are not available (see DMMP – Implementation Report, Table 2-1 for the preference and status ranking of these potential CAD facilities). Constraints include the depth of contaminated sediment and the depth to bedrock, both of which can severely restrict the capacity of the sites.

c. The potential for this type of CAD facility has also been investigated in both Lower Bay and Raritan Bay. Zone 2 at roughly 12 square miles in Lower Bay (Figure 3-6), was identified as a potential new area with a capacity for 100 MCY or more (see DMMP – Implementation Report, Table 2-1 for preference and status). Based on feedback from various resource agencies, CAD facilities in Raritan Bay (Zone 1) are not considered feasible, due to concerns about biological impacts. Zone 2 is located some distance from the significant habitat complex of the Raritan and Sandy Hook bays, but is of concern regarding permanent loss of bay bottom and Essential Fish Habitat with no in-kind mitigation for the loss. This option, therefore, is considered the least desirable of feasible CAD alternatives.

3.2.5.2 SUB-CHANNEL CAD FACILITIES

a. A variation on the CAD option is the construction of pits within an existing channel. This option involves placing dredged material in an area excavated below currently authorized or maintained depths within an existing channel or berthing area. Once the material has been placed, it can be left to be capped by natural sedimentation processes, or it can be capped with a suitable material brought from elsewhere. Sub-channel CAD facilities for the DMMP would be used as a contingency only if no other cost-effective beneficial use options with comparable production rates were available.

b. Advantages of sub-channel CAD facilities include the following: (1) habitat disturbance to other areas would be minimized because it would be limited to areas already subject to periodic disturbance from maintenance dredging; (2) introduction of non-HARS material to other areas would be reduced; (3) dredging operations can be optimized and costs reduced because transportation distances would be shortened. Potential disadvantages are: (1) there could be negative effects on future channel deepening and turbidity associated with heavy vessel traffic, including deep draft vessel disturbance to material placed in those facilities; and (2) side slope excavation may be required if very deep pits are needed, which have potential adverse impacts on the biota and cultural resources.

c. The total volume available for sub-channel facilities in the Bay Ridge/Red Hook is estimated at 8 MCY. In Newark Bay there is a potential capacity of 10 MCY in sub-channel facilities.

3.2.6 CONFINED DISPOSAL FACILITIES (CDFS)

a. A CDF involves the construction of dikes or other retention structures to contain dredged material, thereby isolating it from exposure to the environment. Once filled, a CDF is typically capped with clean material that isolates it from the environment. A CDF may be built on land, nearshore (attached to the shoreline), or as an island.

3.2.6.1 UPLAND CDFS

a. Construction of an upland CDF would require the construction of dikes or other retention structures (USACE 1996b). Material placed in an upland CDF would be placed for disposal only, not for site remediation. A liner and storm water runoff collection system may be required, depending on the characteristics of the chosen site.

b. Tests would be carried-out as required on the liquid fraction of the dredged material. Adjacent surface and ground water would be monitored as necessary to ensure that the material is properly contained. Based on feedback received from the public, local officials, and state representatives, all upland CDF sites (with the exception of the Belford site described below) have been dropped from further consideration at the present time, in favor of remediation/restoration at upland sites, with treated dredged material.

c. A site at Belford, New Jersey, (N61) was historically used for disposal of dredged material from the local area. Subsequent transfer to other adjacent locations such as a nearby landfill has been done in the past. State and Monmouth County officials have requested that the site be used only for the future disposal of dredged material generated from navigational projects in the waters of Monmouth County. However, at this time the likelihood of that restricted use is unknown.

3.2.6.2 NEARSHORE CDFS

a. Nearshore CDFs involve the construction in coastal waters of an enclosing dike, attached to land, isolating the interior ponded water from exchange to the ecosystem. Once the dike is constructed, the inner area is filled with dredged material and then capped to isolate the material from the environment. Nearshore CDFs may be used for the purposes of habitat remediation in existing degraded areas or for Port development. The cost of nearshore CDFs is dependent upon the site, its end use, and its level of required mitigation. Environmental concerns with this option include the permanent loss of nearshore aquatic habitat.

b. Given the limited available area in the inner harbor, the total nearshore CDF capacity currently under consideration is less than 5 MCY. Only three sites have been identified for potential nearshore CDF construction. These sites are: OENJ Bayonne, Phase 2, Atlantic Basin (Brooklyn, NY) and South Brooklyn Piers (Brooklyn, NY). All these options are listed as preference 4 or 5, (non-preferred) and are no longer under consideration as a feasible DMMP option (see DMMP – Implementation Report, Table 2-1).

3.2.6.3 ISLAND CDFS

a. An island CDF involves the construction in open bay or ocean waters of an enclosing dike isolating the interior from exchange to the ecosystem. Once the dike is constructed and interior containment achieved, the inner area is gradually filled with dredged material and ultimately capped to isolate the material from the environment. Due to the potential for significant coastal storms in this region, the containing structure of an island CDF must be designed to withstand extreme conditions so as to prevent loss of placed material. Because this type of CDF is relatively expensive to construct, it is generally used for dredged material disposal over many decades in order to increase cost-effectiveness.

b. A preliminary engineering and environmental siting process has identified potential island CDF sites in the Lower Bay of New York Harbor and within the New York Bight (Figures 3-6 and 3-7). However, given the substantial environmental, social, and institutional concerns likely to be associated with construction of an island CDF in either location, it has been classified as a non-preferred option and is no longer under consideration as a feasible DMMP option (see DMMP – Implementation Report, Table 2-1).

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4.0 AFFECTED ENVIRONMENT

4.1 INTRODUCTION

a. This chapter discusses existing conditions in the areas potentially affected by one or more of the management options discussed in Chapter 3. It reflects the collection of considerable amounts of data over many years, including scientific information collected specifically for the Implementation Report and Technical Appendix. The topics covered in this section of the PEIS may overlap in several sub-sections. In order to eliminate repetition to the maximum practical extent, cross-references to other sections of the PEIS, Implementation Report, and Technical Appendix will be used.

b. For most of the management options, implementation at specific sites would require detailed site-specific descriptions of resources and perhaps site specific data collection. NEPA compliance would not be considered complete until information about the site's existing condition was collected and presented. It is anticipated that this would occur when or if selected options and sites are chosen for implementation. For now, the options and sites are being assessed for generic overall impacts upon the resources within the larger geographical areas (NY Bight Apex, Lower Bay Complex, Upper Bay Complex, Uplands). Note that sediment quality is discussed under both the biota and water quality sections, because both elements are affected by sediment quality.

c. Placement sites identified as potential dredged material management options could possibly be located within or in close proximity to a designated Superfund Site. Examples of Superfund Sites within the Hudson Raritan Estuary include the Hudson River PCBs Superfund Site, an approximate 200-mile stretch of the Hudson River from Hudson Falls to the Battery in New York City, and the Lower Passaic River and Newark Bay Study Areas of the Diamond Alkali Superfund Site. The Newark Bay Study Area includes portions of the Arthur Kill and Kill Van Kull.

d. In instances where a potential dredged material management option poses a reasonable potential adverse effect on the U.S. Environmental Protection Agency's (USEPA) planned or on-going remedial investigations or remedial actions within a Superfund Site, the NYD will closely coordinate with the USEPA to ensure that the implementation of the dredged material management option will not significantly impede or interfere with the remediation efforts.

e. A current example of this was demonstrated in NYD's close coordination efforts with the USEPA to amend the NYD's "Environmental Assessment on the Newark Bay Area of the New York and New Jersey Harbor Deepening Project" (USACE 2005). One goal of the amendment was to present details of the coordination effort between the Harbor Deepening Project (HDP) and USEPA's Remedial Investigation/Feasibility Study (RI/FS) of the Newark Bay Study Area.

4.2 STUDY AREA

a. The study area is large due to the variety of potential disposal options, volumes of dredged material to be placed, and number of potential sites available. The study area includes potential aquatic and upland sites.

4.2.1 NEW YORK BIGHT APEX

a. For purposes of this report, the NY Bight Apex is defined as the area of the Atlantic Ocean bounded by an imaginary transect line, referred to as the baseline, between Sandy Hook, NJ, and Rockaway Point, NY; proceeding east along the south shore of Long Island, NY, to the meridian at 70° 40' west longitude; then south to the point where 70° 40' west longitude intersects the parallel at 40° 20' north latitude; then west to the NJ shore; then north along the NJ shore to Sandy Hook. This is the study area in which an island CDF has been considered for potential siting. This is also the location of the HARS and any potential new ocean remediation site(s). This is essentially the portion of the Atlantic Ocean created bounded by lines running south from Long Beach, Long Island, and east from Monmouth Beach, NJ, approximately 20 miles offshore (Figure 4-1). Exclusionary criteria have limited the CDF site to 3–12 miles from shore.

4.2.2 LOWER BAY COMPLEX

a. The Lower Bay Complex study area is defined as the waterbodies that are landward of the Sandy Hook to Rockaway Point baseline and includes Raritan Bay, Lower NY Bay, and Sandy Hook Bay and their tributaries. Because this water area has no distinct separations, it is treated as one entity (Figure 4-2). As Jamaica Bay is under consideration for beneficial use options, it is included under the Lower Bay Complex, because while it is a distinct entity, it falls inside the Sandy Hook to Rockaway Point baseline. Potential management options within this area include habitat creation/ restoration.

4.2.3 UPPER BAY COMPLEX

a. The Upper Bay Complex of the study area includes four relatively compartmentalized sub-areas. These sub-areas are: 1) the Upper Bay - from the Verrazano Bridge to the Battery, including Bay Ridge Flats, Red Hook Channel and the embayments, flats, and channels of NJ to opposite of the Battery, 2) the Arthur Kill and Kill Van Kull/Newark Bay, 3) the Hudson River from the Battery to the George Washington Bridge, and 4) the East River from the Battery to the Throgs Neck Bridge (Figure 4-3). Because somewhat distinct sections occur in the Upper Bay Complex, the resources for the four sections listed above are, in some instances, discussed individually. Potential management options within this area include CAD pits, habitat creation/restoration, nearshore CDFs, upland remediation, and decontamination facilities.

4.2.4 UPLAND

a. Potential sites for land placement outside of the immediate area of the Harbor (adjacent to the Lower Bay or Upper Bay Complex) include Monmouth County, NJ, and mine sites in Clearfield County, PA, and Orange County, NY. Some of the sites under consideration for the placement of appropriately stabilized non-HARS suitable dredged material. The potential for additional permits to be issued by regulatory agencies could greatly increase the volume of material beneficially used in this way. The PA Department of Environmental Protection (PADEP) permitted a demonstration project in June 1997 for using processed dredged material for abandoned coal mine reclamation. The mine site chosen for the demonstration project was the Bark Camp Mine Reclamation Laboratory located in Huston Township in Clearfield County, PA. The site was permitted to accept 735,000 MCY of processed dredged material. At project completion, almost 500,000 CY of dredged material from NY/NJ Harbor was placed at the site. A final report on the demonstration was completed in February 2004 (PADEP 2004). The successful demonstration of mine reclamation using dredged material at Bark Camp lends support to considering large-scale projects of significantly greater capacity.

4.3 RESOURCES BY MAJOR AREA

a. A substantial portion of the following characterizations of the study area was synthesized from a report by the United States Fish and Wildlife Service (USFWS) entitled Significant Habitats, and Habitat Complexes of the NY Bight Watershed (USFWS 1997). As information was available and appropriate, the descriptions were augmented by other studies, including those conducted directly for the DMMP initial siting and design efforts, including a benthic infauna survey (USACE 1998a) and, an analysis of groundfish data for the NY Bight Apex (Wilk et al. 1992), Lower Bay Complex (Wilk et al. 1998), and substantial segments of the Upper Bay Complex (USFWS 1985). Since these major areas are large to very large in size, this section will, where appropriate, concentrate on those resources most at risk of being impacted by various options under consideration.

4.3.1 NEW YORK BIGHT APEX

a. The marine environment of the NY Bight Apex seaward of the baseline between Sandy Hook, NJ, and Rockaway Point, NY, is potentially impacted by three options for the disposal of dredged material. These options at one time included an island CDF, the HARS site, and a new ocean remediation site. Given the substantial environmental, social and institutional concerns regarding construction of an island CDF, this option has been reclassified as preference 5 (i.e., non-preferred; see DMMP – Implementation Report, Table 2-1). The HARS is located in the southern portion of the Bight Apex study area, and the resources within its boundaries as well as any impact on them, have already been addressed in a separate EIS (USEPA 1997a).

4.3.1.1 WATER COLUMN

a. Two groups of biota influence water quality, although other groups may also reflect changes in water quality. These groups are bacteria and phytoplankton. Bacteria are defined in the broadest sense as those organisms that decompose organic matter to their basic inorganic forms. Also included in this group are pathogenic organisms known to be harmful to a range of biota (e.g., fish, humans). The coliform test, a measure of intestinal organisms discharged by humans and animals, is most often used as an indicator of the presence of pathogenic bacteria. Tests for *Enterococci* are also being proposed by the USEPA.

b. In 1974, the USEPA conducted a routine bacteriologic monitoring program in the waters of the NY Bight Apex, most importantly in the surf and nearshore zones of Long Island and NJ beaches. These data reveal a decrease in bacteria from the harbor to the open ocean. However data reported by Bigelow (1968) contrasts this gradient by showing a bacteria gradient from the HARS outward. The data from these two surveys showed gradients proceeding in two different directions. It is clear from both studies, as well as the 28-year study conducted by O'Connor (1980), that bacterial influence in the water column is confined to an area of 3 to 5 kilometers (km) (2 to 3 mile [mi]) radius from the HARS located 40° 23' Latitude and 73° 51' Longitude. The center of this site is approximately 9 miles to the west of the center of island siting Zone 3. Data from the USEPA study showed bacteria concentrations in the surf zones of Long Island and NJ beaches to be low and of sufficient quality for swimming. The near shore waters (16 feet [ft] deep or less) show increases but still reflect average bacteria levels, well within standards. Bacteria levels of NJ waters were found to be higher than those of Long Island possibly due to the predominance of the Hudson-Raritan Plume.

c. Phytoplankton are single or multi-celled plant-like organisms that float in the sea. These organisms are capable of photosynthesis, a process that releases oxygen into the water column. Nutrient enrichment can result in the proliferation of plankton, with a detrimental impact on the ecosystem because decomposition by bacteria can lead to anoxic conditions. A convenient measure of phytoplankton biomass is chlorophyll *a* concentration. Phytoplankton has patchy distributions in water columns; the abundance of individual species varies seasonally. Different species may be abundant in successive years and species composition is unpredictable (USEPA 1982).

d. Surface chlorophyll *a* concentration outside the NY Bight Apex is generally less than 1 μ/g/l (O'Connor 1977). In addition to phytoplankton, the plankton community consisted of small animals (zooplankton), which feed upon phytoplankton, as well as each other. Some of the zooplankton are a permanent constituent of the water column while others are temporary such as larval fish that eventually become non-planktonic. Additionally, various fish species (e.g., Atlantic mackerel [*Scomber scombrus*]) that prey upon the zooplankton may, depending on life stage, comprise part of the zooplankton community. These are in turn preyed upon by larger fish (e.g., bluefish, tuna).

4.3.1.2 BATHYMETRY AND BENTHOS

a. The bathymetry within the ocean study area was surveyed and analyzed by Barry Vittor & Associates (BVA) for USACE for surveys conducted during 1995 and 1996, (USACE 1998a) using remote sensing tools (Figure 4-4, Tables 4-1 and 4-2). The topographic features include relatively flat relief, with the Hudson River ancient riverbed, which heads in a southeast direction as a relatively narrow channel, expanding and angling in a southerly direction at about 40º 25' N Latitude and 73 º 50' W Longitude. Depths of this feature in the study area range from 100 ft to greater than 135 ft. Another naturally occurring feature is the change in the rather flat topography associated with the Christiansen Basin in the ocean study area, and the rock/gravel that projects into the study area from the north. Additionally, smaller but important areas such as the Shrewsbury Rocks are located off the NJ coast landward of the ancient Hudson River riverbed.

b. Other substantial topographic features are the results of human activity and include the Mud Dump Site, Cellar Dirt Site, Acid Stain, and the sewage sludge site. The Mud Dump site is within the perimeter of the HARS. Small features include shipwrecks, and material placed for artificial reefs.

c. Areas with major bathymetric features such as the Hudson River canyon, Mud Dump Site, etc., were excluded as possible sites for an ocean island. The general area within the zone that was investigated is characterized by relatively flat but sloping (from northwest to southeast) topography with water depths ranging between 35 and 55 ft.

d. Within the most recently studied area of the NY Bight Apex (Figure 4-1) the substrate is mainly silty-fine sands. The substrate in Zone 3 is part of a much larger silty-fine sand zone and is one of the two dominant sediment types (the other is organic mud). The infauna of the zone provided information on where impacts would be reduced. It supports mainly annelids and bivalves. Numerically, in the shallow water zone (<75 ft) annelids (45+%), mollusks (>25%) and crustaceans (<22%) comprised the vast majority of the taxa. With regards to biomass mollusks, mainly bivalves, dominated (~90%), while echinoderms, annelids, and crustaceans comprised a major portion of the remaining biomass (Marine EcoSystem Analysis [MESA] 1981). The difference between the composition by numbers versus biomass reflects the size of the types of fauna involved. For instance due to the size/weight attained by the surf clam (*Spisula solidissima*) it dominated the biomass. Although *Spisula* is dominant and commercially important, its' populations are ephemeral.

e. The NY Bight Apex was sampled for this DMMP, but because it would have been cost-prohibitive at the current phase of planning to sample the entire area rigorously, only a course spatial resolution was used. The USEPA (1997a) reported the results of data collection for the area. A limited effort to ground-truth area MESA (1981) data (Table 4-1, Figure 4-4) was conducted (USACE 1998a), and additional data for the area were reviewed from the USEPA. The ground-truthing effort indicated that the community described by MESA was still present.

4.3.1.3 FISH AND MEGAINVERTEBRATES

a. The fisheries within this study area are varied, and the time and space orientation of the various species can vary dramatically. Bluefish (*Pomatomus saltatrix*), for instance, reside in the area mainly from mid-May until mid-November, while certain species of the codfish family (Gadidae) reside in the area mainly in the late fall through the early spring months. Bluefish occupy various segments of the water column depending on time of day and food supply while flatfishes (Pleuronectidae) are bottom dwellers that only occasionally venture off the bottom in search of prey (Table 4-3). Common invertebrates include important commercial species such as surf clam, sea scallop (*Placopecten magellanicus*), American lobster (*Homarus americanus*), and squid (*Loligo pealei* and *Illex illecebrosus*).

b. Some fish species are highly migratory, such as several species of herring (Clupeidae family), tuna (*Thunnus*), and shark. Other species that undergo seasonal movements include mackerel (*Scomber* spp.) that are usually present in the highest numbers in mid-spring, and bluefish that follow the mackerel schools. Some bluefish remain in the Apex waters during the summer and into the fall. Additional migratory and transient species generally are found close to or at the bottom. These include: black sea bass (*Centropristis striata*), scup (porgy) (*Stenotomus chrysops*) and summer flounder (fluke) (*Paralicthys dentatus*). Numerous species remain in the vicinity of the NY Bight Apex, but undergo population shifts in response to water temperature, and reproductive patterns (e.g., winter flounder [*Pleuronectes americanus*]).

c. The portion of the NY Bight Apex that represents the site of Zone 3 is mainly unstructured bottom. It is located in an area considered to have high fisheries capacity by National Oceanic and Atmospheric Administration (NOAA) – National Marine Fisheries Service (NMFS) based on groundfish surveys focusing on twelve trawl caught species from 1977–1988 (Chang 1990). These data provide information on usage of the area that was considered in site determinations. The finfish species include commercially and recreationally important winter flounder, summer flounder, and scup.

d. Essential Fish Habitat (EFH) has been designated within the study area of the NY Bight Apex. Various life stages of 33 species of fish and invertebrates have been identified as having EFH in the area. These include both pelagic and benthic species such as Atlantic bluefin tuna (*Thunnus thynnus*), shortfin mako (*Isurus oxyrhincus*), blue shark (*Prionace glauca*), several species of Gadids and Pleuronectids (codfish and flatfish families, respectively), and both squid and surf clam.

4.3.1.4 AMPHIBIANS AND REPTILES

a. No amphibians are present in the NY Bight Apex ocean environment. Reptiles of the study area ocean zone are limited to sea turtles, which are covered under the Federal Endangered Species Act and are discussed under the heading Endangered Species (4.3.1.7).

4.3.1.5 BIRDS

a. Birds especially sea birds, use the nearshore areas of the NY Bight Apex for feeding. Species that nest in the area and are most likely to use this zone are gulls and terns. Additionally, there are several species of sea birds and shore birds that migrate through the areas during the spring and fall. A few species that breed in the southern oceans and summer here include certain shearwaters (*Puffinus*) and Wilson's storm-petrel (*Oceanites oceanicus*). Zone 3 is a wholly aquatic site, therefore no nesting species are found. Land areas adjacent to the NY Bight Apex have nesting species of shorebirds that include American oystercatcher (*Haematopus palliates*), willet (*Catoptrophorus semipalmatus*), killdeer (*Charadrius vociferous*), piping plover (*Charadrius melodus*), and spotted sandpiper (*Actitis macularia*).

4.3.1.6 MAMMALS

a. The ocean waters seaward of the baseline are occasionally visited by several species of small toothed whales including the bottlenosed dolphin (*Tursiops truncatus*), common dolphin (*Delphinus delphis*), and harbor porpoise (*Phocoena phocoena*). The commonly occurring seal in the ocean zone is the harbor seal (*Phoca vitulina*), and increasingly the gray seal *(Halichoerus grypus*). Great whales are discussed in the Endangered Species section (Section 4.3.1.7).

4.3.1.7 ENDANGERED SPECIES

a. In evaluating sites, substantial consideration was given to Federal endangered and threatened species in order to avoid impacts to them. Several species of flora and fauna covered under the Endangered Species Act have been identified in the area (USFWS 1997). Others have been identified from the larger area discussed in the 1997 report, but are not discussed here because they are not known to be in the study area under consideration for dredged material disposal in the NY Bight Apex (Table 4-4, and the Fish and Wildlife Coordination Act Report attached as Appendix A list the species).

4.3.1.7.1 Flora

Sea Beach Amaranth

a. The sea beach amaranth (*Amaranthus pumilus*), an annual plant of the amaranth family, was listed as threatened in 1993. It has historically occurred on the barrier beaches of the Atlantic from Massachusetts to South Carolina. Currently the known sites for this species are limited to the south shore of Long Island. It is found in newly disturbed habitat (e.g., a blowout area of a dune). Because of its ephemeral nature it is possible that this species could be found in the landward reaches of the DMMP study area.

Sandplain Gerardia

a. Sandplain gerardia (*Agalinis acuta*), a member of the figwort family, was listed as endangered in 1988. It occurs from Cape Cod to Maryland along the coastal plain. It is found in dry sandy soils. It now mainly occurs on Long Island and is not likely to be adversely impacted by the DMMP except at an upland site if one were chosen.

4.3.1.7.2 Insects, Northeast Beach Tiger Beetle

a. The northeast beach tiger beetle (*Cicindela d. dorsalis*) was included on the Federal Endangered Species list during 1994. Its former range was from Cape Cod, MA, to south/central NJ. It had been recorded at least 24 times from the beaches of the NY Bight before being extirpated during the 1970s. Development and oil spills have had the most impact on this subspecies. This subspecies was reintroduced to the beach at Sandy Hook, NJ, and has become re-established there.

4.3.1.7.3 Reptiles, Sea Turtles

a. Several species of sea turtle occur in the ocean zone of the study area, they include; the endangered Kemp's Ridley (*Lepidochelys kempii*) and leatherback (*Dermochelys coriacea*), and the threatened green (*Chelonia mydas*), and loggerhead (*Caretta caretta*). The endangered hawksbill (*Eretomochelys imbricata*) is apparently only a rare straggler in the NY Bight area. There is no known special use of the area of Zone 3 by sea turtles.

4.3.1.7.4 Birds

Piping Plover and Roseate Tern

a. Nesting and feeding by piping plovers occur at Sandy Hook and Rockaway Point. This coastal subspecies is Federally threatened. Also, the Federally endangered roseate tern (*Sterna dougallii*) is occasionally found in the vicinity. It was confirmed to be nesting at Breezy Point during 1997 and feeds on small species of fish in ocean and inlet waters adjacent to the nest site.

Bald Eagle

a. The bald eagle (*Haliaeetus leucocephalus*) currently is on the Federal endangered species list, although it has been proposed for delisting. The timing of the delisting is not certain, therefore the removal from the list is not considered for any of the four placement areas or alternatives under this PEIS.

b. The bald eagle does not nest in the study area. Both subspecies of bald eagle migrate through the area, and the northern subspecies occasionally overwinters in the NY Bight area. Its most important wintering areas in the vicinity of the study area are the Hudson River north of the Tappan Zee Bridge, the Delaware River and the Catskill Reservoirs (USFWS 1997). The species continues to rebound, but future nesting in the general vicinity of the Lower Bay Complex is not considered likely due to the density and activity of the human population.

4.3.1.7.5 Marine Mammals, Whales

a. Six species of great whales have the potential to be found in the NY Bight, but are most commonly found outside of the Bight Apex (study area) and none are known to use the area in and around Zone 3 in any special manner. All are listed as endangered, the northern right whale being the most critically endangered.

Blue Whale

a. Blue whales (*Balaenoptera musculus*) are rare visitors to the ocean portion of the study area. Montauk, NY, more likely to be frequented by this species, has had less than 12 confirmed sightings in the last 15 years (Okeanos-reported in USFWS 1997). These sightings were in waters of approximately 100 ft or deeper.

Finback Whale

a. Finback whale (*Balaenoptera physalus*) is the most abundant of the great whales in the ocean off the mid and north Atlantic coasts. Its primary use areas are all located well east of the study area.

Sei Whale

a. Sei whale (*Balaenoptera borealis*) distribution is less well-known than that of the other great whales of the mid-north Atlantic. Generally, it is believed to frequent areas above 40° N latitude, in waters 50–1000 ft deep. Sightings in the NY Bight, but not as close as the Bight Apex, are mainly from July and August.

Northern Right Whale

a. Northern right whale (*Eubalaena glacialis*) is endangered, perhaps critically so, and only about 600 individuals may remain, of which 300–350 are believed to be in the North Atlantic Ocean. Sightings in the area of the NY Bight, but not as close as the Bight Apex, occur every year from March through June apparently during the whales' northbound migration. During the southbound migration they appear to take a more seaward route.

Humpback Whale

a. Humpback whale (*Megaptera novaeangliae*) is the great whale that is most likely to be encountered in the vicinity of the NY Bight Apex. It has been found in NY Harbor (rarely) and other waterbodies in that proximity. Their temporal occurrence is bimodal since they mainly appear from June through September and again in December and January. Their diet consists, in part, of small schooling fish such as sand lance (*Ammodytes* sp.). This may explain the occurrence of this species in nearshore waters in the NY Bight Apex, where sand lance are occasionally abundant.

Sperm Whale

a. Sperm whale (*Physeter catodon*) is the largest of the toothed whales and owing to its size is considered to be a great whale. It is rarely found in waters less than 600 feet. Its presence in the NY Bight Apex is rare.

4.3.1.8 ESSENTIAL FISH HABITAT (EFH)

a. The Magnuson-Stevens Fishery Conservation and Management Act of 1996 (MSFCMA PL 94-265) was amended to include the Sustainable Fisheries Act of 1996. One of its provisions is the designation of EFH for Federally Managed Species. The Fishery Management Councils (FMCs) that manage species along the Atlantic Coast of the United States have made EFH designations. These councils are the New England, Mid-Atlantic and South Atlantic FMCs. The Secretary of Commerce has approval authority for the designations.

b. The designations are based upon a 10' longitude by 10' latitude grid cell that, in the Port area, is approximately equivalent to a 100 square mile rectangle. The presence of a species on the FMC list does not automatically confirm its presence in the Port study area (e.g., white marlin). Designation for a species considers the pertinent life stages (e.g., most fish eggs, larvae, juveniles, adult stages) any one of which would, if data indicated substantial presence in a grid cell, be included as EFH (Table 4-5).

c. Designation of EFH in a given grid cell for a species may be set aside if data show that a section of the grid does not contain the species at all, or it occurs in so few numbers that justification of that section as EFH does not exist. This would need to be determined in formal consultation with NMFS, under the MSFCMA.

d. The NYD is currently in consultation under the MSFCMA to ensure that requirements of the law are addressed, and a thorough review of EFH for designated species. This is especially true for species such as cobia where there is a question regarding the designation and whether designation will remain in place for the Port study area. Further, the consultation will aid in addressing potential adverse effects as a result of potential implementation of options and given sites. Assessment of EFH will be done on individual dredging projects as these projects are advanced for implementation.

e. The NY Bight Apex portion of the Port study area for the DMMP has six EFH grid cells designated. These grid cells contain EFH for one or more life stages for a total of some 32 species. Most species are finfish, however several invertebrates (2 species of squid and 2 species of bivalve) are also included. Species with the most presence based upon grid cells and life stages include the sandbar shark (*Carcharhinus obscurus*), winter flounder, and windowpane (*Scophthalmus aquosus*). Other species that were also well represented using the total number of grids and life stages include several species of skates (*Raja*), red hake (*Urophycis chuss*), silver hake (*Merluccius bilinearis*), monkfish (*Lophius americanus*), bluefish, summer flounder, scup, butterfish (*Peprilus triacanthus*), Atlantic herring (*Clupea harengus*), and black sea bass.

4.3.1.9 CULTURAL RESOURCES

a. Significant cultural resources are any material remains of human activity that are eligible for inclusion or listed on the National Register of Historic Places (NRHP). The Federal authorities on Historic Preservation include Section 5 of the Abandoned Shipwreck Act of 1987, Section 106 of the National Historic Preservation Act of 1966, as amended, Executive Order 11593, and the Federal Advisory Council on Historic Preservation's "Procedures for the Protection of Historic and Cultural Properties (36 CFR Part 800)."

b. A preliminary cultural resource assessment was prepared for the DMMP in 1996 (Rakos 1996). At that time, the defined DMMP study area was much larger and included most of the NY Bight Apex, off shore and nearshore, as well as uplands within 2 miles of the shoreline in the counties surrounding the Port in NJ. The 1996 assessment provided a brief summary of existing cultural resource data for offshore and nearshore resources and summarized the types of resources that might be encountered in upland areas. The assessment also provided general descriptions of the cultural resource work that might be anticipated for each disposal option under consideration. The State Historic Preservation Offices (SHPO) of both NY and NJ and the NY City Landmarks Preservation Commission (NYCLPC) concurred with the approach the NYD proposed to take with regard to identifying and evaluating cultural resources for the various DMMP options (Appendix C of this PEIS).

c. A geomorphological assessment of the sediments recovered from a series of vibracores and borings was conducted in all offshore zones to assess the potential for these areas to contain paleoenvironmental data. During the last 10,000 years of the late Pleistocene and Holocene periods, when ocean levels were lower than now, these areas were on a relatively dry coastal plain that may have been inhabited by Native American populations. The geomorphological study concentrated on the analysis of pollen, foraminifera, and grain size, coupled with limited radiocarbon dating of sediments obtained from vibracores and borings. These data were used to reconstruct the paleoenvironment and ascertain areas that may have been favorable for occupation by Native Americans and that are more likely to have been preserved under existing sediments, having withstood geological and human scouring processes. The preliminary analysis of these data indicates that several areas of the Apex do contain soils that may yield important information on the prehistoric landscape (LaPorta et al. 1998).

d. Zone 3 has a moderate potential to contain significant resources. Sediments recovered from this area are suggestive of a paleoshoreline. While such an environment would have a high probability for cultural resources, the location of Zone 3 on the continental shelf would have made it prone to extensive erosion during the late stages of the Holocene sea-level rise. It is therefore possible that prehistoric sites have been eroded away (LaPorta et al. 1998). The final report will indicate which locations within Zone 3 have higher or lower potential for significant resources.

e. Historic resources that might be encountered in the NY Bight Apex area of potential effect consist primarily of shipwrecks and other isolated artifacts lost or dumped at sea. The potential for shipwrecks is substantial, although recent surveys in the Lower Bay Complex identified only a few potential cultural resources (Cox 1998). A remote sensing survey will be conducted for Zone 3 as the project proceeds.

f. Cultural resource issues for the HARS were addressed in the Environmental Impact Statement produced for that project. Six shipwrecks were identified. The NJ SHPO concurred that there would be no impact to these resources provided that the wrecks were avoided, as proposed in project plans. Fish reef construction would be located on pre-approved, existing sites for which cultural resources have already been addressed. As options are selected and locations determined appropriate cultural resources studies will be undertaken. Compliance with Section 106 of the National Historic Preservation Act of 1966 will be achieved for each selected site.

4.3.1.10 SOCIO-ECONOMIC FACTORS

4.3.1.10.1 Shipping

a. During 1996, more than 51 million tons of ocean-borne cargo passed through the Port. The regional monetary impact of the Port and its dependent activities is currently estimated at more than $25 billion per year, and 229,000 direct and indirect Port-related jobs.

4.3.1.10.2 Commercial Fishing

a. Commercial fishing occurs in the NY Bight Apex. Some of the main target species include ocean quahog, surf clams, and a variety of finfish such as winter flounder, summer flounder, scup, and several species of the codfish family. Substantial numbers of people in the area engage in subsistence fishing.

4.3.1.10.3 Recreational Fishing

a. Computation of revenue associated with this activity is not readily available, but the NY/NJ metropolitan area has at least 750,000 saltwater recreational fishermen that fish on average of about 10+ days per year each. This activity provides substantial employment and commercial income to individuals and business at marinas, bait and tackle shops, and those who work on recreation fishing boats as captain and mates. Fishing in the NY Bight Apex utilizes a variety of vessels that include private boats, charter boats, and party (head) boats.

4.3.1.11 WATER QUALITY

a. This section describes the surface water quality of the NY Bight Apex, specifically addressing temperature, salinity, dissolved oxygen, various nitrogen and phosphorus forms, silicate, pH, heavy metals, coliform bacteria, and phytoplankton. Major water quality monitoring in the NY Bight Apex began in 1948, but has been sporadic. Three types of water have been identified in the Apex shelf waters: inlet waters (also called Hudson River Plume water), surface shelf water, and bottom water. Sediment quality is discussed under both the biota and water quality sections, since these are the elements affected by sediment quality.

b. The Hudson River Plume water encompasses the combined discharges of the Hudson and Raritan rivers and flow from the Lower Bay. This culminates into a low-salinity plume located in the northwest corner of the NY Bight Apex. Discharge volumes are maximal in April and minimal in August. Approximately one-half of the annual discharge occurs during March, April, and May (Bowman and Wunderlich 1977). The plume persists throughout the year; with an extent and depth highly dependent on local winds and flow rates from the Hudson and Raritan rivers (McLoughlin et al. 1975). Generally the plume flows southward between the NJ coastline and the axis of the Hudson Shelf Valley. During winter, however, the plume may flow eastward along the southern coast of Long Island.

c. During spring the surface shelf water is affected by heavy river discharge with average salinity varying more than 4 parts per thousand (ppt). Surface salinities in the NY Bight Apex decrease and a moderate salinity-maintained stratification occurs during the spring and summer months, separating surface shelf water from bottom shelf water. Decreasing winds and increasing isolation cause a stronger thermocline to develop (Charnell and Hansen 1974). The two-layer system reaches its maximum strength by August. Moderate salinity (25 ppt to 27 ppt) and high temperature characterize summer shelf water.

d. The winter characteristics of the bottom shelf water are essentially homogenous over the NY Bight Apex shelf. With rapid formation of a thermocline and separation of surface shelf water in spring, bottom waters become isolated until the next winter. Bigelow (1933) reported that this cool pool (temperatures typically less than 4°C) extended from south of Long Island to the opening of the Chesapeake Bay. Bigelow (1933) also found that the cooler pool of Bottom Shelf water was surrounded on all sides by warmer water. The upper layer of the Bottom Shelf water is usually found between 30m and 100m during the summer (Bowman and Wunderlich 1977). Seaward, near the shelf edge, steep density gradients prevents large scale mixing from occurring between shelf and slope waters during the year.

e. Anti-degradation policies apply to all surface waters of the States. Existing uses must be either maintained or protected, and no irreversible changes to water quality are allowed that would impair or preclude attainment of designated uses.

4.3.1.11.1 Physical Properties

a. Physical properties considered in this document are temperature, light, turbidity, and salinity.

Temperature

a. Temperature fluctuations generally follow a seasonal pattern and on the spatial scale of the NY Bight Apex, are relatively unaffected by man-made inputs. However, unusual high or low temperature conditions occurring on various temporal and spatial scales can result in undesirable effects on the biological community. The solubility of gases in water declines as temperature increases. Saturation concentrations for dissolved oxygen in the NY Bight Apex can vary as much as 4 milligrams/liter (mg/l) from winter to summer. Temperature must be considered when evaluating toxic substances in aquatic systems, as many substances (such as cyanide, phenol and zinc) exhibit increased toxicity at higher temperatures. In addition, aquatic organisms require certain ranges of temperature for optimal growth. Although not present during the winter, a strong thermocline develops during the summer with warm surface layers overlying cold bottom waters. The thermocline is easily penetrated by dredged material but forms a boundary restricting the movements of plankton, nutrients, and oxygen during the summer.

b. Surface temperatures of NY Bight Apex waters vary minimally over the long term with the average summer temperature ranging from about 21° to 24°C. Monthly surface temperatures vary from a low of 2°C in winter to a high of about 23°C in late summer. A maximum average vertical temperature stratification of 7°C is observed during July and August. The most significant lateral gradients occur during the high runoff period in the spring. The influx of cold bottom and surface waters from the ocean are evident during spring conditions. The summer surface profiles have relatively small lateral gradients, although the vertical stratification is quite evident during this period. The fall and winter data reflect the seasonal cooling and subsequent vertical mixing.

c. The average surface temperatures of the NY Bight Apex area range from 8.5° to 20°C in the spring. Increases in temperature are noted toward the NY Harbor and easterly to the Atlantic. Cooler temperatures occur along the northern coast. Summer surface temperature average ranges from 18° to 24°C. Fall surface temperatures range from 3.5° to 15°C. Winter surface temperatures range from 2° to 13°C. The average bottom temperatures range from 4° to 12°C in the spring, 6° to 21°C in the summer, 11° to 14°C in the fall and 1.5° to 8.5°C in the winter.

Light

a. Light that penetrates bodies of water is a fundamental source of energy for life and heat. In general, light decreases exponentially with depth. Light penetration is calculated as a measure of turbidity: the greater the turbidity reading, the less light penetration. In a highly turbid system where light penetration is diminished, photosynthetic activity is limited to the upper reaches of the water column. Turbidity can be influenced by many factors, including river plumes and energy events that re-suspend sediments.

Turbidity

a. Surface turbidity can be measured by satellite imagery. These images of the NY Bight Apex show the Hudson Plume, which is distinguished by the difference in reflexive index due to turbidity, in contrast with its surrounding waters. The images of the plume show it extending southward and close to shore (Fedosh and Munday 1982). Northwest winds, followed by southwesterly winds, cause the plume to move offshore by as much as 27 km.

b. Turbidity below the surface can be measured using in situ instruments. Dragos and Peven conducted hydraulic surveys in 1994, which included high resolution vertical profiling of water column turbidity in the vicinity of the HARS. These hydraulic surveys showed low turbidity throughout the water column with a small mid-depth maximum in the central portion of the HARS study area. This feature seems to extend from the north and west in to the HARS but does not extend to the east of this area. The data did not reveal elevated turbidity in the vicinity of the HARS that might be attributed to dredged material disposal. However, the data did show the Hudson River discharge or coastal currents exerting notable influence on the turbidity. Time series tracking of individual dredged material plumes demonstrated that turbidity associated with disposal events in the HARS quickly reached background levels within a few hours (Dragos and Lewis, 1993). These data indicate that dredged material disposal in the HARS has transient impact on water clarity.

Salinity

a. The concentration of dissolved salts in seawater is usually expressed as a measure of salinity. A rapid means of obtaining the salinity of a water sample is by measuring electrical conductivity. Although water from the open ocean contains slightly more salts than expressed in salinity values (Strickland and Parsons 1968), salinity is essentially equivalent to the total dissolved solid content of seawater.

b. Density in the marine environment is a function of salinity and temperature. Density stratification is important in aquatic systems in that the different strata can have different environments and aquatic life communities. Density is also important in evaluating pollutant discharges into the aquatic system. Density differences between a sewage plume from an ocean outfall and the receiving waters can cause the plume to rise, resulting in concentrated sewage in the surface layer of the receiving waterbody.

c. Salinity data in the Bight area was collected over a period of 28 years (from 1948 to 1976) with no distinct long-term overall pattern observed (although the higher flow years in the early 1970's appear to reflect a decrease in surface salinity). Average vertical gradients of salinity vary from less than 1 ppt to almost 2 ppt from top to bottom. Seasonal salinity profiles may vary. The effect of the high runoff from the Hudson River basin in the spring can be seen in the low salinity surface water extending into the NY Bight Apex. Southward along the NJ coast the bottom water is higher in salinity, producing maximum stratification during this period. In addition there is an indication of higher salinity bottom water penetrating into the Apex from the south.

d. During late summer, the period of lowest average flow from the Hudson, salinities are greater than during spring. The movement of low salinity water southward along the NJ coast persists, as does the penetration of higher salinity in the bottom layer up the Hudson shelf valley, but with somewhat less stratification. In contrast to the littoral current pattern, the off shore summer salinities suggest a clockwise circulation driven by the incoming freshwater, the general southwesterly drift and to some degree, incursion of high-salinity bottom water.

e. The fall and winter data reveal less stratification, with the fall surface data again indicating the drift along the NJ shore. The winter surface data indicate some tendency for the surface flow to be deflected farther northward than usual. Vertical gradients are small, and generally movement of higher salinity bottom and surface water into the area from the southeast is apparent (O'Connor et al. 1977). Maximum salinities occur inshore during February and March, averaging 33 ppt to 34 ppt (Bowman and Wunderlich 1977).

4.3.1.11.2 Chemical Properties

a. Chemical properties include dissolved oxygen, various forms of nitrogen, phosphorus, organics, pH, and certain heavy metals.

Dissolved Oxygen

a. Aquatic photosynthetic organisms such as phytoplankton influence the dissolved oxygen level in a natural waterbody through photosynthesis and respiration. Because photosynthesis requires light, oxygen production from photosynthesis occurs during the daylight hours and predominantly in the surface layers. Organisms such as bacteria are a source of oxygen depletion in an aquatic system as they utilize oxygen through respiration. Oxygen depletion in aquatic systems, however, may be replenished through atmospheric regeneration. As oxygen is depleted in the water column, atmospheric oxygen diffuses into the water to replace the deficiency. The saturation level of dissolved oxygen in water is limited and varies with salinity and water temperature. Generally, organism survival begins to drop off at dissolved oxygen levels below 3–4 mg/l.

b. Monthly variations in the NY Bight Apex-wide dissolved oxygen averages are vertically stratified, with dissolved oxygen at the surface near or above saturation with a maximum variation of about 16%. The variation of percent saturation at the bottom is much higher over the year. The values range from a maximum in January close to saturation, to a minimum of 63% in August. The maximum vertical stratification of about 40% occurs in August and September; generally little variation is observed in January and November. Dissolved oxygen concentrations vary from 12 to 7.6 mg/l at the surface and 11 to 5 mg/l at the bottom, from winter to summer respectively (NOAA 1979).

c. Seasonal stratification of dissolved oxygen occurs in the spring when vertical differences of 10 to 30% occur, with some indication of a bottom sediment oxygen demand reflecting the effects of sewage disposal in the Hudson shelf region. In summer, surface dissolved oxygen everywhere is greater than 100%, which reflects algal photosynthesis. The bottom percentage of oxygen saturation varies through the NY Bight Apex, with less than 60% in the vicinity of the HARS and 70 to 80% in other areas including Zone 3. No spatial variances in dissolved oxygen content occur in the fall and winter, except for the apparent discharge of low dissolved oxygen water from the Hudson River into the surface of the NY Bight Apex during the fall. In general, in the fall and winter near vertical homogeneity at reasonably high levels of dissolved oxygen occur.

d. Moving sewage sludge disposal from the 12-Mile Site to the 106-Mile site in 1986–1987 measurably improved the water quality of the inner Bight (Studlhome et al. 1995). Data collected between 1987 and 1989 to evaluate the response of the NY Bight Apex to reductions in sewage sludge loading showed that summer water column dissolved oxygen levels in previously impacted areas rose after the 12-Mile Site was closed. In particular, measurements of dissolved oxygen (DO) in bottom waters of the inner NY Bight Apex demonstrated rapid recovery of DO values to that above 4 mg/l from 1986 through 1988 (minimum values in 1989 were about 2.5 mg/l). This compared to values below 0.5 mg/l at the previously most heavily impacted station during the summer months from 1983–1985 (Mountain and Arlen 1995). Dissolved oxygen levels were measured by USEPA Region 2 in the coastal waters (original data from USEPA 2 STORET database) off NJ and NY (to depths of 40m) between May and October from 1985 through 1994 indicated that only 26 of 3,888 data points were less than 2 parts per million (ppm) and 102 less than 3 ppt. This strongly suggests that the vast majority of the Bight Apex contains enough dissolved oxygen to sustain marine life. No trends toward lower DO as depth increased were evident in this data set (USEPA 1997a).

Nutrients

a. The two nutrients essential for primary production in the ocean are phosphorus and nitrogen. Other nutrients, notably silicon, as well as micronutrients and metals, also are necessary for plant growth and may enhance or retard production. Most aquatic marine systems however, are dominated by the availability or unavailability of phosphorus and nitrogen, usually present in water and taken up by photosynthetic organisms as phosphate or nitrate.

b. The biological reactivity of nutrients, seasonal physical structure of the water column, currents and wind conditions, and remobilization from sediments all affect the distribution and concentration of nutrients in the water column (Stoddard et al. 1986). The dominant factor affecting nutrients in the NY Bight Apex is the flux associated with the Hudson River outflow (Stanford and Young 1988). The flux is the movement of water associated with tidal exchange and net outflow due to the discharges mostly from the Hudson and Raritan rivers. The flux dominates the loading of nutrients to the inner Bight (Stoddard et al. 1986, HydroQual. 1989a). Stoddard et al (1986) summarized data from stations between 1973 and 1981 in the greater NY Bight. This summary indicates that nutrients in the NY Bight Apex typically display a winter maximum (period of lowest productivity) and summer minimum. The amplitude of this cycle decreases seaward. Primary production is highest in the spring with a summer minimum and secondary fall maximum.

c. Generally, nutrient enrichment in the off shore coastal waters of NJ routinely causes elevated phytoplankton levels (HydroQual 1989b). Stoddard et al (1986) indicates that the enrichment could increase primary productivity by as much as 30 %. Annual monitoring of the coastal waters off the eastern seaboard by USEPA Region 3 shows the effect of coastal outflows on chlorophyll enrichment (USEPA 1992a) and decreasing levels with increasing distance off shore including coastal NJ. Such enhancements are generally confined to the surface waters as the source of nutrient for phytoplankton growth are added above the seasonal density stratification limits exchange of nutrient rich bottom waters with surface waters. Under typical conditions, these same phenomena limit the availability of nutrients regenerated in the sediments from reaching the light rich surface layer, thereby limiting the impact of sediment regeneration on coastal productivity during the summer months (Kelly 1993, 1995).

d. In the past 10 years, nutrient loading in the NY Bight Apex has decreased, thereby resulting in improved water quality. Evidence of this is the increase in dissolved oxygen levels in the NY Bight Apex waters. Disposal of dredged material in the NY Bight Apex remains, as in the past, a minor source of nutrients.

e. In aquatic systems, inorganic phosphorus is generally in the form of orthophosphate, although other forms may be present. Readily available inorganic phosphorus is essentially a nutrient for plant and animal growth and passes through various stages of decomposition and recycling.

f. In the NY Bight Apex from 1949 to 1974, inorganic phosphorus means ranged from 0.012 to 0.025 mg/l at the surface and from 0.026 to 0.030 mg/l at the bottom. In the vicinity of the historic HARS, mean inorganic phosphorus concentrations at the bottom were higher than bottom concentration averages for the NY Bight Apex. Monthly variations show a decreasing trend in inorganic phosphorus from about 0.028 mg/l in January, to a minimum of about 0.018 mg/l in May. During the spring algal bloom, an increase occurs to mean values between approximately 0.02 and 0.04 mg/l. Vertical stratification is minimal except during the summer, when the difference between the mean concentrations at the surface and the bottom are about 0.01 mg/l.

g. Nitrogen is notable in the aquatic system because it is an essential component of all proteins, chlorophyll *a* and other biological compounds. Nitrification in aquatic systems is a phenomenon in which ammonia is oxidized to nitrites and nitrates. This phenomenon is dependent on bacterial action and is important in water quality management because of the significant amount of oxygen required for this process. Thus, the input of wastes can upset the natural balance. Nitrification in aquatic systems causing eutrophication (over-enrichment of the system) can result in excessive growth of aquatic plants. Atmospheric nitrogen is transferred to the aquatic system by electrical discharge and by nitrogen fixing bacteria and algae that convert elemental nitrogen to organic nitrogen.

h. Data on nitrogen in the NY Bight Apex-wide system were not obtained prior to 1969. Looking at nitrogen on a monthly scale, nitrates show a downward trend from a mean concentration of about 0.06 mg/l of nitrogen in February, to minimum values of about 0.008 mg/l in July. Vertical stratification is generally minimal. A notable exception occurs in April, when the mean surface nitrate concentration is about 11 mg/l, indicative of high nutrient input during the spring runoff period. The primary source of nitrogen appears to be from the Hudson River. There is a general tendency for higher nitrogen concentrations to extend southward along the NJ shore, in accordance with the general circulation patterns.

pH

a. pH is the measure of the acidity (less than 7) or alkalinity (greater than 7) of a solution. Pure water, containing equal parts of hydrogen and hydroxide ions, is neutral with a pH of 7. The pH value generally encountered in the sea is between 7.5 and 8.4. Deviations from normal conditions may be indicative of contaminants. Photosynthetic activity can result in higher pH values as result of the reduction of CO2 in the water. Low pH indicates anaerobic conditions. No pH data of area waters were available before 1973. According to data collected by O' Connor (1977), pH is consistently within a narrow range of from about 7.8 to about 8.3 on a NY Bight Apex-wide average. This pH is also normal for open ocean waters. The pH in the bottom layer is always from 0.1 to 0.4 standard units lower than in the surface layer.

Metals

a. Heavy metals included in this section have been selected on the basis of available data.

b. Iron and manganese concentrations are generally low in highly buffered aquatic systems that are well aerated, because oxidized precipitates form and settle out of the system. Background levels in the open ocean for iron and manganese are 0.010 and 0.002 mg/l, respectively (Wenk 1969) (Table 4-6).

c. Recent data show that the concentrations of metals in the water column decrease off shore from the mouth of the Harbor. The decreasing off shore gradient (USEPA 1991, USEPA 1992a, 1992b, Hanson and Quinn 1993, Klinkhammer and Bender 1981) directly reflects dilution of the contaminant concentrations in the Hudson River Plume with seawater from the Bight region. Variations of this gradient may occur as the flow of the river changes and in response to other climatological factors that affect mixing and transport regimes of the inner Bight. The seasonal stratification of the water column also affects the vertical distribution of contaminants. For example, metals concentrations in surface waters are consistently higher than in waters from below the pycnocline (density layer). This reflects both the influence of the Hudson River outflow on the surface waters of the NY Bight Apex and natural geochemical processes that transport metals through the water column. Repeated sampling of the water column in the vicinity of the HARS shows that metals concentrations in this area are low and reasonably constant. Thus while the concentrations of heavy metals in the NY Bight Apex and study area can range widely, the spatial and temporal distributions of heavy metals are reasonably predictable (USEPA 1997a).

d. In general, data on iron concentrations in the NY Bight Apex are measured as total iron, which includes soluble, particulate, colloidal and organic iron. The NY Bight Atlas recorded iron measurements 5 ft below the surface and 5 ft above the bottom. Data showed that average surface iron concentrations are highest during winter (about 160–299 μg/l), with averages of about 40 μg/l generally observed during the remaining of the year. A second peak observed in April may be due to spring runoff. Vertical stratification of iron is minimal through the year, except for September, October, and December, when the difference between surface and bottom averages is about 80 μg/l. compared to background levels for iron of 10 μg/l in the open ocean. Horizontal distributions of iron are present seasonally.

Iron concentrations in the NY Bight Apex are generally higher than those of the open ocean levels. Peak concentrations occurred in the vicinity of the sewage sludge and acid waste disposal areas.

e. The background levels for copper; cadmium and zinc are 0.003, 0.001, and 0.01 mg/l respectively. Cadmium is an element of high toxic potential that concentrates in plant and animal tissues. Zinc is an essential element in biological metabolism. Concentrations of 0.03 to 4.0 mg/l have been reported to be toxic to fish (US Department of Health, Education and Welfare 1962).

f. The sulfates of copper and zinc, as well as copper and cadmium, are synergistic in their toxic effect on fish (McKee and Wolf 1963).

g. According to a NOAA study (1979), copper averages at the surface decrease from 4.7 μg/l to about 3.5 μg/l during the winter-spring period. In the bottom layers, average concentrations during this period vary from about 3 to 4 μg/l to a maximum of approximately 8 μg/l in July and September respectively. Conditions are generally homogenous through the water column during this period.

h. The average cadmium at the surface and bottom decreases from 8.9 μg/l and 2.4 μg/l respectively, in February to a homogenous condition in the spring of less than 0.5 μg/l. The background ocean concentration of cadmium varies from about 2 μg/l in July and October to between 0.5 and 1 μg/l during other months. Averages at the surface vary from 1.5 μg/l in July to 0.5 to 1 μg/l for the other months. Thus vertical stratification exists in October, but with bottom levels greater than surface levels and with the opposite conditions in February.

i. The average concentrations of zinc at the surface were approximately 40 μg/l in February, August and September, decreasing to 20 μg/l in October and increasing to 35 μg/l in November. There is no notable vertical stratification of zinc except in August and September, when bottom average concentrations were 10 to 20 μg/l less than at the surface. The ocean background concentration of zinc is about 10 μg/l.

j. Mean surface manganese was less than 1 μg/l in February, whereas the ocean background level is 2 μg/l. In April, stratification is seen with a surface mean of 28 μg/l compared to a bottom mean of 10 μg/l. During the remainder of the year, mean concentrations varied from 5 to 15 μg/l at both surface and bottom, with vertical stratification during some months.

Organics

a. The persistence and toxicity of chlorinated hydrocarbon's (e.g., DDT [dichloro-diphenyl-trichloroethane] and PCBs]) cause great concern due to their abundance and distribution in marine environments.

b. Inputs of PCBs to the NY Bight Apex result primarily from historic dumping of sewage sludge and dredged material, atmospheric fallout, and direct discharge from shore sources. Within the Harbor area (the source of dredged material), important sources of PCBs to the water column and eventually the sediments are the Hudson River inputs. These inputs consist of PCBs from an estimated 500,000 kg (1.1 million pounds) that exist in the Hudson near Troy Lock and Dam, and approximately 3,100 kg of PCBs in the lower Hudson, annually (USEPA STORET). Sewage treatment-plant discharges and atmospheric fallout accounts for a portion of the PCB load within the Hudson River (O'Connor et al. 1980). Concentrations of PCBs are lower offshore than within the estuary.

c. HydroQual (1989b) summarized water column PCB concentrations as falling in the range of 0.33 to 0.6 ppb in the late 1970s, but suggested that the levels might be high due to analytical artifacts. The measured background concentrations of Dioxin in the water column of the HARS are low (<9.913 μg/l or ~10) (Dragos and MacCarthy-Peven 1994). Further, Bopp et al. (1995) indicate the DDT concentrations in water column particulate matter are low and can be traced to atmospheric inputs rather than dredged material from the HARS.

4.3.1.12 GROUNDWATER

a. Groundwater resources within the NY Bight Apex study area have generally not been classified. Existing studies on groundwater resources are confined to landmasses. The closest landmasses to this study area (Brooklyn and Queens, NY) are underlain by the Upper Glacier Aquifer, the Gardiners Clay Aquifer, Jameco Aquifer, Magothy Formation Aquifer, Raritan Clay Aquifer, and the Lloyd Sand Aquifer (Personal Communication, USGS NY). No extrapolation or studies have been performed to determine the boundaries of these aquifers as pertains to the NY Bight Apex (Pope 1998). The flow gradient of these aquifers is such that groundwater from the landmass is merging with the salt water of the NY Bight Apex.

4.3.1.13 AIR QUALITY

a. Air Pollution has been defined as the presence in the air of substances in concentrations sufficient to interfere with health, comfort, safety, or the full use and enjoyment of property. Substances released into the air are considered potential pollutants not only in terms of their effects on human health but also in terms of their effects on agriculture products and on buildings, statues and other public landmarks.

b. Air pollution can be produced by both stationary and mobile sources, and can lead not only to acute and chronic health problems, but also long term global effects.

c. Site specific NEPA analysis for air quality would be conducted following the USEPA recommended checklist given below:

- Air permits to be issued by the USEPA, NY, or NJ;
- Supporting air emissions and air quality impact evaluations for dredged material, and on-road and non-road mobile sources, including marine vessels and locomotives;
- Supporting analyses to assess conformity of actions with the NY and NJ State Implementation Plans;

- Evaluation by local metropolitan transportation planning organizations such as the NY Metropolitan Transportation Council and the North Jersey Transportation Planning Authority where a transportation project is involved in the disposal; and,
- Identification of indirect emissions associated with specific options.

d. According to the 1996 National Air Quality and Emissions Trends Report prepared by the USEPA, air quality has continued to improve during the past 10 years for all six National Ambient Air Quality Standards (NAAQS) parameters. The NAAQS parameters are: ozone (O3), inhalable particulates (PM-10), sulfur dioxide (SO2), nitrogen oxides (NOX), carbon monoxide (CO), and lead (Pb). When examined individually, emissions for all criteria pollutants, except NOX, decreased between 1970 and 1996. Lead emissions had the greatest improvement overall with a 98% decrease from 1970 to 1996 (USEPA 1997b).

e. Volatile organic compounds can lead to the production of ozone, which at ground level can cause considerable harm. According to the USEPA, ground level ozone appears to be the most pervasive problem nationwide.

f. The air quality of the aquatic areas associated with the proposed options under the DMMP are determined by both natural and anthropogenic processes. Natural processes consist of the emission of particulate matter and gases from the ocean surface. Anthropogenic emissions are characterized as particulate and gaseous material from land surfaces, and stationary and mobile sources. The majority of anthropogenic emissions are a result of fossil fuel combustion. The NY Bight Apex coastal areas are heavily industrialized and represent one of the largest emission sources in the United States. Air currents and winds disperse constituents released from point and non-point sources throughout the region. The National Weather Service maintains an offshore meteorological platform, ALSN6-Ambrose Light at 40º46' North and 73º 83' West. This platform collects meteorological data including information on winds, waves, atmospheric pressure, and air temperature. The National Weather Service tabulated the average wind speeds from November 1984 through December 1993 at Ambrose Light. Wind speeds are strongest during the fall and winter months, peaking in December with an average of 16.5 knots. Air temperature peaks in July with an average measurement of 22.4^{o} C. The lowest average air temperature was 1.4^{o} C in February.

g. Although air quality data are not collected specifically for the NY Bight Apex, air quality in this region is related to the air quality of the surrounding landmasses. These landmasses include Monmouth County, NJ, and Brooklyn, NY. According to the 1996 Annual NY State Air Quality Report there are 12 air monitoring sites within Richmond County (Staten Island) and 5 air monitoring sites within Kings County (Brooklyn).

h. Monmouth County is located in the Northern Coastal Pollutant Standards Index Reporting Region. For monitoring year 1996, this region had 1 unhealthful day and 3 days approaching unhealthful. Within the county, air-monitoring stations are located in Freehold and at Monmouth University. The Freehold station monitors for carbon monoxide and smoke shade. Ozone is monitored at the Monmouth University station. For monitoring year 1996, Monmouth County was in non-attainment of the National Primary (Health) Standard for ozone. This area was designated "Severe 2" with a design value of 0.191–0.279 ppm. The attainment date is November 15, 2007 for this parameter. Monmouth County was in attainment for monitoring year 1996 for the other parameters of concern (NJDEP 1997a).

i. Staten Island (Richmond County) is currently designated as non-attainment for CO with a moderate classification of 12.7 ppm (NYSDEC 1997). Of the 12 monitoring sites located in this county, none collects data on ambient CO. The county is not designated for Pb or PM-10 parameters but multiple monitoring sites do collect data on these parameters. Data for 1996 did not exceed the parameter for Pb. According to the 1996 Annual NY State Air Quality Report, PM-10 is monitored by six sites, none of which exceeded the PM-10 parameter. Richmond County had non-attainment and severe classification for O3 for monitoring year 1990 (ENFLEX 1998). The S. Wagner High School site monitors for O3 and had no exceedances in 1996 (NYSDEC 1997).

j. Richmond County**,** which is part of the NJ-NY-Connecticut (CT) Interstate Air Quality Control Region (AQCR) cannot be classified or is better than the national standards for NOX (ENFLEX 1998). Monitoring systems located throughout Richmond County do not monitor for this parameter. SO2 is monitored at the S. Wagner High School and had 0.027 ppm for a 24-hour average, which does not exceed the annual mean standard for this parameter. All but one monitoring site within the county collects data on total suspended particles (TSP) and for monitoring year 1996 there were no exceedances for this parameter (NYSDEC 1997).

k. Brooklyn is located in Kings County, which is also designated as the NJ-NY-CT-Interstate AQCR. This county was in non-attainment for CO with a "Moderate 2" designation and a classification of 12.7 ppm in 1996. O3 was classified as "Severe 2" as of 1990; therefore the county was also in non-attainment for this parameter. Both PM-10 and Pb have not been designated and SO2 is not classified for Kings County. The NJ-NY-CT NJ-Interstate AQCR is designated as better than the national average for NO2 (ENFLEX 1998).

l. Within Kings County there are five monitoring sites that are part of the ambient air monitoring system of NY. Of the parameters monitored by these sites CO, O3, PM-10, TSP, SO2, and Pb did not exceed the state/federal standards determined for these parameters in the monitoring year 1996. Brooklyn Transit, a monitoring site for Kings County, has continually decreased in its exceedances for CO from 1984 to 1995. Trace metal concentrations for arsenic, cadmium, Pb, mercury, nickel, and vanadium have also steadily decreased at the Greenpoint monitoring site from 1992 to 1996 (NYSDEC 1997).

4.3.1.14 NOISE

a. The Atlantic Ocean at NY Bight Apex represents a natural resource that impacts 19 million people. Its shores support prime swimming areas in addition to recreational boating and fishing. A variety of finfish and shellfish have been commercially fished there for over a century. Shipping lanes cross its waters. Sand and gravel mining, air traffic overflights, and wind, all contribute to its uses and contribute to its ambient noise levels.

b. The nearest areas of special concern are on the NY and NJ coasts. These areas were established for the protection and enhancement of waterfowl and shore birds. The largest area of special concern is the 26,000-acre Gateway National Recreation Area that encompasses most of the Jamaica Bay and Rockaway Point region of Long Island, as well as part of Sandy Hook, NJ.

4.3.1.15 AESTHETICS

a. Aesthetic resources of the NY Bight Apex study area can be defined as the perceived view of this area by the population. Federal laws that apply to aesthetic resources include the Coastal Zone Management Act of 1972 (Sections 302b, 303b), the NEPA of 1969 (Section 101b), the Water Resources Planning Act of 1965 and the "amenities" criteria of the MPRSA of 1972.

b. The perceived aesthetic view for this study area can be described as the visible surrounding land and water use. For establishing the aesthetic environment in the NY Bight Apex study area, special consideration may be given to the direct view of an aquatic project site from public and private access shoreline points and scenic viewpoints surrounding the study area. The daily visibility for the NY-NJ region is recorded by the National Weather Service, Northeast Regional Climate Center from the Newark Airport (Essex County, NJ), the J.F. Kennedy Airport (Queens County, NY), LaGuardia Airport (Queens County, NY), and Central Park (Manhattan, NY). The recorded visibility for these locations ranges from limited visibility (ability to view objects less than one-quarter mile away only) to visibility greater than 10 miles (Schultz 1998). The NY Bight Apex study area is visible from Monmouth and Middlesex county shoreline regions in NJ and from Richmond, Kings, and Queens county shoreline regions in NY. Offshore visibility may be lessened in the spring months due to off-shore fog created by warm southerly flows of air passing over the cold ocean water.

c. The public access shoreline points and scenic viewpoints surrounding the NY Bight Apex study area may include community facilities such as schools, churches, libraries, community centers, parks, designated federal or state wild and scenic rivers, historic or recreational facilities, designated scenic viewing areas, wildlife areas, public foot trails, fishing piers, boat docks, boat access ramps and other designated open spaces. Consideration may also be given to the residential zones and all roadways or rail systems in relation to the project vicinity (NYECL 1987; Conner et al. 1979; and USACE 1996a).

d. Additionally, consideration may be given to the viewscape from the aquatic study area seen by the recreational fishermen and boaters using this area. General aesthetic degradation of the NY Bight Apex region is a major concern to this group (Conner et al. 1979). The Bays and waterways in the NY Bight Apex study area are used extensively by boat, barge, and freighter traffic of commercial and recreational interests. Boaters within and surrounding the NY Bight Apex study area may be in view of a dredged material disposal location.

e. Whether viewing the study area from the surrounding shorelines or waterways, the viewscape of the NY Bight Apex study area may include lightly traveled waterways, light air traffic, developed commercial shorelines, residential beach shorelines, and undeveloped shorelines.

4.3.1.16 RECREATION

a. The NY Bight Apex is the focal point for many recreational activities. NY and NJ shores are dotted with beaches, state and national recreation areas, wildlife refuges, and marinas. These areas along the coast provide recreational opportunities for the large nearby population. The recreational opportunities that occur in the Atlantic Ocean in the area of the NY Bight Apex include boating, sailing, scuba diving, surfing, swimming, bird watching, and surf and deepwater fishing, hence environmental quality and recreation are linked. Tourism was taken into account in the above topics (e.g., scuba diving, fishing), and will be taken into account in the Recreation sections for the rest of this chapter.

b. The most popular recreation activity in NY and NJ is swimming and sunbathing (Carls 1978). The Gateway National Recreation Area offers two locations in the NY Bight Apex region of the Atlantic Ocean for beach activities. These are Sandy Hook and Jamaica Bay/Breezy Point. Other beaches can be found in Queens County, including Rockaway Beach, Atlantic Beach, East Atlantic Beach, and Long Beach in Nassau County. In NJ, south of Sandy Hook, beaches are found in the towns of Highlands, Navesink, Sea Bright, Monmouth Beach, and Long Branch. Additionally, there are the units of the Gateway National Recreation Area at Sandy Hook (~4 miles) and at Breezy Point (~5 miles).

c. Long Island and NJ are famous for their surf and deepwater fishing. Fishing is among the most popular marine recreational activities and is important to many coastal town economies. A number of important recreational fishing grounds are found in the NY Bight Apex. Typical species landed include striped bass (*Morone saxatilis*), black sea bass, bluefish, weakfish (*Cynoscion regalis*), bluefin tuna, scup, summer flounder, and winter flounder (Grosslein and Azarovitz 1982). Anglers have the opportunity to fish from the beach and piers along the coast or from boats in the deeper waters of the ocean, such as Zone 3.

d. As many as 20 party boats (head boats) depart from several NY Ports to fish the Bight Apex waters. These ports include Captree, Freeport, Point Lookout, Gerritsen Beach, Howard Beach, Sheepshead Bay and Staten Island. Several charter boats, which can take as many passengers as party boats, also fish the Apex. Additionally, many small charter boats that carry up to 6 passengers also fish off shore in the bight. NJ also has a number of party boats and large and small charter boats that ply the Bight Apex waters for fish, several of which leave from ports along Raritan Bay. Fishing in Zone 3 is mainly for bluefish, although there are other zones where fishing is concentrated.

e. Scuba diving occurs throughout the NY Bight Apex where divers from PA, NY and NJ come to enjoy the shipwrecks, artificial reefs and marine life. These waters contain many shipwrecks dating from the 18th century to the present day. Estimates for the number of shipwrecks off the coast range between 4000 and 7000. These sites are popular with scuba divers for exploring historical wrecks as well as for observing the sea life that is attracted to these areas. Other popular dive sites in the Atlantic Ocean are the many artificial reefs that are constructed to provide habitat for sea life (NJSD 1998). The Professional Association of Diving Instructors (PADI), the largest dive certifying agency in the world, certified 5,000 and 10,000 individuals in NJ and NY respectively in 1997; each diver spends an average of

$200.00 for each certification course (The Undersea Journal 1993). There are an estimated 120-dive shop and certifying facilities in the counties surrounding the NY Bight Apex (Telephone directory search). The biggest attraction to diving in this area is the wreck dives. Scuba diving takes place year round, though summer months mark most frequent diving. According to Charternet.com there are approximately 18 scuba diving charters in NY and 11 in NJ within the vicinity of the study area. No prominent wrecks or structures for diving are known to be in Zone 3.

4.3.2 LOWER BAY COMPLEX

a. DMMP options investigated in the Lower Bay are CAD facilities and sub-channel CAD facilities. The use of CAD facilities was evaluated in Zones 1 and 2 and Ward's Point Bend in the Lower Bay Complex. Several of the techniques for Beneficial use/Habitat Restoration/Creation are also proposed for the Lower Bay, including the creation, enhancement, and restoration of wetlands, oyster reefs, and shellfish beds, and borrow pit restoration. Work connected with the restoration of wetland and borrow pits has been proposed for areas around, and within, Jamaica Bay. No specific sites have been designated yet for the oyster reefs or shellfish beds but they would probably be located in the Lower Bay Complex.

4.3.2.1 WATER COLUMN

a. Water column biota includes both phyto- and zooplankton. Species composition and density will vary throughout the year and will differ from those occurring in the NY Bight Apex. Differences from the Bight Apex include the planktonic stages of species of fish and shellfish that mainly reproduce in the Lower Bay Complex. The plankton will include invertebrates such as hard clam larvae, and fish larvae such as winter flounder that occupy the water column before settling to a life on the bottom.

4.3.2.2 BENTHOS

a. Sediment Profile Imagery (SPI) and Shipek/Smith McIntyre grab samples were utilized by the USACE to survey benthic habitat within Harbor (Figure 4-5) from October 1994 to February 1998 (Iocco et al. 2000). SPI is a vertical photograph of the sediment water interface showing various characteristics of the sediments (color texture, Redox Potential Discontinuity) and benthic community structure (burrows and tubes). Overhead pictures (plan view) were occasionally taken. The combination of SPI and benthic grabs provides a more complete analysis of the benthic community than either method would have provided independently.

4.3.2.2.1 Lower Bay

a. As with the NY Bight Apex, studies to determine the relative value of benthic areas were undertaken. The benthic environment of the Lower Bay can be described by using five general habitat classes: shell beds, *Ampelisca abdita* mats, sand, silt, and oligozoic. These are listed in descending order of ‘value’. Shell beds can contain either clams or mussels, or may contain both. *Ampelisca* mats are areas where thousands of tube-dwelling amphipods (in the genus *Ampelisca*) cover the surface of the sediments. Sand and silt habitats are based on grain size characteristics where sand is courser than silt. Oligozoic bottom substrate is characterized by no visible evidence of biological activity ecological conditions and sometimes shows bacterial growth.

b. Cerrato et al. (1989) found the amphipod *A. abdita* in high numbers throughout the year within a band of muddy sediments ranging from Sandy Hook Bay to Staten Island in a southeast to northwest direction. Moderate numbers were also collected in the northern portion of the Lower Bay, especially along Staten Island and in Gravesend Bay. In the sandy areas of Old Orchard Shoal, Flynns Knoll, Romer Shoal, and the East Bank, it was entirely absent or very low in numbers.

c. The shell beds described by Cerrato et al. (1989) consisted mainly of the blue mussel (*Mytilus edulis*) (second most abundant species taken in the study) and the soft-shell clam (*Mya arenaria*). The blue mussel was found mostly in the northern part of the Lower Bay being most prominent in the areas west and south of the tip of Coney Island and west of Rockaway Point. Their numbers were highest in the spring (mostly small juveniles) and declined steadily throughout the rest of the year. In addition, Sandy Hook Bay contained consistently moderate numbers all year long. The soft-shell clam was most abundant in Raritan Bay where, although not consistently taken within its inner reaches, a dense population was present year round. Three other bivalves of commercial value were also found in the Lower Bay. The hard clam (*Mercenaria mercenaria*) occurred in patches all over the Lower Bay, except in the southern half of Raritan Bay and the East Bank. The surf clam was collected all year long on a transect ranging form Rockaway Point to west of Sandy Hook, but mainly occurred on the East Bank shoal. It was also found during the summer and fall in sandy areas along the Staten Island and NJ coast. The oyster (*Crassostrea virginica*) was rare and was only found in isolated patches during the spring and summer.

d. Iocco et al. (2000) found the shell beds to be more diffuse, while being mainly composed of five species; *Mercenaria mercenaria*, *Mya arenaria*, *Mulinia lateralis* (small non-commercial surf clam), *Mytilis edulis*, and *C. virginica*. *Mercenaria* occurs all over Lower/Raritan/Sandy Hook Bay. *Spisula* occur mostly on the East Bank shoal. *Mytilus* is patchy but patches occur throughout the harbor. *Mya* is limited to Raritan and Sandy Hook Bays. Oysters are rare, to the point of being considered remarkable occurrences within the sampled areas (note: creek mouths were not sampled and oysters would be expected to be more likely to occur at those sites). At this level, USACE findings agree with those of Cerrato (1989). There was a large shell bed lying just north of the *Ampelisca* mat surrounding the Raritan Channel. This shell bed also ranged south bisecting the amphipod mat almost exactly in the middle. Several smaller shell beds were dispersed within the *Ampelisca* mats south of the Raritan Channel and in Sandy Hook Bay. Other shell beds were located near the West Bank pit, north of Hoffman Island, in and around the large East Bank pit, around both the little East Bank pit and the CAC pit, and at Romer Shoals. Hard clam, surf clam, and blue mussel dominated the shell beds to the north.

e. Oligozoic habitat was relatively rare. In the Lower Bay Complex (other than Jamaica Bay), oligozoic habitat was limited to three small areas in or just west of the West Bank pit (Clarke et al. *in prep.*). Silty sediment, which is finer than sandy sediment, was found mainly around Hoffman and Swinburne islands and at the CAC pit. The CAC pit generally contained sand or silty sediments with the bottom of the pit mostly silt and the rim of the pit sandy. The West Bank and the rest of the northern portion of the Bay was mainly silt and sand with small areas containing mixtures of silt, sand, and gravel. The East Bank and the rest of the northeast portion was also mostly sand with a few areas of silt, sandy silt, silty sand, and gravelly silt in and around the larger East Bank pit. The central portion of the Lower Bay was almost entirely sand with smaller areas of gravelly sand, silty sand, and sandy silt. The *Ampelisca* mat surrounding the Raritan Channel covered mainly silt and sandy silt bottoms, while some of the mat covered sand and silty sand. Most of the sand and gravelly sand sediments in the same area were covered with shell beds. The *Ampelisca* mat in Sandy Hook Bay almost exclusively covered sandy silt sediments.

f. Coch (1986) noted that Lower NY Bay contained three distinct regions of sediments separated by narrow gradational facies. The three regions were: the NY Bight Apex in the north and northeast, Sandy Hook Bay in the south, and Raritan Bay in the west. Sands with aprons of gravelly sands and patches of sandy gravel covered most of the bottom of the northern portion of the Lower Bay. These facies graded into the sands covering the apex of the NY Bight to the east and southeast. Silty sands underlay Sandy Hook Bay and graded into sand along the shoreline of NJ and Sandy Hook. Sandy clayey silt covered Raritan Bay and extended into the Raritan River estuary to the west and into the Arthur Kill to the northwest. These sediments graded into sands of the northern Lower Bay to the northeast and the sand along the NJ coast to the southeast.

g. A study of the benthos in the Lower Bay of the Harbor was conducted seasonally from 1986 to 1987 by Cerrato et al. (1989). Eighty-four sites were sampled extending from Raritan Bay, across to Sandy Hook, up to Rockaway Point, and across to the Verrazano Narrows. The sediments were variable ranging from 100% sand and gravel to silty clay. The amphipod *A. abdita* accounted for 55.8% of the total number collected, and the blue mussel ranked second at 18.6%. Other abundant species included the polychaetes *Asabellides oculata* and *Heteromastus filiformis*, soft shell clam, slipper shell *Crepidula fornicata*, and the amphipods *Corophium tuberculatum* and *Elasmopus levis*.

h. In benthic grab samples collected from October 1994 to February 1998 by Iocco et al. (2000), the amphipod *A. abdita*, and the polychaetes *Streblospio benedicti* and *Mediomastus ambiseta* were the most abundant species. Sandy and silty bottom substrates had fewer organisms and lower species diversity than the *Ampelisca* mats. Other abundant organisms were the amphipod *C. turberculatum*, the surf clam *M. lateralis*, the amethyst gem clam *Gemma gemma*, and the Atlantic nutclam *Nucula proxima*.

4.3.2.2.2 Jamaica Bay

a. An adjunct section of the Lower Bay Complex is Jamaica Bay, which was sampled by Iocco et al. (2000) in 1995 to 1997. Two benthic habitat classes, *Ampelisca* mats and Oligozoic dominated the Bay. *Ampelisca* mats were found throughout much of the Bay in its main channels (Runaway Channel, North Channel, Beach Channel, and the Raunt) and its other internal channels, where valuable fish and wildlife habitat exists. Amphipod and sandy habitats dominated salt marsh and natural tidal creeks. Surrounding the internal channels were highly degraded areas (Mill Basin west of the Belt Parkway, Paerdegat Basin, Hendrix Creek, the terminal end of Thurston Basin, Little Bay, Norton Basin, and Sommerville Basin) consisting of dead-end canals that are receptacles for sewage and landfill leachate. These Oligozoic areas contained bacterial mats, silty material, gas voids, and few benthic infauna. The one notable exception to the healthy habitat in the Bay proper is Grassy Bay, which was sampled by SPI imagery. Large portions of Grassy Bay exhibited signs of a degraded environment with methane gas pockets and bacterial mats associated with low or no dissolved oxygen. The excavation in association with the construction of Idlewild (JFK) Airport changed the circulation patterns and water exchange rate in Grassy Bay causing the degradation of the benthic habitat. Additional confirmatory sampling would be undertaken if these sites were selected for potential use.

4.3.2.3 FISH AND MEGAINVERTEBRATES

a. A report for the Harbor Estuary Program (Woodhead 1991) identified some 101 species of fish, mainly from the marine environment present within the study area. Some 60 species were found by trawl in lower NY Bay (Lower Bay), where bottom salinity averages 30 ppt. In relative terms the highest abundance and diversity were reported in dredged channels.

b. NMFS (Wilk et al. 1998) has conducted sampling of adult and older juvenile fish and megainvertebrates for the last 6+ years (Table 4-7). Six species of fish and megainvertebrates have cumulatively dominated (greater than 90% of the catch number and weight). These species are subject to Fishery Management Plans associated with EFH provisions of the reauthorized MSFCMA. Designation of the habitats occurred later in 1999 for the Port waters landward of the Sandy Hook/Rockaway Peninsula transect.

c. Among the invertebrates, three species of crab were found in substantial numbers, the Atlantic rock crab (*Cancer irroratus*), blue crab (*Calinectes sapidus*), and lady crab (*Ovalipes ocellatus*). Longfin squid (*Loligo pealei*) was also found.

d. Some 22 species of fish dominated the catch of finfish, and included three species each of skates, cod family fish, and flounder, as well as two species each of searobin (*Prionotus*), temperate bass (Percichthyidae family), herring, and Atlantic croaker (*Micropogonias undulates)*. Other important species included the scup (porgy), butterfish, tautog (blackfish) (*Tautoga onitis*), bluefish, and bay anchovy (*Anchoa mitchilli*). Table 4-7 lists those species that comprised the greatest percentage (>90%) of the catch during the NMFS survey based upon 6+ years of data collection (Wilk et al. 1998).

e. The channels were used proportionately more than the 'flats' by those species that dominated the catch, especially in the winter. Reasons for this have not been firmly established but could include the presence of food, thermal refuge, structure, salinity, depth preference, predator avoidance and availability of migratory pathway. A substantial number of species and individuals were collected on the flats, but they tended not to be as concentrated as in the channels.

f. Invertebrates such as the blue crab utilized channels in the Lower Bay Complex, the flats south of the Raritan Channel, Sandy Hook Bay and the area south of the Verrazano Bridge, and to a lesser extent an area just north and west of Hoffman Island. They were also collected in other scattered locations, but not in substantial numbers. Atlantic rock crab, and to a greater extent lady crab were more widely scattered in the Lower Bay Complex. These two crab species were found on the flats during spring, and in the summer also.

g. Species such as the red hake and silver hake showed a stronger affinity for channels in all seasons when present. These species are more associated with ocean environment and its higher salinity. Species such as the scup, while found in relatively high numbers in the channels, were also found on the flats, occasionally in numbers/trawl similar to the channel catches.

h. Flatfish such as the summer flounder, winter flounder, and windowpane were found throughout the sampling area. Concentrations of summer flounder occurred in the Raritan channel, and south of it in the flats, and Sandy Hook Bay, as well as, near Hoffman and Swinburne Islands, and just south of the Verrazano Bridge. The flats north of the Raritan Channel and west of the Chapel Hill Channel in the vicinity of Zone 2 were most often utilized in summer.

i. Winter flounder exhibited a pattern similar to that of summer flounder with regard to favoring channels, Sandy Hook Bay, and the area just south of the Verrazano Bridge, but unlike summer flounder, they were also concentrated in the Red Bank reach of the Raritan Channel, Ambrose Channel, and large East Bank Pit. Some utilization of the Lower Bay Complex flats in Zone 1 and Zone 2 occurred especially in winter and spring (Figure 3-3).

j. Windowpane generally showed a strong affinity for channels, as well as for Sandy Hook Bay. They also used the flats associated with Zones 1, and 2.

k. Recent studies (Wilk et al. 1997, Clarke et al. *in prep.*) have shown fish use in all the Lower Bay CAD pits. They have not been characterized to the extent that differences or similarities can be definitively demonstrated. Results from Clarke et al. (in prep) and others indicated that the CAC pit is well mixed (unstratified) from top to bottom for temperature and salinity during sampling in various seasons.

l. A survey of finfish in Jamaica Bay was conducted by the National Park Service, in cooperation with the USFWS, in 1985–86, and 1988–89, which updated studies performed by Texas Instruments and the NY Aquarium. A total of 81 species of finfish were found using otter trawl, gill net and beach seines. Environmental and other variables were recorded, e.g., temperature salinity, pH, dissolved oxygen, total and fecal coliforms, and chlorophyll *a*.

m. Most species of finfish caught in Jamaica Bay were juveniles utilizing the bay as a nursery. Winter flounder dominated the otter trawl catch, accounting for almost half (44.7%) of the fish caught in 1985–86. Lesser dominants (4.5 to 9.6%) taken by otter trawl in 1985–86 were summer flounder, tautog, windowpane, grubby (*Myoxocephalus aenaeus*), weakfish, bay anchovy, and scup. Winter flounder again dominated during the 1988–89 effort. Other species that contributed substantially to the otter trawl catch during both sampling periods were red hake, bay anchovy, blueback herring (*Alosa aestivalis*), American eel (*Anguilla rostrata*), weakfish, scup, black sea bass, striped bass, spotted hake, striped searobin (*Prionotus evolans*), grubby, butterfish, and cunner (*Tautogolabrus adspersus*).

n. Dominant fish species caught by beach seines in 1985–86 were silversides (*Menidia* spp.), mummichog (*Fundulus heteroclitus*), striped killifish (*Fundulus majalis*), and juvenile bluefish. Limited gill netting showed that six species dominated; they were, menhaden (*Brevoortia tyrannus*), winter flounder, summer flounder, bluefish, scup, and tautog. Individual samples were quite variable depending on location within the bay, season, and sampling period.

4.3.2.4 AMPHIBIANS AND REPTILES

a. No amphibians are present in the Bight Apex ocean environment, and reptiles are represented only by the diamondback terrapin (*Malaclemys terrapin*) and sea turtles. The diamondback terrapin is found in the marshes of the Lower Bay complex and in Jamaica Bay. It prefers lower salinity waters (3–7 ppt.). Its population is considered stable in the Lower Bay Complex (USFWS 1997). Sea turtles are covered under the Federal Endangered Species Act and are discussed under the topic Endangered Species (4.3.2.7 below).

4.3.2.5 BIRDS

4.3.2.5.1 Waterbirds

a. While many bird species fly over the Lower Bay Complex during the northbound and southbound migrations, it is chiefly waterbirds that use the area of the Lower Bay Complex for feeding. Species most likely to use this zone are two species of loons, two species of grebes and two species of cormorant. These species utilize the complex in the winter months, although the double-crested cormorant (*Phalacrocorax auritus*) has in recent years begun to nest in larger numbers in the Port area. These species feed on small fish. Additionally, the fringe of the complex shallow waters especially in salt marsh areas provide feeding habitat for some 10 species of herons and allied species. They feed on a relatively wide range of invertebrates and vertebrates. These species will nest in appropriate habitat on the fringe of the Lower Bay Complex. Other groups that utilize the complex in winter include several species of ducks such as bufflehead (*Bucephala albeola*), and greater scaup (*Aythya marila*).

4.3.2.5.2 Shorebirds

a. The other large group of species to utilize the waters of the Lower Bay Complex includes over 25 species of shorebird. These shorebirds (e.g., plovers, oystercatchers, and sandpipers) feed on a variety of invertebrates at the waters edge. Most of these migrate through the area to breeding grounds in or near the arctic. Several species of shorebirds nest in the Port area, including: American oystercatcher, willet, killdeer, spotted sandpiper and piping plover (Andrle and Carrol 1988).

4.3.2.5.3 Gulls/Terns

a. Two species of gulls, herring gull (*Larus argentatus*) and greater black-backed gull (*Larus marinus*) are found year-round. They are opportunistic feeders, whose diet ranges from storm deposited species such as several types of mollusks and starfish to scavenging for scraps of food left by humans. Additionally, the laughing gull (*Larus atricilla*) nests within marshes of Jamaica Bay. The terns (common, roseate and least) mainly target living prey namely small species of fish. These species of gulls and terns and the black skimmer (*Rynchops niger*) utilize the study area for nesting.

4.3.2.6 MAMMALS

a. Great whales rarely visit inside the baseline, as discussed in the Endangered Species section (Section 4.3.1.7). The humpbacked whale is the most likely visitor based upon past sightings. The Lower Bay Complex waters are occasionally visited by several species of small toothed whale including the bottlenosed, and common dolphin, and harbor porpoise. The commonly occurring seal inward of the baseline is the harbor seal (*Phoca vitulina*), and increasingly the gray seal (*Halichoerus grypus*).

4.3.2.7 ENDANGERED SPECIES

a. Federally listed species in the Lower Bay Complex, under consideration for each dredged material disposal option, are limited to those which may be expected in the area.

4.3.2.7.1 Fish

a. A species of concern not yet listed or nominated is the Atlantic sturgeon (*Acipenser oxyrhynchus*). This fish has declined substantially in population. Currently there is a moratorium on taking this species from the Hudson River estuary.

b. The short-nosed sturgeon (*Acipenser brevirostrum*) is found in the Hudson River system. Its preferred habitat is characterized by salinity up to 3 ppt. As a result, it is only rarely encountered in the Lower Bay Complex. Occurrence there is most likely during and just after freshets, especially in spring when snowmelt from the Hudson river and its drainage may depress salinity in the Lower Bay and other embayments in the Port area.

4.3.2.7.2 Reptiles, Sea Turtles

a. The most likely species of sea turtles to be found in the Lower Bay Complex are the Kemp's Ridley, and the loggerhead sea turtle. Occasionally a green sea turtle may also be found in the Lower Bay Complex, while leatherback sea turtles are less likely to visit the area. This species feeds opportunistically during the course of its migration.

4.3.2.7.3 Birds

Peregrine Falcon

a. The peregrine falcon (*Falco peregrinus*) was removed from the Federal Endangered Species list, but will be monitored by USFWS until at least the year 2010. It nests within the study area and three nesting sites border the Lower Bay Complex at the Outerbridge Crossing, Staten Island, the Verrazano Bridge (at the narrows between Upper and Lower Bay

Complexes) and the Gil Hodges Memorial Bridge (Jamaica Bay). The nesting adults stay in the vicinity of the Bight during winter. Further, the NY/NJ metropolitan area is important, in that it is along the migratory route for the highly migratory subspecies (*tundrius*) which nests in Canada. This subspecies feeds opportunistically during its migration.

Bald Eagle

a. The bald eagle does not nest in the study area. Both subspecies of bald eagle do migrate through the area, and the northern subspecies of bald eagle occasionally overwinters in the Bight area. Its most important overwintering areas in the vicinity of the study area are the Hudson River north of the Tappan Zee Bridge, and the Catskill Reservoirs (USFWS 1997). The northern subspecies continues to rebound, but future nesting in the general vicinity of the Lower Bay Complex (adjacent to Zones 1 and 2) is unlikely, due to the density and activity of the human population.

Piping Plover

a. Nesting by piping plovers does occur at Sandy Hook and Rockaway Point. This species' coastal subspecies is listed as threatened under Federal law. It nests and feeds along beaches. The Federally-listed roseate tern occasionally is found in the vicinity, and nesting was confirmed at Breezy Point in 1997, with feeding areas likely to be nearshore adjacent to nesting areas.

4.3.2.7.4 Marine Mammals, Whales

a. Six species of great whales are found in the in the NY Bight. They are less common in the Bight Apex, and their presence landward of the Sandy Hook to Rockaway Point baseline is highly unlikely. An exception is the humpback whale, which has been found in NY Harbor, although its occurrence is rare.

4.3.2.8 ESSENTIAL FISH HABITAT

a. There are five EFH grid cells within the Lower Bay Complex. Some 18 species have been identified as having EFH in this complex. Winter flounder and windowpane were designated in each grid cell for all life stages. Scup was in four of five grid cells for all life stages and for two life stages in the other grid cell. Also designated in most grid cells for most life stages were red hake, summer flounder and sandbar shark. Two other species bluefish and Atlantic mackerel also had a high number of designations within the Lower Bay Complex.

4.3.2.9 CULTURAL RESOURCES

4.3.2.9.1 Prehistoric

a. As with the NY Bight Apex, a geomorphological study was conducted to assess the potential for prehistoric resources for the CAD pits, in-channel and island options. Analysis suggests that all areas examined have some potential to preserve prehistoric sites although some are more sensitive than others (LaPorta et al.1998). All of Zones 1 and 2 have been rated to have a "high potential" for significant resources. This part of the continental shelf could have been subject to rapid flooding and sedimentation during the Holocene sea-level rise, which would have preserved prehistoric sites. Ward's Point was also rated to have a "high potential" for significant resources. Several Native American archaeological sites have been recorded in the Jamaica Bay area and the NY State Museum considers this location sensitive for prehistoric resources, including areas now filled or inundated (Black 1981, Brighton 1993). Other locations proposed for beneficial use will require cultural resource surveys.

4.3.2.9.2 Historic

a. Background historical research and a magnetic and acoustic remote sensing survey were conducted in March and April 1998 for Zones 1A, 1B, 1C and 2. No underwater archaeological investigations were undertaken. Data analysis suggests that four targets show characteristics suggestive of cultural resources, possibly shipwrecks (Cox 1998). Two are in Zone 1 and two "hits" in Zone 2 have the potential to be submerged cultural resources (Cox 1998). Current project plans call for the avoidance of targets and anomalies within the project area but if avoidance is not a viable option, additional archaeological investigations of the identified targets will be undertaken. Remote sensing was not conducted for Ward's Point Bend, as dredging of the channel would have disturbed any historic resources. Historic resources may be an issue with Beneficial use in the form of shipwrecks in the areas proposed for restoration. Restoration work in nearshore areas around Jamaica Bay has the potential to impact historic resources such as piers, bulkheads and other shoreline structures. Other locations proposed for beneficial use will require cultural resources surveys.

4.3.2.9.3 Existing Pits

a. Existing borrow pits represent a disturbed environment from a cultural resources point of view. Any cultural resources that may have existed in these pits would have been significantly disturbed, if not completely destroyed, by sand mining activities. It is unlikely that intact cultural resources eligible for listing on the NRHP will remain in existing borrow pits if all disposal activities are limited to areas previously disturbed by pit construction. Additional cultural resources studies may be necessary if additional excavation is required.

4.3.2.10 SOCIO-ECONOMICS

4.3.2.10.1 Shipping

a. During 1996, more than 51 million tons of ocean-borne cargo passed through the Port of NY/NJ. During 1996, the regional monetary impact of the Port and its dependent activities was estimated at more than $25 billion, and 229,000 direct and indirect Port-related jobs.

4.3.2.10.2 Commercial Fishing

a. Commercial fishing in the Lower Bight Apex includes harvesting of finfish such as summer flounder, shellfish such as hard clam, and crustaceans such as blue crabs. Hard-clam harvest data from the Lower Bay within NY waters are provided in Table 4-8. The harvested clams are depurated before sale. The economic return to the State of NY from this program ranges form $12.5 to $20 million (NYSDEC 2000).

4.3.2.10.3 Recreational Fishing

a. Recreational fishing in the Lower Bay Complex includes bottom fish such as flounder species (summer and winter), tautog, black sea bass, and scup, and those that feed at various water column depths such as weakfish, bluefish, and striped bass. The NY/NJ metropolitan area has at least 750,000 saltwater recreational fishermen.

4.3.2.11 WATER QUALITY

a. The Lower Bay-Estuary portion of the study area is a dynamic estuarine system that acts as a catchment from natural and man-induced inputs originating mainly from the Hudson River, with the Raritan River and its drainage basin also contributing substantially to the flow. The Bay complex is relatively shallow (5–20 m or 16–66 ft) but has an irregular topography, due mainly to the numerous ship channels and sand borrow pits in Lower and Raritan bays. Sediment quality is discussed under both the biota and water quality sections, since these are the elements affected by sediment quality.

b. Sewage effluent from the NY Metropolitan area is the principal source for the high concentrations of nutrients observed in the Lower Bay Complex. Tributary, urban runoff, and accidental spills are also notable sources of nutrient contamination. A large fraction of these nutrients are consumed in biological processes occurring within the Lower Bay Complex. There is a net transport of nutrients and chlorophyll *a* to the apex of NY Bight. The nutrients originating from the Lower Bay Complex and transported seaward have been implicated as an important factor leading to the decline in oxygen in the bottom waters of the Bight during summer periods (O'Connor et al. 1977).

c. Waters of the Lower Bay Complex exchange and mix with the waters of Upper Bay, mainly through the narrow constriction between Brooklyn and Staten Island (appropriately named The Narrows) and with the open ocean, through the relatively wide (~10 km or 5.4 mi) opening between Sandy Hook, NJ, and Rockaway Point, Long Island, (the Sandy Hook-Rockaway point transect). The Arthur Kill, a tidal canal along the West Side of Staten Island, shunts a small amount of Upper Bay waters to Raritan Bay.

4.3.2.11.1 Physical Properties

a. Physical properties considered in this document are temperature, light, turbidity, and salinity.

Temperature

a. The distribution of temperature during November shows that the more saline bottom waters were warmer (12.6º to 13ºC) than the less saline surface waters whose tidally average temperatures were between 11.6º and 12ºC. In January, a similar temperature inversion is present, but the entire water column cooled to 3.6º to 5ºC. In March, the water column warms slightly but is near isothermal from top to bottom, with tidally averaged temperatures ranging between 5.4º and 5.7ºC. In April, tidally averaged surface temperatures increased to 9ºC. The bottom temperatures in the water column had increased substantially; in June, tidally averaged surface temperatures were at 17ºC and bottom temperatures at 15.8ºC.

Turbidity

a. Suspended solids (measured as turbidity) concentrations also showed some variability. The highest concentrations are usually found between Sandy Hook and Ambrose Channel, but are not necessarily associated with peak fresh water discharge. Seventy-seven (77) percent of the suspended solids load is contributed by the tributaries in the area, 94% of which is contributed by the Hudson River. Wastewater contributes about 14% of the total load, and urban runoff the remainder. The major source of oxygen-demanding organic load (i.e., biological oxygen demand [BOD]) emanated from wastewater, compromising 71% of the total load.

Salinity

a. Salinity in the Lower Bay Complex varies seasonally, daily and annually. The non-tidal estuarine circulation largely determines seasonal salinity distribution. NOAA conducted a study in 1979 to collect salinity measurements in the Lower Bay between Sandy Hook and Rockaway Point (NOAA 1979). According to the study, the seasonally and tidal averaged salinities associated with the Bight-ward flow at the surface from Sandy Hook to near the middle of the Sandy Hook–Rockaway Point transect, are approximately 24 ppt in the summer, and greater than 22 ppt in the winter. Salinities greater than 27 ppt in the summer months and 29 ppt in the winter months were observed to be associated with the flow at near the bottom near Sandy Hook. Fresh water entering the Lower Bay Complex along with salt-water encroachment influences the salinity levels. The semidiurnal tides cause the salinity to vary, with surface salinity ranging from 18–27 ppt, and bottom salinity from 24–34 ppt after the flood tide. After ebb tide, bottom salinities even out and range from 28–31 ppt and the surface salinities range from 9–24 ppt. It is thought that salinities may change annually due to storm events and flooding, though no annual figures could be found.

b. Fresh water entering the Lower Bay Complex, along with salt-water encroachment, affects the salinity levels. Research conducted by NOAA in the Lower Bay Complex shows that peak river flows during spring warming correspond to rapidly decreasing salinity. Minimum salinity occurs about one month after the peak discharge. Tides affect the flow of the Hudson all the way to Green Island. Large fluctuations also exist in annual mean flows of the Hudson, Raritan, and Passaic Rivers. In 1965, there was a dramatic decrease in discharge of the Hudson and Passaic Rivers, which resulted in a decrease in the flushing of the Lower Bay Complex.

c. In a typical estuary, horizontal density gradients caused by salinity gradients are established by fresh water inputs at the head of the estuary (Pritchard 1952, 1954, and 1956). Gravitational forces associated with these gradients maintain a net circulation in which the upper, less saline layer moves seaward and the lower, more saline layer moves up the estuary. As the bottom saline water flows upstream, it mixes vertically and becomes entrained in the overlying waters, to be carried seaward. In the lower Hudson estuary, a two-layer flow is known to be well developed (Abood 1972, Overland 1973).

d. Fresh water discharge from the Raritan River produces an east-west salinity gradient that drives the estuarine circulation, consisting of a modest flow of saline waters westward near the bottom. These waters enter the Lower Bay through Sandy Hook channel and remain confined to the channel as they flow westward. Some saline waters may also enter the Raritan Bay through Chapel Hill and Swash channels. In addition to these deep flows, there is a seaward drift of freshwater confined to the south side of Raritan Bay. It is separated horizontally from the westward flow of slightly more saline waters.

e. In addition to riverine inputs, the Lower Bay Complex receives fresh water from rain and snow. During the winter, total precipitation exceeds evaporation; in the summer, evaporation is greater than precipitation, both affecting the salinity of the complex. It has been calculated that fresh water input from precipitation for the Lower Bay Complex amounts to about 4.3 cubic meters per second (m^3/sec).

f. The Lower Bay Complex also receives a considerable volume of fresh water from sewage effluent and city street runoff. Data from sewage treatment records indicate that about 60 m^3/sec of treated and untreated effluent is discharged into the local waters surrounding the NY metropolitan area (Interstate Sanitation Commission 1994). The frequency, intensity, and duration of episodic rainstorms have notable effects on the concentrations of pollutants and amounts of fresh water entering the Lower Bay Complex.

g. A study conducted between October 1973 and June 1974 by the Marine Science Research Center (MSRC) (Duedall et al. 1979) at Stony Brook determined the tidal variability in water properties of the Lower Bay complex. The center found that the Bightward flow of Hudson-Raritan waters in the surface layer near Sandy Hook, accompanied by the harbor flow of Bight waters at depth near Sandy Hook and throughout the water column near Rockaway Point, produced the observed salinity gradient across the Sandy Hook-Rockaway Point transect. Salinities less than 24 ppt, associated with the Bightward flow, extend at the surface from Sandy Hook to near the middle of the Sandy Hook–Rockaway Point transect. Salinities greater than 27 ppt were observed to be associated with the flow near the bottom in the vicinity of Sandy Hook and from surface to bottom over the northward third of the channel. The maximum tidal averaged salinities were observed at depths greater than 5 m (16 ft) in Ambrose Channel and near Rockaway Point and were associated with harbor-ward flow.

h. The movement of salt into Raritan Bay is confined to depths greater than 4 m (13 ft) in Sandy Hook channel; similarly, high salinity waters were observed to be confined to the south side of Rockaway Inlet. The distribution of tidally averaged salinity in the Narrows showed the accepted increase in salinity with depth.

i. Seasonal variation in tidal salinities show salinity is more variable near Sandy Hook, due to the seasonal variation of freshwater entering the Lower Bay Complex. High salinity is seen in the waters near Rockaway Point and low salinity estuarine waters near Sandy Hook.

4.3.2.11.2 Chemical and Biological Properties

Nutrients and Chlorophyll a

a. According to the aforementioned study by MRSC, tidal water properties in the complex, except for nitrate concentrations, are primarily associated with riverine input (Duedall et al. 1979). The distributions of tidally averaged nutrient concentrations were observed to be associated with the lower salinity waters, resulting from the introduction of these nutrients with sewage effluent. Similarly, the distribution of chlorophyll concentrations corresponds to that of lower salinity waters. However the most likely source of chlorophyll *a* concentrations in the Sandy Hook-Rockaway Point transect was the very high concentrations observed in Raritan Bay near Sandy Hook (Parker 1976). Tidally averaged concentrations of chlorophyll *a* in the Narrows and in Rockaway inlet were much lower than those observed in Raritan Bay or the Sandy Hook-Rockaway Point transects.

b. Seasonal variations in nutrients and chlorophyll *a* concentrations are wider between Sandy Hook and Ambrose Channel due to the combined effects of seasonal variation in biological and physical processes, such as variations in freshwater flow from the Hudson, and advection of Raritan Bay waters into the transect. Jeffreys (1962) described the nitrate and phosphate chemistry on Raritan Bay where he found an apparent rapid regeneration of phosphate relative to nitrate. This rapid renewal of phosphate along with the relative sluggish circulation was suggested as an important factor leading to the observed dense populations of phytoplankton. Parker (1976) calculated that in Raritan Bay, ammonium and other nutrients advected from Lower Bay are biologically consumed. They also calculated that the Raritan Bay exports chlorophyll *a*. Thomas et al., through personal communications with NOAA, reported record high values of 700 to 1050 grams (g) carbon-m^2/yr of primary productivity for Raritan Bay. This indicates that the Raritan Bay is capable of absorbing by biological processes a notable fraction of the nutrients discharged from sewage (NOAA 1979).

c. The primary sources of microbial load to the Hudson–Raritan Estuary are raw municipal wastewater and urban runoff from combined sewer overflows (CSOs). The pathogens chapter of the HEP CCMP estimates that 89% of the bacteriological loadings to the harbor are from CSOs.

4.3.2.12 GROUNDWATER

a. Although saltwater migration into groundwater aquifers has not been studied under the waterbodies of the Lower Bay Complex, information is available regarding salt-water intrusion into the aquifers of surrounding landmasses. Over-pumping of the Coastal Plain aquifers has resulted in the development of large regional cones of depression and a corresponding increase in the chloride concentration of the aquifer. The most extensive cone of depression is present in the Potomac–Raritan–Magothy aquifer system (NJDEP 1995). A well study performed on Staten Island in 1953 also found impacts due to saltwater intrusion (USGS 1988). In Brooklyn and Queens, significant improvement in encroachment has occurred owing to years of aquifer recovery after most commercial pumpage has ceased. Indeed, recovery of the aquifers has raised groundwater levels to the point that flooding is occurring in certain NYC subway systems (USGS 1999a).

4.3.2.13 AIR QUALITY

a. Air quality in the Lower Bay–Estuary is also directly related to the air quality of the surrounding landmasses: Staten Island, NY, and Monmouth, Middlesex NJ, Essex NJ, Union NJ, and Hudson counties, NJ. USEPA Monitoring sites C1-1, SP-1, SP-2, SP-3, and SC-4 are all located south of Staten Island and west of Brooklyn. Sites SP-4, SP-5, and SC-1 are located within Newark Bay. Surrounding landmasses are comprised of Essex, Union, and Hudson counties NJ. Air quality in Staten Island, Brooklyn, and Monmouth County has been previously discussed within the NY Bight Apex section.

b. Middlesex County contains six monitoring stations, which collect data for six air parameters in all. This county is part of the Suburban Pollutants Standards Index Reporting Region of northern NJ. Within this reporting region there were two unhealthful days and four days approaching unhealthful in 1996. Also, on July 14, 1996, O_3 was rated as unhealthful for that day and exceeded or approached the health standard for this parameter (NJDEP 1997a).

c. In monitoring year 1996, Middlesex County was in non-attainment for ozone under the National Secondary (Welfare) Standard and was designated as "Severe 2" with a design value of 0.191–0.279 ppm. The attainment date for this parameter is November 15, 2007. Pb, NO2, and PM-10 were not designated as non-attainment for Middlesex County, while both SO2 and CO are in attainment as of 1996 (NJDEP 1997a).

d. According to the 1996 Air Quality Report from the NJDEP Bureau of Air Monitoring, Middlesex County had no violations or did not exceed the standard for the following parameters; SO_2, PM-10, CO, and Pb. Violations were placed for exceeding both the Primary (Health) and Secondary (Welfare) Standards for O_3 in monitoring year 1996. Also, a violation was noted for the TSP parameter, which exceeded the Secondary (Welfare) Standard in 1996 (NJDEP 1997a).

e. Essex County in Northern NJ is located in the Southern Metropolitan Pollutant Standard Index Reporting Region. Essex County in 1996 was in non-attainment for CO under the National Primary (Health) Standard and had been designated as "Moderate 2" with a design value of 12.8–16.4 ppm. Ozone was also in non-attainment for the National Primary (Health) Standard with a design value of 0.191–0.279 ppm, which is classified as "Severe 2". The attainment date for this parameter is November 15, 2007. The remaining parameters Pb, O_3, and PM-10 have not been designated as non-attainment for this county (NJDEP 1997a).

f. Essex County utilizes four monitoring sites, one located in East Orange and three in Newark. These sites monitor for ten different parameters pertaining to the NJ Air Monitoring Program. Essex County had no violations for the following parameters in monitoring year 1996; SO2, PM-10, CO, NOX, Pb, or smoke shade (SS). The National Secondary (Welfare) Standard was exceeded for both TSP and O_3 therefore; Essex County had violations placed for both parameters as of 1996 (NJDEP 1997a). For monitoring year 1996 the Southern Metropolitan region had two unhealthful days and four approaching unhealthful (NJDEP 1997a).

4.3.2.14 NOISE

a. A variety of activities contribute to background ambient noise. The Lower Bay Complex is part of one of the world's busiest seaports (Hammon 1976), and it is also used for sand and gravel mining (Schlee and Sanko 1975). Sport and commercial fisheries are major activities in the Raritan Bay and thousands of people annually enjoy swimming and recreational boating in the Lower and Raritan Bays. In addition to water-based industry and recreational activity, the complex is exposed to air traffic overflights and vehicular traffic. Results of a vehicular noise study conducted in Monmouth County, NJ, are presented in Table 4-9.

4.3.2.15 AESTHETICS

a. The existing aesthetic view for this study area can again be described as the visible surrounding land and water use. For establishing the aesthetic environment in the Lower Bay Complex study area, particular consideration is given to the direct view of the aquatic project site(s) from the public and private access shoreline points and scenic viewpoints encompassing the study area. This view is based on the atmospheric visibility. The National Weather Service, Northeast Regional Climate Center, records daily visibility from the Newark Airport (Essex County, NJ). The recorded visibility for this location ranges from limited visibility (less than one-quarter mile viewing distance) to greater than ten miles. The Newark Airport site has, on average, 17 days of limited visibility per year. On any typical day the visibility is recorded as greater than 10 miles (Schultz 1998). The Lower Bay study area is visible from Monmouth, Middlesex, Union, and Hudson county shoreline regions in NJ and from Richmond and Kings county shoreline regions in NY. During the spring months, offshore visibility may be decreased due to coastal fog.

b. Public access to shoreline points and scenic viewpoints surrounding the Lower Bay Complex include community facilities such as schools, churches, libraries, community centers, parks, designated Federal or state wild and scenic rivers, historic or recreational facilities, designated scenic viewing areas, wildlife areas, public foot trails, fishing piers, boat docks, boat access ramps and other designated open spaces. Consideration may be given to the residential zones and all roadways or rail systems in relation to the project vicinity, as well (Conner et al. 1979, NYECL 1987,; and USACE 1996a).

c. Consideration also may be given to the viewscape from the aquatic study area by the recreational fishermen and boaters using the Lower Bay area. The bays and waterways in the Lower Bay study area are used extensively by boat, barge, and freighter traffic of commercial and recreational interests. The waterways around Richmond County, NY, also are used by tourist cruise liners. Anyone traveling the Lower Bay Complex waterways or the surrounding waterways may be in view of the Lower Bay study area disposal sites that would be at or above the surface.

d. The Lower Bay viewscape from either the shoreline or the waterway may include the following: heavy boat traffic along the bay channels; moderate boat traffic elsewhere in the bays and rivers; moderate air traffic; residential and commercially developed beaches; undeveloped, moderately developed, and heavily developed shorelines. Features of the horizon include; Hoffman Island and Swinburne Island (Lower Bay); Verrazano–Narrows Bridge, Outerbridge Crossing, Goethals Bridge, and Shooters Island (Arthur Kill); NJ Turnpike Extension Bridge (Newark Bay); and Bayonne Bridge (Kill Van Kull).

4.3.2.16 RECREATION

a. The Lower Bay Complex supports a wide variety of recreational uses for a large number of people in NJ and NY. Activities include swimming, surf fishing, scuba diving, sailing, and bird watching. Many clubs and businesses that support recreational uses, such as boating, fishing, surfing, and scuba diving, can be found in the coastal towns bordering the bay; hence environmental issues and recreation are linked.

b. In NY and NJ, swimming is the most popular outdoor recreation (Carls 1978). The NJDEP monitors water quality at all designated recreational beaches along the NJ coastline of the Raritan Bay. Swimming areas are maintained at seven beaches in NJ in the towns of Keansburg, Middletown, Leonardo, Highlands, and the Sandy Hook Unit of Gateway National Recreation Area (Loftin 1998). Large numbers of bathers visit the Gateway National Recreation Area where the National Parks Service maintains miles of beach in both Queens County, and Richmond County, NY. Public beaches at Coney Island in Brooklyn provide access to the bay for many NY City residents (National Park Service 1998).

c. Coney Island and Gateway National Recreation Area, two major recreation destinations of New Yorkers, provide miles of access to the water and beaches of the bay. The National Park Service maintains nature trails in Great Kills Park along the western shore of the Lower Bay. Swimming, bird watching, and surf fishing occur in the parks and recreation areas along its shores. Trails provide an opportunity for bird watchers to view the birds that nest within the Lower Bay. Hoffman and Swinburne islands, which are maintained by the National Park service, are nesting sanctuaries for many native bird species. They are not open to the public.

d. The Lower Bay Complex contains fishing grounds used by a large number of recreational fishermen from NY and NJ. Weakfish, bluefish, winter flounder, summer flounder, black sea bass, and striped bass are among the most popular species. Most of the primary fishing areas are concentrated near the intersection of the Chapel Hill South Channel, Raritan Bay Channel (Figley and McCloy 1988), Sandy Hook Bay, Old Orchard Shoal, Flynn's Knoll, and Romer Shoal. These primary fishing areas are mostly accessed by boat. Much fishing, however, occurs from piers and beaches along the bay's coastline. The NJ Department of Environmental Protection has detected high levels of PCBs and certain pesticides in fish taken from the Raritan Bay.

4.3.3 UPPER BAY COMPLEX

a. Several options are under consideration for potential disposal of dredged material in the Upper Bay Complex. The options include contained aquatic disposal such as sub-channel placement, and confined disposal facilities such as nearshore fill. Additional options under consideration include decontamination processes, land remediation and habitat restoration. Past studies including those directly associated with the DMMP were used in site determination.

4.3.3.1 WATER COLUMN

4.3.3.1.1 Upper Bay

a. The water column within the Upper Bay contains varying amounts of silt. Turbidity is partially dependent upon silt and plankton blooms. Rainfall from the upstream Hudson River watershed causes erosion and contributes the vast amount of the silt to the Upper Bay. Mixing of the water column will be substantial most of the time, due to the downstream currents from the Hudson coupled with the twice-daily tidal exchange.

b. Dissolved oxygen will also vary with biological and chemical oxygen demand associated with rainfall, CSOs, and non-point source runoff. Also influencing dissolved oxygen are those seasonal changes associated with air temperature, and hence water temperature, with higher oxygen readings occurring when water temperatures are lowest.

c. The biota of the water column will contain both phytoplankton and zooplankton. The species composition and density will vary throughout the year. Some of the plankton will include invertebrates such as hard clam larvae, and fish larvae such as winter flounder.

4.3.3.1.2 Arthur Kill/Kill Van Kull/Newark Bay

a. The water column within the Arthur Kill, Kill Van Kull/Newark Bay contains varying amounts of silt. Turbidity is partially dependent upon silt and plankton blooms. Turbidity is related to rainfall upstream from the Hackensack and Passaic, increasing sediment and plankton blooms. Mixing of the water column is usually substantial for several reasons, which include the downstream currents from these rivers, the shallowness of substantial portions of Newark Bay, and tidal exchange. Mixing on both Arthur Kill and Kill Van Kull occurs mainly due to the twice-daily tidal exchange.

b. Dissolved oxygen will also vary with biological and chemical oxygen demand associated with rainfall, CSOs, and non-point source runoff. Also influencing dissolved oxygen will be those seasonal changes associated with air temperature and therefore water temperature, with the higher dissolved oxygen readings generally occurring when water temperatures are lowest.

c. Two main rivers drain into the Newark Bay, the Passaic and the Hackensack rivers. Seven major tributaries feed into the main stem of the Passaic River. Riverine surface water quality of the Passaic River and its tributaries varies from moderately good in the freshwater upstream tributaries to degraded, in the Passaic River reach below Two Bridges.

d. The water quality conditions in Newark bay are considered to be good, based on existing USEPA STORET (water quality) data, and on observations taken by the National Marine Fisheries Service, and the Stevens Institute of Technology. Both Newark Bay and the Passaic River below Dundee Dam are tidal. The dissolved oxygen levels in Newark Bay generally range from about 3 mg/l up to 11 mg/l, and the temperature range from 34°F to 82°F throughout the year. There is usually a gradient of lower salinity near the Passaic/Hackensack River mouths to higher salinity at Kill Van Kull. Average salinity in Newark Bay varies depending on rainfall. While heavy rainstorms (25–100 year events) can effectively reduce salinity to at or near 0.0 ppt for several days, the normal range is from 14–24 ppt (Cerco and Bunch 1997).

e. Newark Bay is a partially stratified estuary with lower salinity at the surface and higher salinity at the bottom. Surface salinity is lowest (2 to 20 ppt) near the mouth of the Passaic

River, which has greater freshwater flow than the Hackensack River (Suszowski 1978). The vertical gradient is most pronounced in the northern part of Newark Bay, particularly near the Passaic River, and decreases to the south. The highest surface salinity is found at the confluence of Newark Bay and the Kill Van Kull.

f. The highest concentration of total suspended solids (TSS) in Newark bay occurs during the spring in the Passaic River. The TSS concentrations in near-bottom water in Newark Bay are higher in the northern portion of the Bay than in the southern. These higher concentrations are known as the turbidity maximum. The turbidity maximum is caused by estuarine-type circulation, wherein the bottom water has an average upstream velocity during flood tide equal to its average downstream velocity during ebb tides (net velocity equals zero) and suspended sediment is circulated. The turbidity maximum usually breaks down during low river flow when stratification is reduced.

g. Newark Bay is classified as SE3 saline estuarine waters by NJDEP with the designated uses of: (1) secondary contact recreation; (2) maintenance and migration of fish populations; (3) migration of diadromous fish; (4) maintenance of wildlife; and (5) any other reasonable uses. The surface and bottom water measurements at four stations in Newark Bay were averaged in these plots. These variations reflect typical meteorological and hydrological conditions in Newark Bay and the waters that flow into it (Arthur Kill, Kill Van Kull, Hackensack, and Passaic rivers). According to the Water Quality standards established by the NJDEP, fecal coliform in Class SE3 waters shall not exceed a geometric mean of 1500 counts/100 ml.

h. Although historical data on conventional water quality constituents in Newark Bay are sparse, there are data for NYCDEP's Harbor survey sampling at Shooters Island in Kill Van Kull, which is at the southern end of the Bay (Table 4-10). The trend in DO since 1968 shows a steady increase attributed to upgraded wastewater treatment. In the last 10 years the DO at Shooters Island exceeded the NYCDEP criterion of 3.0 mg/l. The geometric mean fecal coliform concentrations in the surface and bottom waters at NYCDEP's sampling station at Shooters Island were 67 and 68 counts/100ml, during the summer 1994. The 1994 data reflected an improvement over previously collected data.

i. As part of USEPA's development of waste load allocation for metals in NJ/ NY harbor, Newark Bay was sampled and analyzed for metals in 1991. Three surveys were conducted, which sampled Newark Bay, Shooters Island, and the Passaic River. Results showed concentrations of arsenic, cadmium, nickel, lead, silver, and zinc in all waters samples from Newark Bay were lower than USEPA criteria. The copper concentration in the dissolved phase was below the site-specific criterion of 5.7 μg/l. Total recoverable mercury concentrations in Newark Bay, the Kill Van Kull and the Hackensack and Passaic rivers were consistently above criterion of 0.025 μg/l.

4.3.3.1.3 Hudson and East Rivers

a. The water column within the Hudson River is similar to that of the Upper Bay but becomes less saline as one proceeds upriver (USFWS 1985), with varying amounts of silt depending upon upstream rainfall. The water column within the East River contains varying amounts of silt, and hence turbidity, depending upon rainfall upstream mainly from the Hudson River flow that is diverted through the Harlem River. Mixing of the water column is substantial most of the time due to the downstream currents and very turbulent tidal exchange bordering Manhattan.

b. Within the Upper Bay Complex, there are a number of sediment hot spots such as Newtown Creek and Gowanus Canal that have much higher contamination levels than found in navigation channels. However, testing of sediment from Newtown Creek and other sites indicated that the sediment passes Toxicity Characteristic Leaching Procedure (TCLP), which is the standard test used by the USEPA and the states to determine whether a solid waste is deemed to be RCRA hazardous waste. An exception is sediment found in the lower Passaic River below Dundee Dam covering a 6-mile reach that is part of the Diamond Alkali Superfund site, portions of which are hazardous waste.

c. In September the effect of local heating from the 59th Street power plant effluent released into the lower Hudson showed surface temperatures rise to 20ºC. This warm surface core overlies the Upper Bay bottom water of less than 19ºC and is separated from upstream bottom river water greater than 20.5ºC. In the fall, isotherms in Upper Bay move upstream and the warm core, with surface temperatures over 21ºC, moves some 10 km upstream.

d. Dissolved oxygen will also vary with biological and chemical oxygen demand associated with rainfall, CSOs, and non-point source runoff. Also influencing dissolved oxygen, are those seasonal changes associated with air temperature and therefore water temperature, with higher dissolved oxygen readings generally occurring when water temperatures are lowest.

e. The biota of the water column will contain both phytoplankton and zooplankton. The species composition and density will vary throughout the year. Some of the plankton will include invertebrates such as hard clam larvae, and fish larvae such as winter flounder.

4.3.3.2 BENTHOS

a. The benthos of the Upper Bay Complex is addressed below by the different sections, Upper Bay, Arthur Kill, Kill Van Kull/Newark Bay, Hudson River from the Battery to the George Washington Bridge, and the East River from the Battery to the Throgs Neck Bridge, including major embayments.

4.3.3.2.1 Upper Bay

a. In the Upper Bay, sampling revealed a biologically diverse habitat at the edge of the main shipping channel on the NJ flats (USFWS 1985). This zone of highest abundance and diversity was found to be on the flats adjacent to the main channel from Robbins Reef north to just east of Ellis Island (SPI sampling, Iocco et al. 2000). Generally, Upper Bay benthic infauna abundance and biomass were low in the Upper Bay compared to Lower Bay. Sampling of the shipping channels is currently underway.

b. These sites were dominated by clam beds, mussel beds, and *Ampelisca* mats, intermixed with sandy bottom. The shipping channel connects Constable Hook Reach of Kill Van Kull in a northerly direction with the Military Ocean Terminal at Bayonne, NJ, (MOTBY) and the former Elizabeth Rail Yards and contained silt. Samples taken landward of this channel were dominated by silty sediment with some samples yielding oligozoic sediment sometimes containing little or no benthic organisms' bacterial mats. These mats were particularly prevalent at the end of the dead end channels (e.g., at Global Marine Terminal) and in the central part of the Constable Hook Flats (Figure 4-5).

c. Diversity and abundance on the NY side was highest at the eastern edge of the Bay Ridge Flats. Here clam beds and mussel beds predominated, interspersed with sand (USFWS 1997). On the east side of the Red Hook Channel along the piers of the Brooklyn Waterfront from Owls Head Park to the vicinity of the Brooklyn Bridge, the sediment was dominated by silty bottom with interspersed areas of oligozoic sediment in the Atlantic Basin (Iocco et al. 2000). A few Brooklyn interpier areas contained samples dominated by gas voids that indicate anaerobic decomposition.

4.3.3.2.2 Arthur Kill/Kill Van Kull/Newark Bay

a. Benthic sampling in these areas was limited to Newark Bay and was conducted by NMFS during 1993–94, and WES during 1996. Results of the benthic samples collected for the DMMP in the Newark Bay shallows revealed that the sediment was dominated by silty material especially on the east side of the bay east of the shipping channel although bacterial mats and sand patches were interspersed. Five samples in the shallows between the Port Elizabeth and Port Newark Channels revealed two sites with gas voids, two with silty bottom and one that was sandy.

b. The NMFS survey of Newark Bay collected 100 benthic grabs. The southern portion of the bay was generally comprised of finer sediments mostly described as light, soft silt and clay with some shells and debris. Several sites contained thick hard red clay. Sediment analyses for the north section of the bay yielded generally soft with varying consistency. Sediments at the lower Passaic River contained soft black silty clay.

c. The results of the benthic biological sampling in Newark Bay included 54 species of seven phyla (Wilk et al. 1997). The samples mainly contained soft shell clams, dwarf surf clams, polychaetes (marine worms), and crustaceans.

4.3.3.2.3 Hudson and East Rivers

a. The benthos of the Hudson River from the Battery to the George Washington Bridge has not been systematically sampled. However some generic conclusions can be drawn based upon the strong salinity gradient from higher salinity at the Battery to lower salinity at the George Washington Bridge. Increases in species of annelids (worms), and mollusks, which are more tolerant of lower salinity, will occur. For instance, oligochaete worms would be expected to increase in abundance, and polychaete worms decrease. Likewise mollusks such as some species of snails will increase with a decrease in salinity.

b. No sampling is known to exist for the main channel of the East River. This may be due to the strong currents there, especially at Hell Gate. The side channels such as Newtown Creek, Bowery Bay and Flushing Bay are dominated by silty sediment. In Bowery Bay, the western side closest to the CSO was dominated by bacterial mats and gas voids. Closer to main channels *Ampelisca* were present, but do not dominate as in the Lower Bay. Shallow areas near CSOs contained lesser amounts of benthic life. Some stations exhibited even lower amounts of benthic life and were dominated by bacterial mats.

4.3.3.3 FISH AND MEGAINVERTEBRATES

a. An otter trawl survey of deeper water in the Upper Bay Complex was conducted during 1984 by the Marine Science Research Center of SUNY. Sampling sites in the Upper Bay Complex included 15 sites from the Upper Bay, five sites on the Hudson below 59th Street and three more above 59th Street to Spuyten Duyvil.

b. The USFWS collected data from the Upper Bay and along the Hudson River to Spuyten Duyvil Bay in depths generally ranging from 7–14 ft. Three sampling techniques were used, including otter trawl, gill net, and beach seine (USFWS 1985).

c. Many of the same species that were abundant in otter trawls on the flats adjacent the channels (USFWS 1985) were also found in substantial numbers in the deeper navigation channels. These species included bay anchovy, Atlantic tomcod (*Microgadus tomcod*), killifish, silversides, black sea bass, white perch (*Monroe Americana*), striped bass, cunner, winter flounder and summer flounder.

d. At least 36 species of finfish were collected from Upper Bay sites, including four species each from the herring, and codfish families, and six flatfish species. Additionally, two members of the temperate bass, drum (Sciaenidae), wrasse (Labridae), and searobin (Triglidae) families were captured.

e. The most numerous species was bay anchovy (~50%), and most were caught in August. These were most likely adults, since this species is small and not subject to full sampling (gear selectivity) with the gear used. Winter flounder was the second most common (14%), followed by summer flounder (~8%). August, October and May produced the most individuals with May being the highest, but this again was due to the presence of a relatively large number of bay anchovy. Further up the bay, bay anchovy, Atlantic silversides, striped killifish, and winter flounder dominated. The silversides and killifish were mainly caught by beach seine as were more than 50% of the striped bass, which were juveniles. From December through March, species and individual occurrence in shallow water declined. This observation most likely reflected movement to avoid low temperatures in the shallows.

f. High salinities and sandy bottom were associated with an increase in capture of flatfish species. Fish species attracted to vertical structure (e.g., near piers, riprap etc.) included black sea bass, tautog, and cunner. Juvenile fishes captured included bay anchovy, Atlantic tomcod, red hake, striped bass, and striped searobin.

g. A salinity decrease was noted and the following shift in species was observed: 1) white perch were captured for the first time compared to downstream; 2) weakfish and butterfish increased; 3) scup numbers declined; 4) black sea bass were not captured despite the presence of appropriate structure; and 5) abundance in general decreased except for herring which increased. In this portion of Upper Bay, bay anchovy was the single most abundant species (~50%), followed by winter flounder and striped bass. Striped bass and blueback herring were captured by gill nets (USFWS 1985).

h. Sampling of fish and megainvertebrates of the Arthur Kill, Kill Van Kull/Newark Bay took place in Newark Bay by NMFS in 1993–94 (Wilk et al. 1997). Their analysis revealed that the numerically the most abundant species in the shipping channels using 8.5-m otter trawl were striped bass (28%), tomcod (13%), male blue crab (12%), white perch (11%), female blue crab (10%), weakfish (8%), winter flounder (5%), and spotted hake (4%). This represented 33,503 individuals of 56 species of fish and megainvertebrates. These deep-water channels consistently contain greater concentrations of fish than adjacent flats. Newark Bay is relatively small in size (~3,200 acres), and only about 20% are channels, which are utilized by young of the year and other non-adult year class fish. It apparently has some function as a nursery area.

i. In the shallows of Newark Bay (eastern side) the most abundant species using a 4.9-m otter trawl were bay anchovy (47%), Atlantic herring (22%), tomcod (10%), male blue crab (5%), winter flounder (5%), striped bass (4%), female blue crab (2%), Atlantic silverside, summer flounder, and bluefish (1%) each. This represented 2,978 individuals of 33 species of fish and megainvertebrates. The shallows of the bay support proportionately lower amount of fish species and individuals, which offsets its larger size compared to the channels as a place to support fish populations.

j. Experimental gill nets in the shallows collected 1,154 individuals of 16 species of fish and megainvertebrates. The most abundant species were Atlantic menhaden (42%), striped bass (19%,), male blue crab (13%), bluefish, and blueback herring (6% each), female blue crab and Atlantic herring (4% each), weakfish (3%), alewife and white perch (1% each).

k. Fishes and megainvertebrates of the Hudson River from the Battery to the George Washington Bridge were also surveyed by USFWS (1985). Several sites were sampled including the area extending from Greenville Yard Jersey City, NJ, to the Battery, Manhattan, and from the Battery north to the former Conrail Yard at Weehawken, NJ, to 70th Street, Manhattan. Fishing efforts captured 25 species of fish and 2,537 individuals. Bay anchovy, white perch, Atlantic tomcod, winter flounder, and striped bass dominated the catch. Further decline in salinity resulted in increased capture of white perch, and more consistent capture of hog choker (a form of sole). Striped bass were captured in the shallows in the interpier areas. Winter flounder, striped bass and white perch were captured during each sampling month. At least six species of juvenile fishes were captured and included; bay anchovy, Atlantic tomcod, weakfish, striped searobin, windowpane, and winter flounder. An increase in the number of tomcod was likely the result of the decrease in salinity and the presence of a soft muddy bottom substrate (USFWS 1985).

l. Further upstream, between Conrail Yard at Weehawken, NJ, north to 70th Street Manhattan, and north from Blumer Beach to Spuyten Duyvil, 27 species and 2,955 individuals were captured. This reach exhibited changes in the fish species assemblage, including the following: 1) hog choker, which comprised almost 50% of the catch from March through October, and 2) Atlantic tomcod, white perch, and bay anchovy, which comprised the next largest component of the catch. Six species of the herring family were captured. The increase in herring is hypothesized to be the result of the relative narrowness of the Hudson at this point. Northern pipefish were also collected, and found in substantial numbers downstream of a sewage plant, where floatables from the plant provided cover.

m. Fishes and macroinvertebrates of the East River have not been systematically sampled. In recent years, however, a recreational fishery for bluefish and striped bass has developed in this waterbody. Since the East River is tidal and has only limited freshwater input, it is likely that the same species occupy this river, that occupy the lowest reaches of the Hudson River where the salinity is high. It is also likely that this waterbody acts a migration pathway.

n. In summary, both the flats and the channels are important habitats for fish. Data from previous sampling and analysis indicate that channels are relatively more important, because larger numbers of fish of more species were found in them (Will and Houston 1988; Wilk et al. 1995; Wilk et al. 1998).

4.3.3.4 AMPHIBIANS AND REPTILES

4.3.3.4.1 Estuarine Amphibians

a. There are no known estuarine amphibians that use this complex.

4.3.3.4.2 Reptiles

a. Some diamondback terrapin probably occur in small numbers in the Upper Bay portion of the Upper Bay Complex in suitable areas, mainly confined to the NJ side of the bay where some marsh habitat still exists, especially along the Arthur Kill. In the Hudson River from the Battery to the George Washington Bridge, the diamondback terrapin is likely rarer than in the Upper Bay because little habitat is available south of the Piermont Marsh in the Tappan Zee Area. The eastern mud turtle (*Kinostemon subrubrum*) may also be present in the Upper Bay Complex, mainly in Arthur Kill.

4.3.3.5 BIRDS

4.3.3.5.1 Waterbirds, Shorebirds, Gulls and Terns

a. The majority of birds that use the Upper Bay Complex are water birds. These include loons, grebes, cormorants, waders, waterfowl (Anseriformes), shorebirds, gulls and terns. Of these groups, cormorants, waterfowl and gulls are the most likely users because of water depths and habitat availability. A few areas along the west (NJ) side of the Upper Bay are shallow and hold the potential to attract waders such as herons and egrets, and at low tide shorebirds such as dowitchers, sandpipers and plovers. Further discussion can be found at Section 4.3.2.5.

4.3.3.5.2 Herons

a. Five islands comprise the Harbor Herons Complex: Shooters Island, Pralls Island, the Isle of Meadows, Swinburne Island, and Hoffman Island. These islands are found in the

Arthur Kill, Kill Van Kull, and Lower NY Bay. Also included in the complex are tidal and freshwater wetlands in the northwest quadrant of Staten Island.

b. This complex is considered significant habitat by USFWS because of the presence of major nesting colonies and foraging areas for herons, egrets, and ibises. Three island colonies, or rookeries, were established in the 1970s. In 1995 these rookeries collectively contained nearly 1,400 nesting pairs of colonial wading birds of special regional emphasis or management concern, including, in declining order of abundance, black-crowned night heron (*Nycticorax nycticorax*), glossy ibis (*Plegadis falcinellus*), snowy egret (*Egretta thula*), great egret (*Ardea alba*), cattle egret (*Bubulcus ibis*), yellow-crowned night heron (*Nyctanassa violacea*), green heron (*Butorides virescens*), and little blue heron (*Egretta caerulea*) nesting pairs (USFWS 1997).

c. This Harbor Herons Complex, the largest in NY State, contains approximately 25% of all wading birds that breed in NJ, NY, and CT (USFWS 1997). The largest number of nesting great egret, cattle egret, snowy egret, and yellow-crowned night herons in NY State occur at these colonies. In addition, over 1,000 herring gull, 30 great black-backed gull, and 140 double-crested cormorant pairs have nested on these same sites. Nesting by the double-crested cormorant constitutes one of the southernmost nesting areas for this sub-population. Adult and young herons and egrets forage extensively in the wetlands over this complex, feeding on rich concentrations of forage fish in the marshes, flats, and shallow waters of ponds and tidal creeks (USFWS 1997).

d. Herons, egrets, and ibis have not occupied Shooters Island for 5 years in a row (Pers. Obs. USACE 2000–2004). This may be related to human activity on the island. Pralls Island has also been uninhabited by herons or gulls since 1997. The Isle of Meadows presently contains active heron, egret, and ibis nests (Kerlinger 1999).

e. A 1999 survey (Kerlinger 1999) revealed large populations of nesting herons and egrets, as well as herring and greater black-backed gulls, on Hoffman Island. Swinburne Island appears to be uninhabited by nesting herons, egrets, or ibis, but does provide nesting habitat to double-crested cormorants and to herring and greater black-backed gulls.

f. Shooters Island is situated off the north shore of Staten Island, opposite Mariners Harbor, at the juncture of Newark Bay, the Kill Van Kull, and Arthur Kill. The upland portion of the island (30–40 acres) supports a deciduous canopy approximately 30 ft high. The species showing greatest relative basal-area dominance are gray birch (*Betula populifolia*), black cherry (*Prunus serotina*), and black locust (*Robinia pseudoacacia*) (Parsons 1987). The rest of the island is vegetated with herbaceous grasses, such as common reed and saltmarsh cordgrass, and vines, such as greenbrier (*Smilax rotundifolia*) and honeysuckle (*Lonicera* sp.). Due to its inaccessibility, few mammals inhabit Shooters Island, the most common being the Norway rat (*Rattus norvegicus*) and meadow vole (*Microtus pennsylvanicus*) (USACE 1986a). The chief importance of the island has been its use as a mixed heron rookery, though recent studies have indicated that the island has been abandoned by nesting herons.

4.3.3.6 MAMMALS

a. Few mammals associated with water (e.g., muskrat [*Ondatra zibethicus*] and beaver [*Castor canadensis*]) are expected to inhabit the Upper Bay Complex.

4.3.3.7 ENDANGERED SPECIES

4.3.3.7.1 Fish

a. The short-nosed sturgeon is usually associated with low salinity (i.e., 3 ppt or less). Because of the relatively high salinity in the Upper Bay, Kill Van Kull/Newark Bay, and Arthur Kill, these waterbodies are less likely to harbor this species, though the species has been recorded in the area. Any sites located in upstream areas of the Hudson where the salinity is less than 3 ppt become more likely to harbor this species. This sturgeon occurs regularly as one proceeds upstream toward Troy Lock and Dam, Troy, NY, (USFWS 1997) where major spawning, nursery and over wintering areas occur. They will occasional enter the Upper and Lower Bay during times of heavy rains, which reduce salinity in these waterbodies. Coordination with NMFS on this species will continue (Table 4-3).

4.3.3.7.2 Reptiles, Sea Turtles

a. Sea turtles are uncommon in the Upper Bay Complex. The Arthur Kill, Kill Van Kull, and Newark Bay are the least likely to harbor these species. The Kemp's Ridley in the 2–5 year old range enter the Lower Bay Complex and occupy the area from June through October, however, they are not known to occupy the Upper Bay Complex in any numbers. The loggerhead turtle has two different populations in the area, only one of which enters the bay waters, mostly in the Lower Bay Complex (USFWS 1997).

4.3.3.7.3 Birds

Peregrine Falcon

a. The peregrine falcon has recently been removed from the Federal Endangered Species list but will be monitored until at least 2010. It nests within the study area and some 15 aeries have been discovered and monitored primarily on bridges and buildings in the area of the Upper Bay Complex. The nesting adults tend to stay in the vicinity during winter. Further, the NY/NJ metropolitan area is important, in that it is along the migratory route for the highly migratory subspecies that nest in Canada.

Bald Eagle

a. The bald eagle is still on the Federal endangered species list, although it has been proposed for delisting. The timing of the delisting is not certain, therefore the removal from the list is not considered for this EIS (i.e., it is discussed here as if delisting is not imminent). The bald eagle does not nest in the study area. Both subspecies of bald eagle do migrate through the area, and the northern subspecies, occasionally overwinters in the Upper Bay area, although its most important over wintering site near the study area is along the Hudson River and Catskill reservoirs (USFWS 1997). The northern subspecies continues to rebound, but future nesting in the general vicinity of the Upper Bay Complex is unlikely due to the proximity of humans and their industry.

Piping Plover

a. There are no known nesting sites for this species in the Upper Bay Complex, and habitat for nesting is scarce or non-existent.

Roseate Tern

a. There are no known nesting sites for this species in the Upper Bay Complex, and habitat for nesting has not been identified.

4.3.3.7.4 Marine Mammals, Whales

a. Great whales are rarely if ever found landward of the baseline, with the possible exception of a rare visit of the humpback whale. Great whales in the Upper Bay Complex would be accidental and mostly likely associated with injury or disease.

4.3.3.8 ESSENTIAL FISH HABITAT

a. The Upper Bay Complex contains four grid cells designated as EFH. Nineteen species from the Upper Bay complex have been identified. As with the Bight Apex and the Lower Bay Complex, winter flounder and windowpane were found in each grid cell for all life stages. The sandbar shark also had designation for the very young of the species and the adults, in each grid cell. Other species, which were found in most or all grid cells for most or all life stages, included scup, Atlantic herring, red hake, summer flounder and butterfish. Other species that were designated less frequently but with relatively high frequency of occurrence were bluefish and Atlantic mackerel.

4.3.3.9 CULTURAL RESOURCES

4.3.3.9.1 Prehistoric

a. A geomorphological study was conducted to assess the potential for prehistoric resources in preliminary potential placement areas in Newark Bay, Hudson River, Bowery Bay, Constable Hook/Port Jersey, and Red Hook/Bay Ridge. The analysis suggests that all areas examined have some potential to preserve prehistoric sites although some are more sensitive than others (LaPorta et al. 1999). Constable Hook/Port Jersey was designated as having a "low potential." Bowery Bay and Red Hook/Bay Ridge were classified as "moderate to low." Newark Bay area was deemed to have a "moderate potential" primarily because modern construction has disturbed any remains of prehistoric occupation. The Hudson River channel was assessed as "low potential" for the middle channel where a river channel has been in place prior to any occupation of the area but the outer portions of the river channel have been assessed as "moderate to high." In general, the sites proposed for the Upper Bay are not as sensitive for prehistoric resources as those proposed for the Lower Bay due to modern disturbances.

b. The Beneficial Use options in the Upper Bay are all proposed for nearshore locations. These nearshore zones have the potential to contain buried prehistoric deposits. Cultural resource data may be available for a number of the proposed sites such as Pralls and Shooters Islands and the Brooklyn waterfront in other NYD reports. These reports are related to the

Collection and Removal of Drift Project as well as other navigation projects such as the Arthur Kill (Wagner and Siegel 1999). Locations have not yet been determined for the Mudflat Creation, Enhancement and Restoration.

4.3.3.9.2 Historic

a. Remote sensing was not conducted for the in-channel disposal options as the historic dredging in the channels and anchorages would have likely removed any historic wrecks or debris. Historic cultural resources may be an issue if nearshore options are considered. Many nearshore resources in the NY area, such as piers and waterfront structures, have been listed on, or determined eligible for listing on, the NRHP, although some of these historic properties may have been recorded and removed as specific projects proceeded. The Atlantic Basin, a potential CDF site in Brooklyn, was not evaluated as a whole when reviewed for the NYD Collection and Removal of Drift Project, but cribwork around the basin's outer perimeter was determined to be potentially significant (Raber Associates 1984). Most of the Bush Terminal, a location proposed for water quality wetlands, was also determined eligible (Flagg and Raber 1986). Other structures along the waterfront may be potentially significant and additional studies to identify other resources may be required. Indirect impacts to historic sites will also need to be assessed. This work should evaluate the effects of the proposed facility on landscape and setting as well as on the viewsheds of significant properties like the Statue of Liberty and Ellis Island, two National Historic Landmarks. Historic resources of particular concern for DMMP options evaluated immediately adjacent to the shoreline are derelict vessels and waterfront structures such as bulkheads, wharves and piers related to industry and historic landfilling. Dredging may have occurred along segments of shoreline that could have adversely impacted resource preservation.

4.3.3.10 SOCIO-ECONOMICS

4.3.3.10.1 Shipping

a. (see 4.3.1.10.1)

4.3.3.10.2 Commercial Fishing

a. No commercial fishing is known to take place in the Upper Bay Complex.

4.3.3.10.3 Recreational Fishing

a. Local recreational fishing from the shoreline and from private boats occurs in the Upper Bay Complex and with improvement in water quality use will likely increase.

4.3.3.11 WATER QUALITY

a. NY and NJ have assigned water quality classifications to many of their major rivers, lakes, estuaries, and ocean waters. These classifications are based on the extent to which these surface waters will attain the aquatic life support and swimmable goals of the Clean Water Act, and the designated uses outlined by the states. The designated uses for NJ are defined in the state's Surface Water Quality Standards regulations (N.J.A.C. 7:9 et seq) and are generally based on a set of numeric and narrative water quality criteria. The swimmable goal is intended to have all possible surface waters of sufficient quality to allow for primary contact recreation. The fish propagation and management goal is designed to have all possible waters supporting healthy and reproducing aquatic biota.

b. NYSDEC Division of Water publishes The Priority Waterbodies List, which identifies surface waters that either cannot be fully used as a resource, or have problems that can damage their environmental integrity. This list is used as a base resource for the Division of Water's program management.

c. The Interstate Sanitation Commission, a tri-state environmental agency, provides assistance in water pollution abatement programs to the waterways shared by CT, NJ, and NY. A long-standing goal of the Interstate Sanitation Commission is making additional areas available for shellfishing and swimming. The Interstate Sanitation Commission 's programs include minimization of the effects of combined sewers, participation in the National Estuary Program, control of floatables, enforcement, compliance monitoring, pretreatment of industrial wastes, toxics contamination, sludge disposal, dredged material disposal, and monitoring of ambient waters (Interstate Sanitation Commission 1997). Table 4-11 is based upon USEPA data and indicates reaches where water quality is suspected of being impaired by point source discharges.

d. The Upper Bay waters from the confluence of the East River to the confluence with the Kill Van Kull are designated "Use Impaired" by the NJDEP due to toxic discharges from point sources. The NYSDEC has classified the Upper Bay as Use Impaired with an advisory on striped bass fishing use. The NYSDEC considers the Upper Bay a priority waterbody. The Interstate Sanitation Commission reported that total coliform and fecal coliform are the cause for these waterbodies to be in non-attainment. The elevated levels of these parameters are a result of CSO, surface water runoff, treatment plant upsets, and effluents from upstream waterbodies (Sattler 1998)

e. The Hudson River drains a watershed of about 35,000 sq. km and empties directly into the NY Bight Apex. About 50% of annual discharge occurs between February and May (Giese and Barr 1967). The mean discharge of the Hudson River over 1957 and 1965 was 20,000 cubic ft per second.

f. Studies found that the river and estuarine waters show a strong salinity and temperature stratification that occurs during periods of high spring runoff into the Hudson River. Bottom values are greater than 25 ppt at the Narrows, and surface values are less than 4 ppt 40 km upstream in the Hudson River. This distribution illustrates the intense vertical density and salinity gradients typical of periods of heavy runoff in this area.

g. A study of the Hudson River estuary circulation and discharge was conducted by the United States Geological Survey (USGS) (Giese and Barr 1967, Darmer 1969, Busby and Darmer 1970). The results indicate that the Hudson River estuarine system is dynamic and acts as a catchment for natural and man-induced inputs originating mainly from the Hudson River itself.

h. By September, salinity levels in the estuary have increased compared to April. Although salinity in the Narrows is only a little more than during April observations, salinities 40 km up the river have increased to about 12 ppt.

i. Siltation problems in the lower Hudson estuary occur where the river empties into NY Harbor. The abrupt widening causes the salinity structure to change from well mixed to partially mixed. Sediments are transported upstream by the landward bottom flow until they meet the seaward flow in the well-mixed region.

j. The PCB contamination of the Lower Hudson River and the impact of this contamination on the aquatic community are among the serious water quality problems in the basin. The original source of this problem is the historic discharge of PCBs to the waters of the upper Hudson River. Although the direct discharge of PCBs has been significantly reduced, the contaminated sediment serves as a continuing source of PCBs in the waters of the Lower Hudson. This contamination has resulted in a 200 mile reach of the Hudson from Hudson Falls to the Battery being designated a Federal Superfund Site in 1984. Recent monitoring data indicate that PCBs in the fish are declining.

k. More conventional pollution problems related to municipal wastewater discharges, combined sewer overflows and urban runoff, while showing steady improvement in recent years, continue to reduce the water quality of the river. Hudson River water quality is best in the lesser populated mid Hudson Valley. Water quality then deteriorates over the final 20 miles of the river as it flows through the very high-density population areas of NY City and NJ. Even in this section of the Hudson, however the upgrading of the NY City and NJ wastewater plants to provide secondary treatment has resulted in measurable improvements in water quality.

l. The NYSDEC Priority Waterbody Problems (PWP) List indicates that nutrient enrichment in the Lower Hudson River Drainage Basin reduces the water quality over six water segments. Generally these high nutrient loads can be attributed to the rapid pace of development. Failing and/or nonexistent on-site septic systems, groundwater leaching from these systems, lawn fertilizing, and general runoff, all contribute to nutrient pollution. Even in areas where development pressures are not as great, agricultural activities are often cited as sources of excessive nutrient loads.

m. The NJDEP has initiated commercial fishing bans and recreational fishing advisories for the sections of the Interstate Hudson River running through NJ as a result of the detection of high levels of PCBs and certain pesticides (primarily chlordane) in finfish taken from these waters. NYSDEC considers this river to be impaired and a Priority Waterbody. NYSDEC has banned commercial fishing of striped bass due to PCB contamination. A health advisory has been issued by the NYSDEC for recreational fishing of striped bass. Other advisories have been announced by the NYSDEC on a variety of finfish and shellfish consumption. A classification of non-contact recreation impairment has also been assigned to the Hudson River.

n. High sediment loads and siltation also threaten fish survival and propagation in many streams in the basin including the Hudson River. Development pressures are a major factor in siltation with construction activities and runoff contributing to the problem (Table 4-12).

o. The East River flows through a highly industrialized area bordered by Brooklyn, Manhattan and Queens County. According to the NYSDEC 1996 Priority Waterbodies List, the East River, located in the Atlantic-Long Island Sound Basin, is a Class I stream with medium resolution. Untreated sewage discharges from CSOs have impaired fish propagation in the stream. Fish consumption is impaired due to PCB contamination. The stream use impairment is due to high BOD caused by priority organics.

p. The Newark Bay Complex, including its major tributaries, the Passaic and Hackensack rivers, is another source of contaminants to the harbor sediments. Sites of past industrial activity, including abandoned sites and landfills, represent major sources, in addition to non-point source runoff from the watershed. NJDEP is moving forward with remediation of sites in the Newark Bay watershed, with dredged material playing a prominent role in many remediations (see Table 2-1 in the Implementation Report for upland sites). The accumulated contaminants from these sites and others in the watershed will remain in the aquatic ecosystem for many years, and the existing bans on commercial and recreational fishing will continue into the foreseeable future (see DMMP – Implementation Report, Section 2.1, for a description of the long-term sediment reduction program).

4.3.3.12 GROUNDWATER

a. Groundwater beneath the waterbodies within the Upper Bay–Estuary portion of the study area has generally not been classified. By reviewing the geology of the surrounding landmasses, it is possible to infer the type of groundwater present. Manhattan is underlain primarily by till and bedrock. This type of geology has limited groundwater found in cracks and fractures within the rock (Caldwell et al. 1989). Bedrock aquifers commonly yield only small to moderate amounts of water and consist of carbonate, sandstone, and crystalline metamorphic and igneous rocks. The water transmitting capability of each rock type is dependent on fracture permeability. Surficial aquifers composed of coarse-grained stratified glacial drift are the most heavily used in NY. They occur in individual stream valleys and are physically and hydraulically bounded by bedrock that forms the valley walls. Area extensive flow systems occur in glacial aquifers on Long Island. The aquifers consist of thick stratified glacial outwash. Water moves through these aquifers along continuous, low hydraulic gradients, to principal streams and the ocean where it is discharged. Continuous flow systems also occur in unconsolidated Coastal Plain sediments that make up the Magothy and Lloyd aquifers. These thick and productive aquifers underlie the upper glacial aquifer on Long Island (USGS 1999b).

b. The principal sandstone aquifer occurs in the Newark basin in southeastern NY in faulted early Mesozoic basins. Staten Island is underlain by unconsolidated formations of Holocene, Pleistocene and Cretaceous age. These consist of Holocene artificial fill, Pleistocene glacial drift of till, till moraine, outwash sand and gravel and Cretaceous deposits of clay, silt, sandy clay, sand and gravel (Perlmutter and Arnow 1953). Staten Island bedrock consists of

Triassic sandstone and its associated igneous intrusive, the Palisades Diabase, and Lower Paleozoic serpentinities (USGS 1999c).

c. Groundwater reservoirs are found in the unconsolidated deposits and bedrock of Staten Island. The largest yields of groundwater are obtainable from sand and gravel beds and lenses in the upper Pleistocene deposits, principally from outwash. Small to moderate supplies of groundwater are available from sand beds in the Cretaceous Raritan Formation and older bedrock (USGS 1988).

d. Information on saltwater intrusion indicates that general overpumping of coastal aquifers has led to an acceleration of the concentration of saltwater present in these subsurface waters. The Saltwater Monitoring Network operating in NJ observes the limits that saltwater have migrated. The USGS also performs studies to identify and map the 250-ppm chloride isochore every few years. Chloride levels of 250 ppm have been established as levels of concern since this is the drinking water standard (Kecskes 1998).

4.3.3.13 AIR QUALITY

a. The Upper Bay-Estuary portion of the study area is comprised of the waters from the Verrazano Bridge to the Battery including: Upper Bay, the East River to the Throgs Neck Bridge, the Hudson River, Bay Ridge flats, Red Hook Channel and the embayments, flats, and channels of NJ to opposite of the Battery. This portion of the study area encompasses the following five sites: The New Constable Hook Flats, the Bay Ridge/Red Hook Federal channels, Bowery Bay, the Hudson River Federal Channels, and the Atlantic Basin.

b. Air quality data for these areas was obtained by examining the surrounding landmasses that include; Hudson County, NJ, and Staten Island, Queens County, Manhattan, and Brooklyn, NY. The air quality data for Hudson County, NJ, is discussed in Section 4.3.2.12 (Lower Bay–Estuary). Brooklyn (Kings County) and Staten Island (Richmond County) air quality is as previously discussed in Section 4.3.1.13 (NY Bight Apex-Ocean). Hudson County is in the same Reporting Region as Essex and Union Counties, and has the same attainment goals as Essex County. Eight monitoring sites are located throughout the county, with two sites in Bayonne, four in Jersey City, one in North Bergen, and one in Union City. Hudson County monitors for at least seven parameters (SO2, TSP, PM-10, CO, NOx, Pb, and O3). In 1996, for six of these parameters, the County was in attainment with respect to both the Primary and Secondary National Standards. The National Secondary (welfare) standard was contravened for ozone in 1996. During that year, on six days, two parameters came close to contravening or actually contravened county health standards: on January 17 and October 17, 1996, TSP in Jersey City approached unhealthful levels, and on February 21 and 22 it was rated unhealthful; on August 4 and 5, 1996, O3 at the Bayonne monitoring site approached unhealthful levels (NJDEP 1997a).

c. Queens is located in Queens County and has one monitoring site located at Queens College, which only monitors for two parameters SO2 and O3. Neither of these parameter's standards were exceeded in monitoring year 1996 (NYSDEC 1997).

d. In monitoring year 1996, Queens was in non-attainment for CO with a "Moderate 2" designation and a classification of 12.7 ppm. O3 was classified as "Severe 2" as of 1990; therefore the county was also in non-attainment for this parameter. PM-10, SO2 and Pb do not have a designation and The NJNJ-NY-CT Interstate AQCR is designated as better than the national average for NO2 (ENFLEX 1998).

e. In monitoring year 1996, Manhattan, (NY County), was in non-attainment for CO with a "Moderate 2" designation and a classification of 12.7 ppm. O3 was classified as "Severe 2" as of 1990 therefore; the county was also in non-attainment for this parameter. The parameter PM-10 was in non-attainment for NY County and as of 1994 was classified as moderate. Both NO2 and Pb do not have a designation and NO2 for The NJNJ–NY–CT Interstate AQCR is designated as better than the national average for NO2 (ENFLEX 1998).

f. There are seven air quality-monitoring sites situated throughout Manhattan that monitor for eight different air parameters. NY County has had a steady decrease in exceedances in association with CO from 1981 to 1995 at all four sites monitoring this parameter. There were no exceedances in 1996 for the following parameters; CO, PM-10, SO2, NOX, and Pb. Trace metal concentrations for arsenic and nickel showed a slight increase while cadmium, lead, mercury, and vanadium demonstrated a steady decrease at the Madison Avenue monitoring site from 1992–1996 (NYSDEC 1997).

4.3.3.14 NOISE

a. The Upper Bay is located along the shores of an industrialized and highly populated region of the country. Industry, including air and vehicular traffic, all contribute to the ambient noise level of this area. Hudson County borders the Bay to the north, to the east is Brooklyn, and to the west is Staten Island. The East River, Hudson River and the Kill Van Kull all feed into this Bay. Steam ship operation and boat traffic are major contributors to ambient noise levels. In addition, housing, churches, schools, and hospitals, located along the shores of these waters, serve as the primary receptors.

b. This area also contains small islands with State Parks located on them, including Ellis Island and Liberty Island. Rail lines and the NJ Turnpike run along the west bank of the river. Bordering the south reaches of the bay, the U.S. Coast Guard station at Fort Gay and Ferry Plaza are located on Staten Island, all contributing to background noise levels.

c. The Arthur Kill, Kill Van Kull and the Newark Bay are located along the shores of one of the most industrialized and highly populated regions of the country. Industry, including aircraft, vehicular traffic, and steam ship operation all contribute to the ambient noise level of this area. The proposed project sites are bordered to the west by the Port of Newark/Elizabeth marine terminals and heavy industrial areas. Noise levels from these sources vary with the level of use (i.e., time of day) and types of machinery operated (e.g., cranes, derricks, loading equipment). The open water of Newark Bay and the Federal Navigation Channels are east of the proposed sites, while the NJ Turnpike Extension and Newark Bay Railroad Lift Bridge are to the north. Primary sources of noise from these areas are boating/shipping activity, highway traffic, and railroad traffic. Commercial airplanes using Newark International Airport located to the west also contribute to noise levels in the study area.

d. The Hudson River runs through the lower Hudson River Drainage Basin. Overall, the portion of the Lower Hudson River Basin in NY State outside of NY City supports a population that approaches 3 million people. The Hudson River is located along the shores of one of the most industrialized and highly populated regions of the country. The Port of NY/NJ at the mouth of the Lower Hudson is one of the largest ports in the world, and it serves as a major transfer point of goods between railroads, trucks, and barges. In addition, the Hudson River is navigable as far north as Albany. As a result, water transport and navigation contributes considerably to the background noise level of the area. Recreational boaters, as well as commercial vessels, use the river and similarly contribute to noise levels.

e. The heavily urbanized and industrialized areas bordering the river contribute to ambient noise levels. A six-lane roadway borders the River to the east and an interstate highway runs to the west. Train lines run along the west shores of the Hudson River. In addition, the shores of this river boast shipyards, industrial storage, the Palisades State Park, yacht clubs, schools, and playgrounds, all of which contributes to elevated noise levels.

f. The East River is located along the shores of an industrialized and highly populated region. This river borders the Bronx and Queens exiting into Long Island Sound. Industry, including air, dock and vehicular traffic, all contribute to the ambient noise level of this area. Residential areas, churches, schools, and hospitals are located along the shores of these waters, serving as the principal noise receptors.

g. LaGuardia International Airport is located along the shore of the East River and contributes to the ambient noise by means of airplane flyovers, construction and vehicular traffic noise. The Navy yard is located along the shore of the East River Park as is the East River Park, playground, and amphitheater. The East Side expressway runs along the river contributing additional vehicular noise (USGS 1981).

4.3.3.15 AESTHETICS

a. The current aesthetic viewscape for this study area can be described as the visible surrounding land and water. For establishing the aesthetic environment in the Upper Bay study area, specific consideration is given to the direct view of an aquatic project site from the surrounding public and private access shoreline points and scenic viewpoints. The National Weather Service, Northeast Regional Climate Center, records daily visibility from the Newark Airport (Essex County, NJ), the J.F. Kennedy Airport (Queens County, NY), LaGuardia Airport (Queens County, NY), and Central Park (Manhattan, NY). The recorded visibility data for these stations range from "limited" visibility (less than one-quarter mile distance viewscape) to greater than 10 miles. The visibility on average is recorded as greater than 10 miles from these four stations (Schultz 1998). The Upper Bay study area is visible from Union and Hudson county shoreline regions in NJ and from Richmond, Queens, Kings, NY, and Bronx County shoreline regions in NY State. Offshore visibility may be diminished during the spring months due to fog created by warm moist airflows passing over cold ocean water.

b. Scenic viewpoints and public access shoreline points encompassing the Upper Bay study area can include a variety of community facilities. These facilities include schools, churches, libraries, community centers, parks, designated federal or state wild and scenic rivers, historic or recreational facilities, designated scenic viewing areas, wildlife areas, public foot trails, fishing piers, boat docks, boat access ramps and other designated open spaces. Additionally, consideration may be given to the residential zones and all roadways or rail systems in relation to the project vicinity (Conner et al. 1979, NYECL 1987, and USACE 1996a).

c. Consideration may also be given to the viewscape from the aquatic study area by the recreational fishermen and boaters using the Upper Bay aquatic region. General aesthetic degradation of the NY Bight region is a major concern to this group (Conner et al. 1979). The Bays and waterways in the Upper Bay study area are used extensively by boat, barge, and freighter traffic of commercial and recreational interests. The waterways around Richmond County, NY, are used by tourist cruise liners. Upper Bay disposal sites may be in view to users of the waterways.

d. The viewscape of the Upper Bay study area (from either the shoreline or the waterway) includes heavily traveled waterways, heavy air traffic, and heavily developed commercial shorelines. The viewscape also includes the following: Verrazano Narrows Bridge (The Narrows); Ellis Island, Governor's Island, and Liberty Island (Upper Bay); Brooklyn Bridge, Manhattan Bridge, Williamsburg Bridge, Queensboro Bridge, Route 278 Bridge, Riker's Island, Bronx-Whitestone Bridge, and the Throgs Neck Bridge (East River); and George Washington Bridge (Hudson River).

4.3.3.16 RECREATION

4.3.3.16.1 Upper Bay

a. The variety of recreational activities for the Upper Bay portion of the study area is limited due to the industrial character of its shoreline and its role as a major Port for NY and NJ. The Hudson River Park from the Battery to 59th Street that is currently under development allows access points to the water. The most popular recreational activity that takes place in the Upper Bay is boating. However a large number of boaters use the bay mainly as a passageway to other recreational waters such as the Hudson River and Atlantic Ocean.

b. The biggest draw to the Upper Bay is the Statue of Liberty and Ellis Island National Monument. Approximately 4.2 million people visit this National Monument annually (National Park Service 1998). National Park rangers give tours and the monument offers exhibits about the construction of the statue and the history of immigration in America. Visitors have the opportunity to view the NY and NJ harbor after a climb to the Statue's crown.

c. Fishing opportunities in the Upper Bay are occasionally impaired due to low water quality. The NYSDEC recommends eating no more than one meal a month of striped bass and no more than one meal a week of any other fish taken from the Upper Bay. This general advisory is to protect against eating large amounts of fish that have not been tested or may contain unidentified contaminants (NYSDEC 1996, 1998).

4.3.3.16.2 Arthur Kill/Kill Van Kull/Newark Bay

a. The portion of the Upper Bay Complex area that encompasses the waterways of the Arthur Kill, Kill Van Kull, and the Newark Bay offer limited opportunities for recreation. The highly industrialized nature of the area and lower water quality hinders many uses such as swimming and fishing. The NJDEP has detected high levels of PCBs, dioxin and mercury, and certain pesticides in fish taken from these waters (NJDEP 1995). As a result, the State of NJ has issued advisories on recreational fishing and recommendations to limit consumption of fish taken from these waters.

b. The majority of shoreline for these waterbodies is occupied for industrial use. A small number of municipal parks border these waterbodies, however, only very limited access to the water exists for recreational activities. Many of the waterfront industries have built their facilities bordering on the waters edge, which restricts the public's access to these waterways (USGS 1981). Another factor that limits the recreational and other values of these waterways is that they are major shipping lanes for commercial ships.

c. The NJ Department of Environmental Protection issues water use index ratings for surface waters of the state. The ratings indicate relative resource values for segments of waterbodies by incorporating information on potable water supplies, freshwater fisheries, shellfisheries, and bathing beaches. The Arthur Kill, Kill Van Kull, and Newark Bay do not meet any of the listed criteria and are not viewed as prime resource waters (NJDEP 1993).

4.3.3.16.3 Hudson River

a. The portion of the Upper Bay Complex area that includes the Hudson River downstream of the George Washington Bridge supports a variety of recreational activities despite its urbanized character. The shores on both banks are almost completely lined with boat docks and piers along this section of the river, but access to the water is severely restricted except to owners of watercraft (USGS 1979 and 1981). However three parks are located along its shore allowing access to the river for such activities as boating, kayaking, fishing, and bird watching (McKinney 1998) and ferries also provide services for transport and recreation.

b. Riverside Park in Manhattan allows access to the river for kayakers and recreational boaters, and maintains 110 slips for use by transient and recreational boaters. Additionally, Hudson River Park is under construction. A number of small cruise lines and charter boats offer short scenic cruises along the Hudson River and around Manhattan. There are also several vessels that take schoolchildren and other groups on educational tours of the river (McKinney 1998).

c. Many people fish the Hudson River from boats and from the piers along both riverbanks. Sportsmen land a number of species from the Hudson including American eel, white perch, striped bass, and bluefish. The detection of contaminants in these fish reveals the degraded nature of the fishery in this portion of the Hudson as well as its future potential if containment levels can be reduced. High levels of PCBs and certain pesticides have been detected in fish taken from this portion of the Hudson River. As a result, the NJDEP and the NYSDEC have issued advisories on recreational fishing and recommendations to limit consumption of fish taken from these waters (NJDEP 1995, NYSDEC 1998).

4.3.3.16.4 East River

a. The East River portion of the Upper Bay Complex area offers a limited variety of opportunities for recreation. High turbidity, strong currents, and low water quality in this section of the river hinders many uses such as swimming and scuba diving (NJSD 1998).

b. Seven parks border the East River shoreline; however, water based recreational activities are limited to fishing (Boden 1998, NY City Department of Parks and Recreation [NYCDPR] 1998). Boat docks and waterfront industries (USACE 1999c) occupy the remainder of the shoreline, thus limiting access to the water for the general public on this section of the river. Due to this limited access and the urban nature of the shoreline, recreation activities for the East River consist mostly of boating and fishing.

c. Many people fish the East River from the park and piers along both riverbanks and from boats on the river. Fishermen land a number of species from the East River including American eel, white perch, and striped bass. High contaminant levels found in these fish also reveal the degraded nature of this fishery, as well as its potential. The NYSDEC has issued advisories on recreational fishing in the East River, and recommends limiting consumption to no more than one a month for fish taken from the East River (NYSDEC 1998).

d. Boating is the most popular activity on the East River from the Whitestone Bridge to the Throgs Neck Bridge (~2 miles in length). This is evident by the number of docks and piers along the banks (USGS 1979) as well as the number of yacht clubs in the area. A number of small cruise lines and charter boats offer short scenic cruises along the East River and around Manhattan. There are also several vessels that take schoolchildren and other groups on educational tours of the NY Harbor.

4.3.4 UPLAND

a. Only one upland site is under consideration for inclusion in the DMMP as a containment facility at this time. That site is a CDF located at Belford Harbor, in Monmouth County, NJ. This site has been used in the past for placement of dredged material from the local area and is contemplated for this use again for containment and possibly remediation. A regional dredged material rehandling facility is under consideration along the Hudson River in NY State.

b. The Belford Harbor site is currently being developed by the county planning department, but may be available as a Federal Disposal site, or as a county site that will be made available for dredged material from Federal project sites, including the deepening of Belford Harbor itself.

c. A dredged material rehandling facility operated by Consolidated Technologies Incorporated has begun operation in Jersey City. Processed dredged material can then be transported via railcars to PA for mine reclamation.

d. Since upland resources potentially impacted by management options are highly dependent on site-specific conditions, no attempt will be made to develop a generic description of resources. The potential area in which a disposal site and/or treatment or remediation site could be located is far too expansive and diverse to support a meaningful or comprehensive analysis at this time.

e. The NYD prepared a feasibility report for flood control and shoreline protection for the Belford site. In NJ, the State Guidance Manual, entitled "The Management and Regulation of Dredging Activities and Dredged Material in New Jersey's Tidal Waters," provides procedures for the evaluation of the potential impact of upland management of dredged material to surface water and groundwater. The manual also sets forth NJ requirements for site-specific information in State required documents.

f. What follows below is a generic description of the resources that may have to be considered when assessing potential uplands impacts at sites outside the areas already discussed.

g. These potential impacts include both surface and groundwater sources including the water column, and impacts to plant and animal communities, including wetlands and endangered and threatened species.

4.3.4.1 WATER COLUMN

a. The state of the water column would vary depending on any given upland site chosen. Those sites located close to or continuous with, the waters edge would have the most potential effect on the water column.

b. The water column contiguous to the Belford, NJ, site fluctuates with the tidal cycle. During the stage of the tide when water is present it will contain phyto- and zooplankton of various species and densities at different times of the year. Invertebrates would include larval forms of many of the bay fauna including several species of crabs and mollusks.

4.3.4.2 BENTHOS

a. As is the case with the water column, the benthos close to any upland site would be most affected and the biota of the sites would vary depending on the water regime, which could range from a salinity of 0 ppt to 30 ppt. This would affect the species composition present along with other factors such as general ambient water quality, and constituency of sediment currently at the site.

b. Both potential sites are contiguous to water, therefore the typical forms of species found in these waterbodies are addressed. The area contiguous to the Belford site contains dredged material from former dredging efforts. Just to the northwest of the site is a tidal mud flat with a small channel. Water is present on this flat at high tide, thus it is considered intertidal.

A typical mudflat biota consists of alga and bacterial mats, which provide primary productivity. Invertebrates can include various species of mollusks such as clams and snails, and marine worms (polychaeta).

4.3.4.3 FISH AND MEGAINVERTEBRATES

a. Like the benthos, the species of fish and megainvertebrates vary according to the site. Salinity would be a very important component driving the species composition.

b. The area contiguous to the site at Belford contains a mud flat that at high tide is likely inhabited by killifish, silversides, bay anchovy, and predatory fish such as smaller individuals of striped bass, bluefish, and weakfish.

4.3.4.4 AMPHIBIANS AND REPTILES

a. Amphibians of the area are mainly toads and frogs, although some species of salamanders do occur. The amphibians are especially sensitive to environmental conditions. Their presence in areas will be greatly influenced by the past and current uses of any given site.

b. Amphibians at the Belford site will most likely consist of several species of toad (*Bufo* spp.), and perhaps frogs (*Rana* spp.). Reptiles such as turtles and snakes are sensitive to the environment and would vary in density and species present depending on the past and current uses of the site.

c. The Belford site has been disturbed by humans. Currently, the Belford site is covered by vegetation, mainly *Phragmites*. It provides some marginal habitat and as a result, some species of reptiles may be found, with the most likely being the garter snake (*Thamnophis siratalis*) and Northern brown snake (*Storeria dekayi*).

4.3.4.5 BIRDS

a. Among land vertebrates, birds are the most numerous in terms of potential species that might be present at a given site. Because many of the species in this area are migratory, their presence will vary seasonally. Some species will overwinter in an area, others will breed there, while others will use it during their north/south migration for rest and feeding. Actual species composition of the bird community, as with the other preceding classes of vertebrates, will vary by the habitat present. Urban tolerant species such as starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*), house finch (*Carpodacus mexicanus*), and rock dove (*Columba livia*) are most likely to be encountered. Areas that have remained unused for a long time may have seen the return of some floral diversity. In these instances bird diversity will increase depending upon the recolonizing plants. If a given site is large enough and floral diversity great enough, a substantial number of species of birds can utilize the area.

b. Because so much *Phragmites* is present at Belford, the number of species utilizing the area is restricted both for nesting and migratory passage species. Besides some urban tolerant species, species such as the red-winged blackbird (*Agelaius phoeniceus*), marsh wren (*Cistothorus palustris*), and common yellowthroat (*Geothlypis tricas*) may nest there.

4.3.4.6 MAMMALS

a. All species of mammals have certain habitat needs associated with critical life requisites. As with other forms of life, species of mammals will be found within their geographic range when their preferred habitat conditions are present.

b. At Belford, mammals associated with the marsh and tidal edges are likely present, but in low numbers due to the poor vegetative diversity and structure of the area. These species may include, shrew (*Sorex* sp.), raccoon (*Procyon lotor*), mustelids such as weasels (*Mustela* sp.), canids such as red fox (*Vulpes fulva*) and feral dogs, and several types of rodent such as meadow vole (*Microtus pennsylvanicus*), black rat (*Rattus rattus*), and Norway rat (*Rattus norvegicus*).

4.3.4.7 ENDANGERED SPECIES

4.3.4.7.1 Flora

a. Sea beach amaranth and sandplain gerardia are two species of vegetation that can occur along the NJ shore, but not along the Hudson River in NY. Since upland sites are disturbed by the past or present actions of humans, there is little likelihood of these species being affected.

4.3.4.7.2 Fish

a. The short-nosed sturgeon is less likely to occur in the vicinity of the sites where salinity exceeds 3 ppt and where sufficient depths for overwintering are absent such as at Belford. The presence of the shortnosed sturgeon is much more likely on the Hudson River in NY; a facility sited upstream along the Hudson would require consultation with resources agencies and the State of NY.

4.3.4.7.3 Amphibians

a. No amphibians are known to occur at either site.

4.3.4.7.4 Reptiles, Sea Turtles

a. The use and distribution of the areas contiguous to the upland study areas would vary from site to site. Estuarine areas contiguous to upland disposal such as at Belford would have a moderate likelihood of having sea turtle being occasionally present. The upstream site on the Hudson River would be well out of these turtles range.

4.3.4.7.5 Birds

Peregrine Falcon

a. The peregrine falcon, recently Federally delisted, does nest within the study area and some 15 aeries have been discovered and monitored, primarily on bridges and buildings. The nesting adults stay in the vicinity of the Bight during winter. Further, the NY/NJ metropolitan area is important, in that it is along the migratory route for the highly migratory subspecies (*tundrius*) that nests in Canada and Alaska. At Belford the most likely occurrence would be brief visits by migrating peregrines.

Bald Eagle

a. The bald eagle does not nest in the study area. Both subspecies of the bald eagle do migrate through the area, and the northern subspecies, occasionally overwinters in the Bight area, although its most important over wintering site near the study area is along the Hudson River and Catskill Reservoirs (USFWS 1997). The northern subspecies continues to rebound.

Piping Plover

a. The piping plover coastal population is currently listed as Federally threatened. Piping Plovers nest on Sandy Hook and the Rockaway Point peninsula. This species has not been reported in the vicinity of the Belford, NJ, or any potential NY sites.

Roseate Tern

a. Roseate tern nesting in the study area is rare. The most likely areas are Sandy Hook and at Rockaway Point peninsula.

4.3.4.7.6 Marine Mammals, Whales

a. Great whales are rarely found landward of the baseline (Sandy Hook Breezy Point transect). No effects on these cetaceans are anticipated for any upland site.

4.3.4.8 ESSENTIAL FISH HABITAT (EFH)

a. EFH is not applicable to upland areas.

4.3.4.9 CULTURAL RESOURCES

a. Cultural resource studies have not yet been conducted as part of the DMMP project for any of the proposed upland options. As a potential study area it is far too large, and specific sites have not been proposed yet to narrow the investigation to a manageable size. The NY/NJ area has been occupied for approximately 10,000 years and has been subject to significant development for centuries. The remains of this occupation may be encountered in many forms throughout the region and may include standing historic structures, prehistoric and historic archaeological sites and historic landscapes. In general, the upland disposal areas may contain a variety of potentially significant resources depending upon the historic land use of the properties and on current site conditions. The need for a cultural resource investigation in connection with each option, and the scope of that survey will have to be assessed in more detail as DMMP options and specific sites are determined.

b. The potential for the implementation of Contaminant Reduction methods to encounter significant cultural resources is low. Cultural resources that may be encountered would include historic industrial structures and sewer plants. "Hot spots," proposed to be capped, most likely represent disturbed areas that would not contain intact resources.

c. The present site at Belford, NJ, is under consideration for a proposed upland confined disposal facility, although the most recent information indicates the site will be used as a stockpile area for material to remediate a nearby landfill. A number of cultural resource studies have been undertaken in Belford and the surrounding area. While recent cultural resource studies in this area have failed to recover any prehistoric materials the authors Harris and Reyes (1991) have stressed that the shoreline around Raritan Bay is sensitive for Native American materials. An early study of the marsh adjacent to Ware Creek, in the vicinity of the proposed disposal area, found the deposits to be heavily disturbed (Kraft 1977).

d. The fishing community at Belford, on Comptons Creek, was one of the earliest on Raritan Bay. Belford is now one of the last remaining vestiges of "baying," a term applied to traditional means of water-related employment and Belford has been determined eligible for the NRHP as the Belford Historic District (Harris and Reyes 1991). The Earle Naval Weapon Pier, in the vicinity of the proposed upland site is potentially eligible for the NRHP. Other impacts such as to the viewsheds of significant properties will have to be evaluated.

4.3.4.10 SOCIO-ECONOMIC FACTORS

4.3.4.10.1 Shipping

a. Shipping is not directly affected by this upland disposal, as presently contemplated.

4.3.4.10.2 Commercial and Recreational

a. Commercial and recreational use would not be directly affected. Benefits would be likely, by keeping nearby marinas and channels at sufficient depth for navigation.

4.3.4.11 WATER QUALITY

a. Surface fresh water is an important consideration where it is present on potential upland sites. According to the NJDEP, the most common water quality problems occurring in the state's freshwater rivers and streams include total fecal coliform bacteria (in 81% of the freshwaters), nutrients (also 81%), depressed dissolved oxygen levels, siltation, road salts, and oil and grease. Other types of known or suspected water quality problems found statewide include thermal modifications/elevated stream temperatures, habitat alternations, pH fluctuations and rising chloride and sodium levels (NJDEP 1995) (Table 4-12).

b. Areas with higher than recommended levels of PCBs and pesticides include NJ/NY interstate waters and rivers in the urbanized northeast part of the state.

c. In general, knowledge of the presence and overall impacts of toxic substances in the state waters is limited. A clear understanding of the presence of heavy metals within the environment is clouded by evidence that indicates that a percentage of the historical record for metals may contain inflated values.

d. Surface water resources shown on the Sandy Hook quadrangle for the immediate project area includes Compton Creek and Ware Creek. Both creeks flow into the Sandy Hook Bay. Pews Creek is 1.5 miles to the northwest and Wagner Creek is about 1 mile to the southeast of the site. No stream specific water quality data could be obtained for these streams, however watershed specific water quality data were available through the NJDEP (NJDEP 1995). Major watersheds in Monmouth County include the Navesink River watershed and the Atlantic Coastal basin. Table 4-13 presents a water quality index of categories, components and criteria for assessing NJ rivers and streams in Monmouth County, NJ (Belford Harbor).

e. The Atlantic Coastal Basin is situated in Monmouth County with the Navesink River watershed being the largest in this segment, draining an area of 95 square miles. The Shrewsbury River drains an area of 27 square miles and the Shark River an area of 23 square miles. Tributaries to these rivers include the Swimming River, Yellow Brook, Big Brook, Mine Brook, and Willow Brook to the Navesink; Parkers Creek, Oceanport Creek, and Little Silver to the Shark River (10 miles). Small tidal streams drain Northern Monmouth County directly to Raritan Bay. There are many small ponds in this area, as well as Swimming River Reservoir and the Glendola Reservoir - both major potable water impoundments. The waters in this region have been classified FW-2 Trout Maintenance, FW-2 non-trout, and SE-1.

f. Water column analyses show aluminum, copper, iron, lead and phenol to be parameters of concern. Iron values greater than the assessment criteria occur in all of the samples collected, 75% of the lead results exceed the criteria. Copper values greater than the criteria also occur in a high percentage of the samples. Forty seven percent of the aluminum results exceed the criteria. Phenol values greater than the criteria occurred in 19% of the samples. In thirteen volatile halogenated organic samples, none of the results for any of the 27 organic substances exceeded the criteria. Chloroform was detected once, but the level was well below the assessment criteria.

4.3.4.12 GROUNDWATER

a. Groundwater provides approximately 50% of NJ's potable water, with 39% coming from public-supply wells and 11% from domestic-supply wells. In addition, groundwater provides baseflow to streams and is closely related to the ecology of the state's wetland systems. Groundwater in the state is divided into three classifications in order to protect its designated uses. Class I groundwaters are waters of special ecological significance. This classification includes the groundwaters within FW1 surface watersheds and those within the Pinelands area as delineated by the Pinelands Protection Act. Class II groundwaters represent waters for potable water supply. Class III groundwaters are waters with uses other than water supply. This includes waters that due to natural compositions (such as high chloride levels) are not suitable for potable water supplies (NJDEP 1995).

b. Monmouth County and portions of Middlesex County are located in the coastal plain physiographic province of NJ. This is the largest physiographic province in NJ, covering an area of 4,689 square miles. During the formation of the coastal plain, a multi-layered aquifer system consisting of one major unconfined aquifer and four major confined aquifer systems developed (NJDEP 1995). The USEPA has designated the NJ Coastal Plain Aquifer System underlying Monmouth County as a sole source aquifer (USEPA 1988).

c. The Englishtown aquifer, Wenonah–Mount Laurel aquifer, and confining beds and minor aquifers are the principal aquifers found in Monmouth County. The portion of Middlesex County located within the coastal plain is underlain primarily by the Potomac–Raritan–Magothy aquifer (USGS1999b). In 1995, Monmouth County had a total water withdrawal of

29,966 million gallons of which 9,992 million gallons was derived from groundwater. In Middlesex County the largest quantity of water, 11,754 million gallons, is withdrawn from the Potomac–Raritan–Magothy aquifer. Of that, 7,681 million gallons is derived from the upper Potomac–Raritan–Magothy aquifer and 4,073 million gallons is from the lower Potomac–Raritan–Magothy aquifer (NJDEP 1995). Overpumping in some of the coastal plain aquifers has resulted in water level declines. This has impacted the Mount Laurel and Englishtown aquifers in Monmouth County and the Old Bridge and Farrington aquifers of the Potomac–Raritan–Magothy system in the South River/Raritan Bay area. These areas are characterized by extensive cones of depression in the regional flow field deep enough to cause saltwater encroachment from nearby saltwater bodies. In addition, there is increased recharge from adjacent aquifers due to the lower hydraulic head in these areas (NJDEP 1995).

d. The State of NJ has a Saltwater Monitoring Network that has been in existence since 1923. This network is comprised of over 400 wells located along the Atlantic Ocean, Raritan Bay, and Delaware Bay. The network provides an early warning system for saltwater intrusion into the groundwater of the state (NJDEP 1995). Over-pumping of the Coastal Plain aquifers has resulted in the development of large regional cones of depression; the most extensive of which is in the Potomac–Raritan–Magothy aquifer system. Within this aquifer system the groundwater levels have declined as much as 23 ft from 1978 through 1983. Although the overall cones of depression were not as great as in the Potomac–Raritan–Magothy aquifer system, heads declined as much as 29 ft in the Englishtown aquifer system during the same time period. Declines were as much as 52 ft from 1983 to 1988 for the Englishtown system. Due to the availability and use of the Manasquan (Reservoir) water and the state imposed cut back on the use of public supply wells, water levels within the Englishtown and Mount Laurel aquifers have risen dramatically during the early 1990's (NJDEP 1994).

e. Historically, aquifers in Brooklyn and Queens, NY, have had problems with saltwater intrusion. By 1947 all wells within Kings County, NY, had been shut down due to saltwater contamination. In response, groundwater withdrawal increased in Queens County, until salt-water intrusion also became a problem in that county. In 1974 all wells in Queens were shut down, with the exception of those belonging to the Jamaica Water Supply Company (Cartwright 1998).

f. Typically, the shallow groundwaters of Staten Island proceed seaward, toward the saline groundwater that surrounds the island. With the exception of the shallow wells near the shores and wells screened deeper than 40 ft below sea level for each foot of head in the well above sea level, all groundwater on Staten Island is good for most of NY City's permitted uses. Groundwater has not been used for public drinking supply since 1970. A 1953 study of 14 wells on the island found that chloride concentration was low to moderate (8 to 70 mg/l). These wells were within 1 mile of the shoreline, with most of the wells located within 1/2 mile of the shoreline. Twelve of the study wells tapped glacial deposits ranging from 22 to 180 ft in depth. Water from a well located 0.2 miles from shore and 180 ft deep contained a chloride concentration of 1,550 mg/L (chloride above 250 mg/L is considered excessively salty). Two of the wells tap the Raritan formation and are located at depths of 135 ft and 230 ft. These wells contained the lowest chloride concentrations at 10 and 2 mg/L respectively (USGS 1988).

4.3.4.13 AIR QUALITY

a. The land placement portion of the study area (UP-1) is located in Monmouth County, NJ. The State of NJ monitors for the six specific air pollutants that are part of the NAAQS as well as meteorological parameters: acid precipitation; smoke shade; TSP; and other trace metals (e.g., cadmium, chromium, copper, iron, magnesium, manganese, nickel, and zinc). Air quality for Monmouth County NJ has been previously discussed under the NY Bight Apex-Ocean, Section 4.3.1.13.

4.3.4.14 NOISE

a. The Monmouth County site is zoned for industrial uses. A private airstrip is located in the vicinity. The land to the west of the site is used for light industry and residential uses. To the east of the site is a military installation and coastal wetland areas. Sandy Hook Bay, a water treatment pond, a sewage treatment facility, and a potential site for a fertilizer company are located to the north of the site. A small trucking company and residential property are located south of the site. There are no parks, recreational or wildlife areas within a 2-mile radius of the site. Land uses by residential, religious, educational, convalescent, and medical facilities are more sensitive to noise than commercial and industrial uses. Land use to the west of the site is residential and light industrial. Local road maps show that there are no hospitals within 2 miles of the site. Review of the Sandy Hook, NJ–NY USGS quadrangle indicates that there is a church and a school within 0.5 miles of the site. There are two churches and one school within 1 mile of the Belford Harbor site.

4.3.4.15 AESTHETICS

a. Aesthetic resources of the upland study areas can be defined as the perceived view of a particular upland disposal site by the surrounding population. Federal laws that apply to aesthetic resources include the Coastal Zone Management Act of 1972 (Sections 302b, 303b), the NEPA of 1969 (Section 101b), the Water Resources Planning Act of 1965 and the "amenities" criteria of the MPRSA of 1972. NY State laws that apply to aesthetic resources include Section 617.21 Appendix B of the NY State Environmental Quality Review Act, which can be used to collect relevant visual resource data for impact analysis (NYECL 1987).

b. The perceived aesthetic viewscape for this study area can be described as the visible surrounding land and/or water. For establishing the aesthetic environment on land, consideration may be given to adjacent community facilities such as schools, churches, libraries, community centers, parks, designated federal or state wild and scenic rivers, historic or recreational facilities, wildlife areas, public foot trails, or other designated open spaces. The viewscape from popular public or designated scenic viewpoints and/or attractions may also be considered when establishing the aesthetic surrounding environment. Additionally, consideration may be given to residential zones and all roadways or rail systems in relation to the project vicinity (Conner et al. 1979, NYECL 1987, and USACE 1996a). For upland disposal sites located along a shoreline, the aesthetic view of the shoreline from fishermen and boaters using offshore waterways may also be described and considered.

c. The surrounding land use of the Belford Harbor region in Monmouth County supports commercial and recreational fishing, commercial businesses, light industrial and residential land uses. Approximately five miles from the site is the Twin Lights of Navesink State Historic Site (Jersey Shore Guide 1998). The public may climb 200 ft to the top of the towers to view the surrounding landscape. The site may be visible from this scenic viewpoint and other elevated locations. There are no parks, recreational or wildlife areas within two miles of the site from which to view the site (USACE 1996a). However, the site may be visible across the Sandy Hook Bay from the west shore of the Sandy Hook Gateway National Recreation Area.

4.3.4.16 RECREATION

a. Monmouth County contains many parks and recreation areas that offer a large variety of activities for both residents and tourists (Table 4-14). The county is home to the Sandy Hook Unit of the Gateway National Recreation Area, Allaire and Monmouth Battlefield State Parks, as well as 34 county parks, and three state wildlife management areas. Acreage for the amount of open space and parks totals over 20,000 acres. Not included in this total are the many beaches maintained by shore towns along Raritan Bay and the Atlantic Ocean.

b. The Sandy Hook Unit of the Gateway National Recreation Area covers 4,169 acres at the northernmost point of the NJ shoreline (Scott 1998) and is approximately 4 miles east of the Belford site. The National Park Service maintains the park for multiple uses. Hiking, fishing, bird watching, and beach combing are popular activities throughout the year. In the summer, swimming and sunbathing are the most popular activities at swimming areas along the park's six miles of ocean beaches. The public can also visit Historic Fort Hancock with exhibits and tours of the historic building including America's oldest lighthouse (National Park Service 1998).

c. The State of NJ maintains two parks and three wildlife management areas in Monmouth County. Both parks are historical landmarks that also have facilities for recreational activities including camping, hiking, canoeing, biking, hunting, and fishing. The three wildlife management areas are primarily maintained for hunting but allow other uses such as hiking and bird watching (NJDEP 1998).

d. Although there are no marinas located in Belford proper, located nearby is the Monmouth Cove Marina in the bordering Town of Port Monmouth. The Leonardo State Marina is located to the southeast in Leonardo. The Monmouth County Marina is a county run marina.

e. Monmouth County maintains a system of 34 parks and recreation areas totaling over 10,000 acres (Kirkpatrick 1998). The parks are used year-round and for a variety of recreational activities including golfing, hiking, fishing, horseback riding, picnicking, tennis, ice skating, cross country skiing, and camping. Total attendance for Monmouth County parks exceeded 3 million for 1997 (Monmouth County Parks Department 1998).

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5.0 IMPACT ASSESSMENT

5.1 INTRODUCTION

a. The DMMP addresses the management of dredged material in two timeframes: short-term needs between the years of 2005 and 2014, and long-term needs between the years of 2015 and 2065. The short-term timeframe generally corresponds to the period when new dredging associated with channel deepening is occurring and the long-term timeframe is a period dominated by maintenance dredging. In recognition of the uncertainties associated with future sources of dredged material, and uncertainties regarding the availability of some of the beneficial management options, the Recommended Plan also evaluated environmentally acceptable disposal options (i.e., those that were determined to minimize environmental impacts), which could serve as contingencies if the preferred options cannot meet all the Port's disposal needs.

It has become apparent based on a considerable amount of field data collected and analyzed in the Hudson Raritan Estuary since 2000 that an important exception to this general trend in improved water, sediment and habitat quality is in the hundreds of anthropomorphic basins, marinas and other poorly-flushed dead-end waterways located throughout the HRE but concentrated in the inner urban core and Jamaica Bay. Without site-specific human intervention, these enclosed and confined waterways seem to be incapable of self-improvement in response to estuary-wide water quality improvements. These isolated areas tend to be recalcitrant to water quality based habitat improvement (generally unlike the high-energy open bays of the estuary) for at least the following reasons:

- Relatively long residence time in heads-of-tide areas.
- Relatively high sedimentation rates (primarily fine material) due to the predominance of low-energy hydrodynamic regimes.
- CSO's and major storm water outfalls common, particularly at the heads of DEB's (anthropogenic waste from these sources tend to contribute to high BOD in sediments and the water column, greater than average contaminant concentrations and very fine high water-content sediments, all of which contribute to poor or, when extreme, virtually non-existent benthic and demersal fish habitat).
- The prevalent disconnection between localized tidal prisms and enclosed water body geometry and volume (i.e., the closer the fit between TP and total basin volume, the greater the capacity of the tides to maintain better water quality, since down-tide receiving waters are generally considerably cleaner, although in some cases (e.g., Flushing Bay) the water quality of the receiving tidal body (e.g., the East River) can also be a constraint to improved habitat quality if the difference in water quality between the water bodies is small).
- Predominance of vertical edges due to historic fill and bulkheading, which tend to maintain poor water quality in enclosed areas.

Thus, in the long term, assuming restoration funding is available, the pro-active rehabilitation of these enclosed and confined waterways would tend to both generate a need for HARS-suitable (and to a lesser extent, non-HARS-suitable sediment for CAD sub-fill) material for filling overdredged areas and capping contaminated (or otherwise inappropriate surficial) sediment, and on the other hand, for the generation of additional non-HARS-suitable material which may have to be transported to a different site for treatment and/or final disposition. Environmental dredging and capping projects could potentially generate much more dredged material than Federal maintenance dredging and/or non-Federal berth dredging. At this time, the volumes and types of sediments generated and/or consumed by environmental dredging projects is very difficult to estimate, in part because they are highly dependent on special Federal and non-Federal public funding, although some funding comes from legal settlements and private entities.

b. The Recommended Plan goes beyond dredged material management in that many beneficial use options address other environmental problems or use dredged material to create, enhance or restore valuable habitats. In addition, the Recommended Plan recognizes that the CARP program might reduce future sediment contaminant levels, which are a limiting factor for some management options. This is consistent with the dual goals of the DMMP planners to maintain the Port and protect the estuary. It is important to recognize that because of the approach taken in the DMMP, beneficial impacts become paramount in the impact assessment for this PEIS.

c. The feasibility, potential availability, and siting information for the options considered for inclusion in the DMMP vary widely, thus the assessments cannot be completed at the same level of detail for each option type or site (when applicable). However, this is a programmatic EIS and there is sufficient information to compare the basic option types to develop an environmentally acceptable Recommended Plan (see the Implementation Report and Technical Appendix for additional information on developing the Recommended Plan). There is a large amount of existing information on dredging and dredged material management that provides support for this function. The Recommended Plan is designed to be flexible in recognition of the changing status of options, changing environmental priorities, and the potential for future reductions in sediment contaminant levels.

d. Initially, a large number of dredged material management options were evaluated in a report prepared by the NYD (USACE 1996a) for their applicability to the needs of Harbor (see Sections 1.5 and 1.6 of the DMMP – Implementation Report). The potential list of options and sites was reduced as presented in the NYD DMMP Progress Report (USACE 1997). The Progress Report considered comments from state officials in NY and NJ, the PANY/NJ, and the DMMIWG of the HEP through eight public meetings. A Partners' Working Group had the task of reviewing the remaining options and assigning a preference ranking (see DMMP – Implementation Report, Table 2-1) to each option, as well as a status ranking which defined an option's current availability. The availability of an option was based on its status with respect to permits, overall sponsor approval, environmental acceptability status, and technical feasibility. Each of these options is separately addressed for its environmental impacts in Section 5.3 of this chapter.

e. In shaping the DMMP, the various options were grouped into alternatives that were potential courses of action for dredged material management. Grouping of options is needed because no single option can accommodate all of the dredged material that will be produced during the 60-year planning period. The alternatives reflect the dual goals of the plan, the need for flexibility, and the desire to achieve environmental benefits from the management of dredged material. Four alternative groupings were developed for consideration:

- No Action
- Recommended Plan
- Environmentally Preferred Alternative
- Base Plan (Economically Preferred Alternative)

f. The assessment of these alternatives is presented in the cumulative impact section (Section 5.6). The Recommended Plan alternative addresses near-term (2005–2014) and long-term (2015–2065) time periods, which generally reflect the period in which substantial new navigation work may occur in the Harbor (near-term), as well as maintenance dredging (near-term), and a period when the majority of dredged material is provided from maintenance of facilities (long-term).

g. This PEIS is not the final step in the environmental review process for implementing dredged material management options. The DMMP provides a guide to options and sites where implementation could occur in an environmentally sensitive manner. Site-specific applications of selected options might include permitting at Federal, state, and local levels (as required) with an associated environmental review. Reviews would include information developed from site-specific surveys and analyses, as appropriate for the magnitude of anticipated impacts, and would be presented in subsequent NEPA documents. The NEPA review process and all required permitting would have to be completed before any options identified in the DMMP would be implemented.

h. The DMMP is a comprehensive, long-term plan that evaluates short term and long-term options over a broad potential impact area. With its emphasis on beneficial use, it is anticipated that the DMMP will become a focal point for environmental management in the Harbor.

i. Section 5.2 begins with a discussion of general impact considerations that are common to the options and provides perspective on the assessments that follow. The potential impacts of the option types are addressed successively in the same order they are presented in this PEIS (Chapter 3). Section 5.5 presents environmental justice issues. The assessment includes options that are in the “not preferred” category to provide a complete comparison of impacts and to show the basis for this status designation.

j. The DMMP has an overall planning horizon of 60 years, with a near-term horizon of 10 years (2005-2015). The availability associated with options varies from existing and permitted options to others for which feasibility is still under study. For those options in a pilot study stage, results will be available within the near-term horizon. For the sediment contaminant reduction option, a long-term program of pollution reduction spanning the 60-year planning horizon is anticipated. With the successful implementation of a long-term contaminant reduction program, initiated through the CARP, significant reductions in contaminant levels are anticipated within the DMMP planning horizon.

k. The plan has been formulated to identify sufficient capacity to allow shifting among the options as sites reach capacity and new options become available, as new options fail to become operational as planned, or as they are determined to be infeasible. The disposal-only contingency options provide a fallback position that can be applied on an as needed basis if beneficial use cannot meet placement capacity needs. In summary, the temporal boundary for impacts can only be described in broad terms, with the timing of specific activities dependent upon the pace of Harbor dredging activities and the changing availability and cost of management options.

l. The spatial boundary for the assessment spans the potential location of all possible option sites. Figure 5-1 shows the study area and major aquatic subareas that were the basis for planning evaluations and the descriptions of the affected environment. The upland subarea boundaries are indefinite in that individual sites are spread across a broad area and could include a number of distant sites if the mine remediation option proves to be feasible and practical. There are many potential candidate sites in the upland section that may develop within the near-term horizon. Figure 5-1 shows the Seaboard and Bayonne land remediation sites because they are currently permitted sites in this category.

m. Temporal and spatial boundaries are not critical to this assessment because options would not be implemented until they are shown to be feasible and environmentally acceptable at a specific site. All applicable permits, NEPA requirements, and responses to contemporaneous public comments would have to be completed before any option would be implemented. For many of the beneficial use applications, a site would be selected on the basis of the need for remediation, thus the spatial boundary would be dictated by the needs of the site. Where siting considerations could be important with regard to potential environmental impacts, they are discussed with each option type.

5.2 GENERAL IMPACT CONSIDERATIONS

a. Large areas of aquatic habitat in the Harbor have been dedicated to navigation facilities for many years. Sedimentation in channels and berthing areas results in the need for regular dredging to maintain these facilities. Much of the sediment contains contaminants from various past and present sources in the Harbor watershed. Despite the repeated physical disruption of habitat associated with dredging, and the presence of contaminants, the Harbor maintains important aquatic resources, which have increased in abundance and expanded their distributions in response to improved water quality conditions in the past several decades. There is a general trend of decreasing contaminant levels and less habitat disruption in the Harbor on a gradient from the Upper Bay Complex, to the Lower Bay Complex and to the NY Bight Apex. The effects of habitat disturbance and contaminants are generally widespread in the Upper Bay Complex and localized in the Lower Bay Complex and NY Bight Apex. These observations have important implications for the selection of a Recommended Plan and sites from among the available choices.

b. The approach taken in the DMMP is to minimize new impacts to the aquatic resources of the Harbor by utilizing dredged material in beneficial applications, primarily the remediation of degraded aquatic and upland sites. The major sites in the recommended course of action (i.e., HARS, brownfields, and landfills) are sources of contaminants that are adversely affecting the aquatic environment, and in the case of the upland sites, they are of concern with regard to human health and other ecological receptors. Thus, the DMMP approach has the dual purpose of managing dredged material and remediating existing degraded habitats. The DMMP minimizes the spread of contaminants to unimpacted areas and confines the habitat disturbance associated with dredged material management to already disturbed areas. This is considered to be sound environmental planning that produces general ecological benefits.

5.3 ASSESSMENT OF OPTION TYPES

a. The options to be evaluated are presented in the Implementation Report (see DMMP – Implementation Report, Table 2-1), and are briefly summarized in Chapter 3 of this PEIS. They include general option types and a large number of sites involving a variety of activities depending on the basic option type under consideration. Because this is a programmatic EIS, this document's goal is to provide a comparison among the different types of options. It is not a site-specific assessment of a given type. As a consequence this assessment will address only the option types with some consideration of individual sites in the case of existing facilities or where substantial data and analyses are available.

b. Among the option types, the depth of the assessment will vary depending on the level of development and the availability of information. The depth of assessment will range from a qualitative discussion to an assessment of specific environmental issues that are relevant to the option type. There will, however, be a sufficient level of evaluation to compare the various options with respect to option impacts and overall impacts of the alternative plans, which consist of various combinations of options.

c. Because there is a large number of option types and sites, tabular summaries of the potential impacts of option types have been prepared to permit comparisons among related options and to condense the information for convenient reference (Tables 5-1, 5-2, and 5-3). Summary tables were prepared for Contaminant and Sediment Control (Table 5-1), Beneficial use (Table 5-2), and CDFs, including CAD Facilities (Table 5-3). The groupings of option types in these summary tables generally follow the major groupings in the Implementation Report. Within Beneficial use, ocean remediation, habitat creation, enhancement, restoration, and land and mine remediation are the option types summarized.

d. In the CDF summary (Table 5-3), CAD facilities different from a CDF are included with island, nearshore and upland CDFs because of their similarity to these option types and uses (disposal) and the value of comparing them.

e. Further studies will be required in the several areas listed below for site-specific projects. The list is meant to be representative rather than comprehensive, and not all listed activities are necessarily applicable to all options.

- Agency Coordination (state and Federal) – Clean Water Act permits, Coastal Zone Management consistency determination.
- Living Resources Investigations – *Aquatic*: Species composition, time of occurrence in area, life-stage usage for fish and invertebrates, essential fish habitat for fish; benthic investigations; site investigations and archival research related to wetlands. *Terrestrial*: Species, time of occurrence in area, life-stage usage for vertebrates and invertebrates; Federal and state threatened and endangered Species.
- Sediment Investigations – Grain-size analysis, contaminant characterization, bioassay as appropriate.
- Air Quality – Air permits from USEPA and states; emissions and impact investigations for dredged material; on-road and off-road mobile sources, including marine vessels and locomotives; analyses related to assessment of general conformity of actions; analysis of transportation conformity in actions involving transportation; identification of emissions associated with specific actions.
- Water Quality – *Groundwater:* well surveys, trends in groundwater levels, drawdowns, chemical constituents. *Surface water:* data from USEPA, USGS, states on physical and chemical properties; state designations for potentially affected waterbodies.
- Water Circulation – Circulation patterns in aquatic settings.
- Cultural Resources – Records searches related to prehistoric and historic resources.
- Noise – Current ambient noise levels; trends in noise; assessment of impacts from implementation, both temporary and permanent.
- Aesthetics – Current setting; trends in new development; assessment of impacts from implementation, both temporary and permanent.
- Risk Analysis – Environmental risk, human health risk.
- Environmental Justice.
- Socio-economic Considerations – Commerce and recreation.

f. In the process of outlining this assessment and in the development of the summary tables, it became evident that there was little or no potential impact for some of the environmental parameters typically addressed in an EIS. Cultural resources, noise, and aesthetics will be discussed as a group for each option type and any potential site-specific concerns will be presented in that discussion. Site-specific NEPA documents will address concerns related to these subject areas as needed. With respect to air quality, for options that would involve a transportation component, there would be an evaluation of compliance with State Implementation Plans under USEPA's transportation conformity rule (40 CFR 93.150 et seq.).

g. Socio-economics is discussed for the DMMP as a whole because all option types share the common goal of maintaining a viable Port, in an environmentally sound and complementary manner, in keeping with the dual goals of the DMMP. Where there are option types with specific socio-economic impacts they will be discussed separately in the section for that option type.

5.3.1 SEDIMENT REDUCTION

a. The goal of this option is to reduce the need for dredging to the maximum extent possible. A primary factor in dredged material management is the large volume of sediment that eventually consumes beneficial use options or disposal sites, requiring the development of new sites on a continuous basis. Reduction in sedimentation in the navigation channels has the direct benefit of diminishing the dredged material management problem as well as reducing the frequency of dredging (Table 5-1).

b. The methods available for sediment reduction, as outlined in the Implementation Report and described in Chapter 3 of this PEIS (Section 3.3.1), include watershed sediment management control, channel design optimization, advanced maintenance dredging and structural modifications. These methods would be applied almost exclusively in the Upper Bay Complex subarea. The application of the methods could involve large areas of Harbor substrate (channel design optimization, advanced maintenance dredging, sedimentation basins) or small areas, primarily at berthing facilities (pneumatic barriers). The area over which a specific method would be employed and the number of applications within the Harbor would be significant factors in the level of impacts.

c. Some of these methods are being evaluated for use in the Harbor now. The NJDOT/OMR evaluated a pneumatic suspension system at a site in NJ and found that although the system appeared to reduce sedimentation, the costs associated with design, installation and operation may be prohibitive (Chapman and Douglas 2002). CITGO Petroleum is currently performing a demonstration of a turbo scour system on the Arthur Kill. The current NY & NJ Harbor Navigation Study (USACE 1999a) is taking into consideration channel design optimization and other sediment control methods in the areas that past modeling has suggested may benefit from their application.

d. With the exception of the proposed projects discussed above for berthing areas, sites for the potential application of the available methodologies cannot be identified at this time. The following discussion addresses only the potential generic impacts of this option type.

5.3.1.1 GENERAL CONDITIONS

a. This option type would entail both beneficial and adverse impacts distributed over a wide area and an extensive timeframe if the methodologies being considered attained widespread use. Benefits accrue from the elimination of or reduction in the frequency of dredging and the disruption of the benthos and water column that it causes, and the associated reduction in dredged material disposal needs. Adverse impacts, if any, would occur primarily through substrate disturbances or changes in substrate type, which could occur from options that alter existing physical conditions, such as channel optimization, barriers and sedimentation basins. These changes could translate into adverse effects on benthos and possibly fish that feed on the benthos. These changes could also enhance conditions where the existing condition is degraded or the frequency of dredging degraded the habitat.

b. With regard to the reduction in the need to dredge, there is the potential that in shifting sedimentation away from selected locations (berthing areas primarily) there would be an increase in the need to dredge other areas. For example, if a series of berths along a channel were utilizing a scour method to maintain a desired depth, the adjacent channel may fill more quickly. In such a case the need to dredge may not be reduced and could possibly be increased depending on local sedimentation patterns in the channels. This emphasizes the need to model or otherwise assess the nearfield and farfield effects of these options on a site-specific basis before implementing them on a large scale.

5.3.1.1.1 Water Quality

a. Water quality impacts of this option will generally be very small because the proposed activities would not add or remove chemical constituents and the change in sedimentation rate would be a very slow process in most cases. The initial use of scour methods in an area containing accumulated sediments could create a short-term resuspension of fine-grained material containing contaminants. This effect, however, would be limited in duration and aerial effect, essentially keeping material already in suspension moving for the brief time period needed to carry the suspended particles beyond the area being protected. Pneumatic devices for sediment suspension may also increase dissolved oxygen in the water column.

b. An important perspective regarding water quality effects is the fact that the sediments and any associated contaminants that would be influenced by the methodologies in this option are already in the aquatic habitat of the Harbor. The proposed methodologies would cause a redistribution of sediment in areas where sedimentation is generally high and contaminants are widespread. Under these circumstances, there would be no incremental significant adverse impacts.

5.3.1.1.2 Benthos

a. Benthic invertebrates, both infauna and epibenthos, would experience primarily indirect effects from sediment reduction activities. Wherever sedimentation patterns are changed, a substrate change can be expected in both the treated area and sites receiving increased or reduced sedimentation. A change in substrate (including grain size, depth, current regimes) would be followed by site-specific changes in the benthic community because these factors have a major influence on community structure. Whether such changes would be beneficial, adverse or neutral depends on the type of change and the size of the affected area. These are site-specific questions that would be addressed in site-specific NEPA documents. However, existing information on Harbor benthos can provide perspective on this question.

b. Fine-grained sediments are widespread in the Harbor and generally contain a benthic community that is low in diversity but relatively high in productivity. The community is dynamic in response to natural and human-induced changes that disturb the substrate. The community has been found to recover quickly from disturbances (Iocco et al. 2000). Low levels of contaminants are widespread in the Harbor, thus the benthic community is constantly exposed to these contaminants. Based on these considerations a redistribution of sediments caused by dredging reduction options would not have a significant adverse impact on benthos, possibly allowing for the expansion of communities living in fine-grained material to areas that do not have to be dredged.

5.3.1.1.3 Other Living Resources

a. This subsection addresses living resources other than benthos. The potential for impacts on these resources is limited by the types of changes potentially induced by the methodologies in this option type. The redistribution of sediments would mimic natural processes and existing disturbances such as dredging and the propwash of ships. These factors have been a feature of the harbor environment for many years and the existing aquatic community has adjusted to their presence. This option type does not introduce a new factor that would significantly alter harbor habitats. The placement of physical structures in the water (dikes, sills, detention basins) would represent a small area of habitat loss, which limits any adverse effects. However, if structures were applied on a widespread basis or to large channels or anchorage areas, or if substantial channel optimization occurred, the impacts associated with construction and operation would have to be evaluated on both a project specific basis as well as cumulatively, because of the large area of habitat potentially affected.

5.3.1.1.4 Essential Fish Habitat (EFH)

a. The potential impact on EFH is limited because the application of these methodologies is restricted to areas that were disturbed when the facilities were developed. The Upper Bay Complex is the only area that would be affected by this option. Some channels and berthing areas may have important seasonal uses, such as wintering habitat for fish, crabs, and spawning by winter flounder. Habitat value could be reduced or enhanced depending on the direction of the change associated with the activity. EFH is not expected to be adversely affected by several of the techniques that could be employed, such as silt screens at berths.

b. An exception to the limited adverse effects to EFH is the potential for impacts from turbo-scour type systems. These potential impacts include both entrainment and impingement. Studies are currently underway at sites in Georgia and North Carolina. Use of a turbo-scour system in NJ would require both entrainment and impingement fisheries studies. Another system, the ‘air guard’ system is expected to have only minimal potential adverse impacts.

c. Adverse effects to EFH species could occur with other sediment-reduction techniques such as channel straightening. Channel straightening could directly affect eggs or larvae of species such as winter flounder or windowpane. The loss of feeding habitat for juveniles and adult fishes could occur on the side slopes that were lost due to the straightening. These impacts could at least partially be offset by other sections of the former channel that would be filled and eventually become feeding sites, but in these instances at least some temporary impact would be expected until stabilization and recolonization of the filled site occurs. Regardless, substantial adverse impacts are not expected because the sites that might be straightened are not expected to be extensive. Maintaining deep water in berthing areas (interpier basins) may enhance habitat for juvenile striped bass, and shifting substrate from silt to sand may enhance wintering habitat for crabs. Habitat changes that went in an opposite direction (loss of depth and a shift to silt substrate) would represent an adverse effect for these species. As with benthos, the actual effect on fish habitat would depend on the spatial extent of the changes.

5.3.1.1.5 Summary

a. Sediment reduction incorporates a wide range of physical modifications to reduce the build-up of sediments in selected areas. Applications of these techniques in a small number of berthing areas would have little impact on aquatic resources. However, as the number of applications increased, or if there was an attempt to control sedimentation in a large area, site-specific evaluations, including cumulative impact assessments, would be needed. The planned small-scale projects will provide a baseline of information on applications of scour techniques to berthing areas. Additional studies would be needed for any large-scale applications of sediment reduction options that might be recommended. These options have little or no potential for adverse effects related to cultural resources, air quality, noise levels or aesthetics, with the exception of channel modifications. Compressors providing air for bubbler systems could be a stationary source of air emissions. Large-scale changes would modify the aquatic habitats on the channel slopes and possibly disturb buried cultural resources.

5.3.2 CONTAMINANT REDUCTION

a. The presence of contaminants in Port sediments was a major factor in the decision to develop a DMMP. Contaminant reduction is included as an option in the 2005 Implementation Report because future dredged material management choices will depend, in part, on the contaminant status of the sediments. The adverse environmental effects of contaminants and the added costs associated with managing contaminated sediments is a strong incentive to control sources. Because the estuary and near-shore ocean waters are the collecting points for an urbanized and industrialized area, the sediments in these waters contain a variety of contaminants with the potential for adverse effects on living resources. Under these circumstances, it is appropriate to use dredged material management as a focal point for programs to reduce contaminants at their source (Table 5-1). A more detailed summary of this approach and the options is presented in Section 3.2.2 of this PEIS, and additional detailed descriptions are provided in the Implementation Report and the Technical Appendix. CARP is an ongoing multi-agency and stakeholder effort to locate and control sources of chemical contamination throughout the Harbor watershed.

b. The Implementation Report addresses the uncertainties associated with predictions of future contaminant levels in Harbor sediments. Reliable predictions of trends in contaminant levels would be valuable for the ongoing management of dredged material, but such predictions are not needed to assess the general impact of contaminant reductions.

c. While upland source control is the primary approach to reducing contaminant levels, the management of existing in-water contaminants is a companion part of the program. The dynamic nature of estuarine sediments causes the redistribution of in-place contaminants throughout the Harbor. Maintenance dredging and some of the proposed new channel work represents a removal mechanism, which, in combination with the proposed beneficial use options, will lower contaminant levels in the short-term. In the case of HARS, and remediation of brownfields and landfills, some control of the in-water and upland sources of contamination will be achieved. With source control gradually reducing inputs and long-term maintenance dredging successively removing in-place contaminants, there should be a long-term trend toward cleaner sediments.

d. An additional companion to contaminant reduction from among the DMMP options is the development of decontamination technologies. A method of applying decontamination could be to treat the sediments from in-water sites with very high contaminant levels ("hot spots"). These sites, while containing relatively small volumes of sediment, represent major sources of contaminants for the Harbor. Decontamination would be an important component of a coordinated regional program for contaminant reduction.

e. The contaminant reduction option is exclusively a beneficial impact with regard to the contaminant reduction planning function. All resource categories benefit from, or are unaffected by, contaminant reduction. The activities associated with the control of sources or remediation of specific sites could involve important issues related to the safe handling of contaminants and other site-specific factors. This PEIS does not evaluate site-specific remediation plans because they are not yet available for most sites. The site-specific assessment of impacts would occur as part of a permitting process. It is assumed that the site-specific assessments would identify and provide for management of any potential local adverse effects related to control of source inputs. This process has already occurred with regard to the Bayonne site, the completed Jersey Gardens Mall site, and the Koppers/Seaboard site. Remediation plans were reviewed by state and Federal environmental agencies and mitigation requirements were applied to these sites for impacts related to wetlands.

f. A significant benefit of this option is the reduction in future dredging costs. A successful contaminant reduction program could result in a cumulative potential cost savings of $1.5 to $2.2 billion over the next 60 years**.** Site-specific/option-specific technical analysis and NEPA documents would identify and evaluate effects, both adverse and beneficial, associated with specific actions. This PEIS is intended only to highlight general information and impacts that may result from this type of option.

5.3.3 BENEFICIAL USE

a. Table 5-2 summarizes the major option types in the beneficial use category and contains a concise statement of the approach and a brief description of the option types. A more detailed summary of this approach and the options is presented in Section 3.2.3 of this PEIS, and additional detailed descriptions are provided in the Implementation Report and its Technical Appendix. The potential impacts on selected environmental areas of concern are presented in a comparison format. Beneficial use contains the options that are preferred based on the progressive approach taken in the DMMP. In a report to the NYD, USACE (2001a) discussed beneficial use of dredged material for habitat creation, enhancement and restoration in the Harbor.

b. With regard to EFH, the goal of the program seeking beneficial use of dredged material is to do no harm and most techniques would be designed to improve habitat. Adverse impacts to EFH from employment of beneficial use are generally not expected for applications such as ocean remediation, creation of shellfish habitat, and creation of reefs. Sites would generally be selected based in part to support the goals of EFH. Once sites are identified, EFH impacts would then be specifically addressed under a site-specific NEPA review.

c. While the following applications are categorized as beneficial use, some could have adverse impacts, although the net effect is expected to be positive. The following assessments are generic except where specific site or environmental issues are clearly defined by existing information.

5.3.3.1 OCEAN REMEDIATION

a. This option type is presently limited to the HARS. The criteria for dredged material placement at the HARS are site-specific. The history of the use of this site for dredged material disposal, documentation of existing contaminants, the decision to close and redesignate the site, and a site management plan along with analysis of impacts are reported in a Supplemental Environmental Impact Statement (SEIS) (USEPA 1997a). USEPA concluded that the benthic habitat could be restored and the loss of contaminants controlled by capping the site with HARS-suitable material as defined by the placement criteria. The information on this site is voluminous, but as a USEPA designed site, it represents the primary location for placement of dredged material that meets the criteria for ocean placement. It is anticipated that full remediation will require millions of cubic yards more than the 22.5 MCY already placed there; therefore, this site will be an important element for the DMMP during the long-term. Capping of dredged material is a procedure that has been used successfully at a number of sites, and monitoring has shown that the material was contained. Lessons learned from the first placement and capping at Boston Harbor, for instance, helped to make the second and third placements successful. These lessons can be used to great advantage in the Port to ensure that caps and the material below them remain where placed.

b. The beneficial impact of remediating the site was established in the SEIS, and monitoring is in progress to document changes in substrate conditions and the aquatic life community as remediation progresses. The management plan contains provisions to control remediation to avoid placement of inappropriate dredged material. The management plan in conjunction with the monitoring would allow refinements to the remediation program should monitoring reveal unexpected problems.

c. HARS is the first attempt at ocean habitat remediation in the United States, thus it has value as a test of this concept. There are other waste dumping sites in the Bight Apex that could be remediated in a manner similar to HARS. The monitoring at HARS would contribute to the evaluation of these other potential ocean remediation sites. HARS monitoring would also provide useful information on the potential habitat recovery if existing degraded areas in the Lower Bay subarea were considered for restoration (note: there are no current plans to consider them for restoration). Although the filling of a pit or other restoration option may be a somewhat different concept for managing dredged material, the information on the recovery of benthic habitat at an open water site would be applicable.

5.3.3.2 HABITAT CREATION, ENHANCEMENT, AND RESTORATION

a. This option type includes a wide variety of approaches with a common goal of creating desirable habitats or improving habitat conditions in degraded areas (Table 5-2). Dredged material would be used to modify physical conditions of selected sites so that the site can be developed for a specific habitat type. The dredged material may be used as the final cover or as a base to which additional covering would be added depending on the site objectives. Sites selected would generally be of low habitat value in their existing condition, but siting could incorporate functioning habitats that would be converted into rare habitats or other habitats more valuable than the existing conditions. A recent study conducted in support of the DMMP provides a summary of information on this option type, including descriptions of selected applications, evaluation of potential sites for some applications and the potential benefits and impacts associated with each application (USACE 2001a). See the DMMP – Technical Appendix, Section A.3.2, for a more detailed discussion.

b. This option achieves the dual goals of the DMMP directly in that it accommodates dredged material disposal and restoration of harbor habitats at the same time. Land remediation provides a comparable approach for upland areas. However, the use of dredged material for aquatic habitat restoration is untested in the Harbor. A phased test program would be undertaken at select sites and results evaluated before there is widespread application of this approach. The testing would involve before, during, and after sampling of physical, chemical, and biological parameters to establish the current use and value of the site, and its best restoration potential. Among the factors likely to be studied would be depths, currents, water quality, sediment chemistry, benthic communities and fish. Modeling could be used to evaluate potential changes, followed by field data acquisition to verify the models. This type of sampling and analysis would provide a basis for using models along with field sampling for assessing impacts of larger applications of this option. BMPs would be used to control potential problems associated with the use of these alternatives.

c. Applications of this option type would be targeted primarily at aquatic sites in the study area, but upland applications for bird or other wildlife habitats are among the possibilities under consideration. Much of the restoration work would be at sites that have been previously identified as being degraded, of low value, or of a common habitat type in order to justify conversion to more valuable or less common habitat types. Creation and enhancement sites have been evaluated on a preliminary level for some options, but a site selection process would be needed to refine these and identify sites for other options.

d. Because of the industrialization of the Harbor complex over the last 200+ years, little of the Harbor sediments other than glacial clay or deeply buried silt are fully void of contaminants. Use of materials that contain contaminants can result in transfer of the contaminant to the biota during placement. Also during placement there may be temporary odor from the mud/silt. Contaminants, however, tend not to bind to sands and other large-grained dredged material. Consequently their use as fill would have minimum to no impacts due to contaminant transfer. It may be feasible to use non-HARS material as initial fill to adjust the site elevations before it is capped and isolated from the biota. The initial placement would cause temporary and very limited exposure to contaminants during construction, and the end product would be a higher value habitat in an area that was previously degraded and perhaps contributing to the degradation of other areas. However, all potential habitat creation, enhancement, and restoration projects involving dredged material will be evaluated with respect to potential contaminant impacts as required by NEPA.

e. All habitat restoration projects would be designed to create an improved environment, thus by definition they will not cause significant adverse impact on the environment. Some options may have some short-term negative environmental impacts, but if the overall benefits exceed the negative impacts, they may still be justified. Created or restored habitats that are in limited supply in the study area or those that could support species of concern would increase the probability of a net habitat improvement. If it could not be reasonably demonstrated that habitat improvement would result, a project would not be justified.

f. Habitat improvements are not restricted to this option type. At sites where land remediation is the primary objective, the future use of a remediated site could include habitat creation for selected species or habitat types. Landfill capping in the Meadowlands or elsewhere may be part of a habitat creation program. Mine land reclamation has the potential to restore habitat over large areas. An ocean island and/or nearshore confined disposal facilities could also be sites for habitat development when the fill is completed, but this would be a form of mitigation, not restoration. This mitigation would not be expected to offset the loss. Because the habitat created would be terrestrial and the loss would involve ocean or bay bottom, it would not be ‘in kind’. Further, ocean/bay bottom would be permanently lost and the relatively shallow water (less than 80 feet deep) is considered of high value. Therefore, the creation of terrestrial habitat, while it would have value, would not produce benefits that would be comparable to or offset the aquatic habitat loss.

g. The following subsections address the generic impacts of habitat creation, enhancement and restoration. Section 5.3.3.3 is specific to habitat restoration at existing degraded aquatic sites because of the potential significance of this option for managing large volumes of dredged material and restoring large areas of habitat in Lower Bay and Jamaica Bay.

5.3.3.2.1 Surface Water and Groundwater Quality

a. Impacts associated with habitat creation, enhancement or restoration would be site specific, but would share the common goals of providing adequate water quality for the selected habitat function. Some temporary, localized adverse impacts would occur during the placement of dredged material, primarily increases in turbidity. Where stabilized dredged material is used, the loss of contaminants would be very small because the contaminants are chemically bound in the production of the fill material. Where untreated material is used it would be capped to contain and isolate contaminants from biota. Construction effects on water quality are controllable through various techniques, such as silt curtains, berms and management practices that limit placement to specific tide stages or other conditions that minimize the spread of material. The presumption is that habitat projects would include water quality protection as a condition in their permitting. Linings of plastic or earthen material would be considered on a case-by-case basis. Where wetlands are constructed, they should provide a water quality benefit due to their tendency to filter suspended solids from overland runoff.

b. Where dredged material is used to fill existing degraded aquatic sites, there would be a long-term improvement in water quality in the project areas. These sites may utilize stabilized dredged material to accomplish the fill or untreated non-HARS material that is capped. Capping of the fill with clean material could be used to isolate the fill material from the surrounding surface water and groundwater, as necessary.

5.3.3.2.2 Benthos

a. Many in-water habitat options would involve aquatic sites where benthic communities are present. The community would be surveyed to establish its functional value. Fill would be used to create a new benthic habitat only if the existing benthic community was shown to be of limited value and could be improved by filling. Surveys could include sediment profile imagery, benthic grabs, and overhead (plan view) photographs to verify findings. Water chemistry and turbidity could also be measured. Surveys would be performed before, during, and after placement of dredged material. The substrate characteristics would be chosen to create a new community that would be of higher functional value than the original, although it may be of a substantially different type and substrate. The new benthic community would be characteristic of the habitat type that was selected to replace the existing community because of its higher value or greater rarity, (enhanced or restored). For example, a reef constructed of rock in an area of sandy substrate would eliminate the benthic community in the sand and replace it with a benthic community adapted to attachment on hard surfaces and to living in the interstices (spaces) of the reef.

b. The new benthic community would be appropriate for the new habitat and the fish expected to utilize the reef. This same process would apply to such habitat options as shellfish beds, oyster habitat, wetlands and mud flats. The sites selected for habitat applications would be evaluated to ensure that they are not currently high functional value benthic communities.

5.3.3.2.3 Fish and Megainvertebrates

a. All of the aquatic habitat options would have a beneficial impact on fish and megainvertebrates if site development creates a net improvement in habitat functional value. The type and magnitude of beneficial effect will vary among the options and could be life stage specific. Wetland creation would benefit primarily juvenile fish, while reefs would benefit many life stages depending on species. Some options could include elements that favor selected species, such as the design of reef elements to favor species that prefer small interstices in the rock.

b. Temporary, localized adverse impacts would be associated with construction at the habitat improvement sites. Existing habitat value would be lost and eventually replaced by higher functional value habitats. Turbidity levels may exhibit some localized increases. Some of the options have been applied with success (reefs and wetlands) in the local area. Others have been demonstrated elsewhere (shellfish beds, oyster habitat, mudflats) or are in a developmental stage. One concern regarding shellfish bed creation is that some areas of the Harbor are not certified for harvesting. Shellfish bed creation in these areas could become a nuisance if the shellfish were illegally harvested. For all of the options that are not a proven technique for habitat improvement, proper site selection and use of a trial site test would precede any widespread applications. The selection process would be important to ensure that sites with high existing value are avoided and those with a high potential for successful conversion are used. Monitoring after treatment would provide information for possible refinements to avoid adverse effects, to maximize functional value, and to plan for additional restoration.

5.3.3.2.4 Terrestrial Wildlife

a. Applications involving shorebird habitat and wetland developments could influence terrestrial wildlife. Birds would make use of most habitat sites to some extent, while terrestrial habitat use by other wildlife could be limited by the surrounding land uses. The magnitude of beneficial impact would be highly site specific and may be controlled to some extent by the project objectives. Habitats designed to enhance the needs of species of concern would attain high functional value if they were successful. As with all options in this category, projects would not be undertaken unless there was a reasonable probability that the project would produce increased habitat functional values.

5.3.3.2.5 Endangered and Threatened Species

a. Habitat creation, enhancement, and restoration have a greater potential for beneficial impacts on selected species in the study area than adverse impacts. There is a substantial database on the occurrence of, and habitat use by, endangered and threatened species in the study area. Habitat development projects would be sited to avoid existing habitats for these species and construction work would be scheduled, as needed, to avoid seasonal species occurrences or breeding activity. Transient species such as migratory birds, marine mammals and sea turtles generally occur for short periods of time at any given location. Their potential for interaction with a habitat development project would be very small.

b. Projects would avoid known habitat for endangered and threatened species unless the projects were designed specifically to enhance or restore that habitat. Piping plover nest in sandy areas such as Sandy Hook and Rockaway Point, and roseate terns occasionally nest at Rockaway Point and possibly could nest at Sandy Hook. There is potential to expand breeding areas for these species through habitat development at Hoffman-Swinburne islands, Floyd Bennett Field and other areas.

c. The peregrine falcon has been removed from the Endangered Species List but the USFWS plans to continue monitoring their populations until at least 2010. The peregrine nests in urban areas and utilizes open spaces for feeding such as in the Hackensack Meadowlands. Because this species is found in the subarea that has the highest concentrations of contaminants in the water and on adjacent land areas (Upper Bay Complex), habitat improvements which also reduced potential contaminant exposure may be beneficial. Capping landfills in the Meadowlands and other sites in the study area (Penn and Fountain Avenue in Brooklyn) could reduce exposure, while providing habitat for other species. Because the peregrine is a predator it could be attracted to these new habitats to feed on an expanding wild bird population. Landfill capping, which includes future habitat development, should include provisions to isolate existing contaminants.

5.3.3.2.6 Essential Fish Habitat (EFH)

a. Changes to EFH for life stages of several species of fish are possible as a result of implementation of beneficial use applications. Generally, change would, in the long-term, be beneficial although some short-term disturbance such as an increase in turbidity could occur. In other instances, certain species of bottom-dwelling EFH species would lose habitat to promote a vertical structure community or a different sediment type. Site- specific analyses would be needed to evaluate the advantages and disadvantages of in-water habitat enhancement in relation to EFH.

b. Areas of rock placement would be at state (NY or NJ) designated zones where reef sites have been permitted because these zones have been found to be relatively low in species diversity. Thus, the establishment or expansion of a rock reef community would provide net benefit to the area.

c. Another example would be the creation of an oyster reef. Deposit of material would displace species at the site, and change habitat. The new habitat would eventually provide conditions that produce greater diversity and provide a net benefit to EFH species and reflect historic usage.

5.3.3.2.7 Cultural Resources

a. Wetland creation, enhancement and restoration proposed for areas around Jamaica Bay are of concern. This area is considered sensitive because it is likely to have prehistoric resources and an archaeological survey may be required. A geomorphologic study may be necessary to determine the potential for sites in locations now inundated or filled. A survey for historic resources such as piers, bulkheads and wharves may also be required. The scope of cultural resource investigations in connection with each technique will have to be assessed, as wetland creation, enhancement and restoration locations are determined.

b. The implementation of oyster reef and shellfish bed creation techniques, possibly in Raritan Bay, may require a remote sensing survey to ascertain if any historic resources, such as shipwrecks, may be impacted by a proposed project. The need and scope of a cultural resource survey will be determined as project locations are defined.

c. Mudflat, bird habitat, and wetland developments are possible at sites in the Upper Bay. These could affect cultural resources in the area and studies would be needed as part of the planning process for specific sites.

d. No further cultural resource surveys will be needed for borrow pit restoration if project actions are limited to the already disturbed borrow pit itself. Cultural resource tasks would be subject to coordination with the appropriate State Historic Preservation Office. If undisturbed areas around the pit will be affected by the proposed actions, then additional cultural resource work will be required. This work may include remote sensing and geomorphologic studies.

e. Facilities such as piers and wharves lining the shores and derelict vessels of the Upper Bay will have to be evaluated within any project areas proposed. Many studies have been undertaken along these shores for the NYD and these studies may provide sufficient data to preclude further cultural resource work or may serve as a basis for determining what additional studies need to be undertaken.

5.3.3.2.8 Other Impact Issues

a. Habitat improvement projects would have little or no negative impact on aesthetics, air quality or noise levels. Habitat development could entail increased noise and air emissions associated with construction, but these effects would be temporary and insignificant. Wetland and upland habitats would generally improve local aesthetics compared to the existing degraded condition.

5.3.3.3 HABITAT RESTORATION AT EXISTING DEGRADED AQUATIC SITES

a. Existing excavated pits in Jamaica Bay and several in Lower Bay may have degraded conditions due to poor water quality resulting from poor water circulation, CSOs, and non-point source pollution loading, as well as, fine-grained sediment accumulation. All of these pits came about as a result of their initial construction 30–60 feet below the natural bay bottom causing them to act as sinks for deposition outside the normal bay bottom flow patterns. Conditions in these pits may improve seasonally during winter, but preliminary surveys (USACE 2001b, 2001c) show that bacterial mats and a very limited benthic community occur for extended periods during relatively high water temperatures when circulation in the pits is stratified. Recent sampling at Norton Basin and Little Bay confirm their degraded condition.

b. An EIS on the use of existing pits in the Jamaica Bay and Lower Bay (USACE 1991) provides a detailed evaluation of impacts associated with pit use as a disposal site. The generic potential impacts of using dredged material to restore degraded pits are somewhat different depending on how they would be filled.

c. The NYD and the NYSDEC are currently engaged in a three-phased demonstration project at the Norton Basin and Little Bay pits. The purpose of Phase 1 of this demonstration project is to collect data to determine if the habitat within the pits is degraded. The decision making process will involve a public participation component, including the review of all documents generated by the interagency team of experts, and extensive public input. At the completion of the public participation process, a final decision will be made by the NYD and the NYSDEC as to whether it is in the public interest to proceed to Phase 2 of the demonstration project. In October 2004, the NYSDEC issued a findings statement on a recently completed evaluation of the habitat function of Norton Basin and Little Bay as part of Phase I. The NYSDEC concluded that both sites suffered significant impairments and could be characterized as degraded. As a result of these findings, the Interagency Technical Committee has recommended that the NYSDEC and the NYD proceed with hydrodynamic and water quality modeling to evaluate the potential net environmental benefits from recontouring the pits to various depths using HARS suitable dredged material. Phase 2 would involve filling (or partially filling) the Little Bay pits with HARS-suitable dredged material, followed by extensive monitoring to determine the success of the restoration project (including the establishment of a well oxygenated, high-quality benthic habitat and associated benthic community). Only after the monitoring results are fully evaluated, and can substantiate that such an operation can be accomplished in an environmentally safe and beneficial manner, would proposals be considered for application to other Jamaica Bay and potentially some of the Lower Bay Pits as well.

d. An issue of concern for the use of existing pits is the potential loss of dredged material during and after placement due to erosion. This issue would be studied as part of the project (see Section 5.3.3.3.1, below). Modeling studies show that there would be very little loss of material during and after placement and after a site is capped. The Jamaica Bay Borrow Pit Evaluation Project would provide for testing of assumptions associated with the modeling and yield empirical data for a very contained and controlled environment to minimize the chance of sediment reaching the larger bay itself.

e. The Newark Bay CDF (NBCDF) has been operating since 1997 and is approximately 70% full. This is actually a subaqueous (CAD) site dug in a relatively shallow water part of the bay with a short connecting channel to the adjacent navigation channel. Monitoring of disposal operations in this facility has shown no loss of material outside the site when dredged material is released from scows. Monitoring at this facility will continue and provide real-time and long-term information on the dispersal of material during placement (PANY/NJ 1998).

5.3.3.3.1 Surface Water and Groundwater Quality

a. There would be a significant beneficial impact from filling pits that have degraded water quality. Filling would reestablish bottom contours similar to the surrounding bottom, eliminating depressions that created poor water circulation. There would be a temporary, localized adverse impact to the area surrounding the pit during filling due to increases in turbidity. Because the pit would be filled slowly, there would be a gradual improvement in water quality as the decreasing depth of the pit would permit better circulation with the overlying water.

b. The placement of contaminated sediments in the pits would have the potential to cause short-term, local increases in contaminant levels. BMPs, such as limiting disposal events to selected tidal conditions and positioning of the dump scow to maximize settling time over a pit, would minimize the loss of material during placement. Another technique to retain sediments is to limit the fill level in a pit to maintain a basin that helps retain suspended materials, or to create a berm around a shallow water pit to serve the same purpose. When completed the berm could be removed and its material used to cap the site. Studies of the fate of dredged material discharged from barges has shown the vast majority of material remains as a well defined mass with little dispersion of the material as it descends in the water column (Schroeder in prep.). A pit would confine the material when it reaches the bottom. As the pit fills, the potential for loss of material would increase. This loss could be minimized by not filling the pit to capacity, which is likely to be the case because there has to be room left for a cap several feet thick to cover the contaminated sediments and isolate them from water column and burrowing organisms.

c. A generic water quality concern for pits is the release of pore water as the placed material consolidates in a pit. Experiments conducted by WES (USACE 1987a, b) show that the pore water contains few contaminants. This is because contaminants that may be present remain tightly bound to the sediment particles in an anaerobic environment that precludes chemical reactions that might release the contaminants.

d. Groundwater is not likely to be adversely affected by the use of pits in the Lower Bay. However, pits located near the shore in Jamaica Bay would need to be evaluated because they may be close to groundwater resources. Many of these pits are adjacent to landfills that could be leaching contaminants into the pits and then into the rest of the bay via water in the pits. Filling these pits could help to reduce or eliminate this avenue at contaminants reaching the environment

5.3.3.3.2 Benthos

a. For restoration to be a viable goal, a pit would have to be shown to have low habitat functional value under existing conditions so that filling would have minimal adverse impacts on benthos and ultimately would have a beneficial impact through the development of a healthy community. Results of Phase I of the Jamaica Bay Borrow Pit Evaluation Project have shown that degraded conditions exist in the Norton Basin and Little Bay pits. The type of habitat that would develop on the surface would depend on the material used for capping, local hydrographic conditions, and the surrounding benthic community. The establishment of an environment that more closely resembles the historic environment especially in the general area around a pit should result in a higher functional value benthic community.

b. Restoring existing pits in Jamaica Bay would involve an additional benthic habitat impact in that access channels to accommodate the dredge scows may be needed. The dredging associated with deepening these channels would cause a local adverse impact. The channels created may be maintained at or near the dredged depth to maintain flushing. Hydraulic modeling and field sampling would need to be conducted to evaluate the need to maintain these channels. Recovery of the benthic community in these channels would be expected, especially given the potential for water quality improvement from filling adjacent pits.

5.3.3.3.3 Fish and Megainvertebrates

a. Impacts on fish and megainvertebrates would involve temporary localized adverse effects associated with the filling of existing degraded pits. Increased turbidity and contaminant loss into the water column would be the effects associated with filling. If the benthic and water column habitats are degraded, fish use of habitat near and at the bottom would be low, thus minimizing adverse effects related to the filling operations. A healthy community would replace the poor habitat quality in pits selected for restoration after filling and capping was completed. Filling would return the elevations in the pits to approximately the historic depths before the pits were excavated providing improved water circulation. Recovery of the benthic community in degraded pits would be followed by increased use by benthic fish and megainvertebrates, with concurrent reduction in the level of contaminant uptake and magnification through the food chain.

b. An alternative approach would be to fill selected pits only to an elevation that created improved water quality and benthic conditions. Some existing pits have been shown to provide enhanced habitat, which may be related to the greater depth in relation to the surrounding depths. Partial filling of a degraded pit could replicate the conditions that occur at pits with enhanced habitat.

c. Filling existing pits already containing year-long high functional value habitat could lead to a long-term adverse impact because the new habitat may not be as high quality. For this reason, existing pits of high functional value habitat are not under consideration for being filled. Currently this includes the large and small East Bank Pits and possibly the CAC pit. The value at the remaining pits in Lower Bay continues to be uncertain and would have to be surveyed to establish the quality of the existing habitat before any further consideration of the need to fill is considered. As recommended in the DMMP this would not occur unless the demonstration in Jamaica Bay (Norton Basin/Little Bay) shows the operation could be accomplished safely and effectively.

d. Fish and megainvertebrates may be exposed to contaminants if they feed in a pit filled with dredged material that contains different levels of contaminants. The dredged material may contain food organisms from the dredging location and rapid recolonization adjacent to undisturbed areas, or the pit itself if it is filled over an extended time-frame, could provide sufficient food resources to attract fish. If a pit were filled slowly there could be time for food resources to develop and possibly accumulate contaminants from the fill material. The significance of this impact would depend on the contaminant types and concentration in the dredged material and the food pathways that may develop. The exposure of fish and megainvertebrates could be reduced or avoided by using interim caps or by planning the disposal operation so that a pit is filled and capped in a continuous operation, after allowing sufficient time for consolidation of the material so it can support a cap.

5.3.3.3.4 Other Living Resources

a. Although there are no current plans to use dredged material as fill for the Lower Bay pits, the potential impacts from such an action on other related aquatic living resources would likely be minimal in the open-water areas of Lower Bay. The open waters of Lower Bay are not known to have high numbers of organisms such as diamondback terrapins and birds that could be adversely impacted by the filling operations. Jamaica Bay on the other hand has concentrations of birds and diamondback terrapins that may be close to some pits. Additional information would be needed in this area in relation to site-specific pit locations. Special management practices may be needed to protect the wildlife of Jamaica Bay, including seasonal restrictions or avoidance of areas important to wildlife use. If a pit were characterized as good aquatic habitat it would not be used for restoration.

5.3.3.3.5 Endangered and Threatened Species

a. Sea turtles are among the endangered and threatened species that may be found in the study area, and could be exposed to the sediments and overlaying water of the pits in Lower Bay and Jamaica Bay. Adverse effects on sea turtles could potentially develop from contaminant exposure during the filling operations if contaminants are present in the fill material. The extent to which sea turtles may feed in an open pit is difficult to predict, and would need to be evaluated (in coordination with NOAA-Fisheries) in any pre-fill characterization of pit use. In any event food resources would be limited during any fill, unless the facility remained open and unused for an extended period of time.

b. The peregrine falcon, now off the Federal endangered species list, uses portions of Jamaica Bay for hunting prey, which may include shorebirds. Coordination with the USFWS would need to be maintained in order to obtain recommendations to offset potential impacts to this species. While there is the possibility of food web transfers of contaminants from dredged material placement in pits in Jamaica Bay, it is not likely to occur because once a pit in Jamaica Bay was capped (including the potential use of interim caps), the contaminants would be isolated and would not represent a source for food chain transfers.

5.3.3.3.6 Essential Fish Habitat (EFH) and Other Special Habitats

a. The Lower Bay includes EFH for many designated species (see Section 4.3.2.8) and Jamaica Bay contains the Jamaica Bay Wildlife Refuge. EFH is designated for selected species over broad areas of coastal and estuarine habitat. It does not indicate the importance of specific areas within the much larger general grid area designations. Site-specific sampling is needed to evaluate the potential for a filled pit to significantly affect habitat for a species and life stage. Therefore, existing pits would be investigated to determine their current level of use and value to EFH designated species prior to use for dredged material disposal. A showing of a high use level for EFH species would establish that restoration is not needed and filling would not be undertaken.

b. In the Jamaica Bay Wildlife Refuge, the use of contaminated sediments in existing pits has the potential for adverse impacts associated with habitat disturbance. This concern would not exist where HARS suitable material is used. Contaminants are the primary issue of concern because if habitat restoration were accomplished using contaminated sediments, the benefits of habitat restoration could be outweighed by the adverse impacts associated with the contaminants. However, if it can be shown that the contaminants can be adequately contained during placement and isolated in the long-term filling, the pits would not represent a significant adverse impact to these special habitats, and the restored pit would be expected to be significant improvement to the system as a whole.

5.3.3.4 LAND REMEDIATION

a. Land remediation would use HARS suitable dredged material or processed non-HARS suitable dredged material that is stabilized by adding Portland cement, fly ash, or other additives that bind contaminants to the sediment so they are not moved off-site and taken-up by local biota. In general, sites chosen or under consideration for land remediation have been developed for human use activity. They include landfills, former industrial facilities, mine lands, and abandoned quarries. These sites have been adversely impacted by their former use and hence provide little habitat value at the present time. A common problem involving mine lands is acid mine drainage. Landfills and former industrial sites may be major sources of contaminants. When they are present, contaminants often spread into adjacent areas by surface or groundwater flow. The objective of remediation is to contain the existing site contaminants to benefit adjacent aquatic resources and to prepare the site for future development. Remediated site could be developed for commercial use, recreational use, or establishing habitat.

b. Generally, impacts on aquatic resources from site remediation work would be short-term and end with the remediation of the site, providing a net positive impact. Adverse impacts to aquatic resources could include: loss of dredged material during off-loading, loss of material stockpiled at a remediation site, effluent from dewatering, and leachate of contaminants from stockpiled material with contaminants. If the dredged material were stabilized before movement to the site, any potential impacts associated with contaminant migration would be greatly reduced or eliminated. Each site would be the subject of a remediation plan that would seek to minimize adverse impacts associated with the remediation activities, while addressing existing problems.

c. In NJ, amended dredged material is subject to leachate testing designed to predict potential impacts to surface and groundwater. Dredged material would not be permitted to be placed on a given site unless other controls, such as groundwater isolation, leachate collection and monitoring, are in place. It should be further noted that all the NJ land remediation sites permitted to accept dredged material have included these engineering controls as part of the overall remediation strategy for the sites. In Pennsylvania, the mine reclamation demonstration project at the Bark Camp Mine included extensive surface water and groundwater monitoring to ensure that the placement of amended dredged material at this site would not adversely affect water quality.

d. There would be substantial beneficial impacts from land remediation in that sources of contamination would be controlled. Existing landfills and industrial sites are significant sources of contaminants and cumulatively represent a major factor in the widespread occurrence of contaminants in the waters of the study area. Control of these sites would minimize human exposure concerns and protect many ecological receptors that are currently exposed directly or through food web transfers and biomagnification. In addition this option removes existing contaminants from the aquatic ecosystem, thereby contributing to Harbor restoration.

e. The sites proposed for land remediation (see DMMP – Implementation Report, Table 2-1) are all in the upland subarea.

5.3.3.4.1 Surface Water and Groundwater Quality

a. Temporary, localized adverse impacts may occur during the transport and processing of dredged material. Processing sites handle large volumes of dredged material with a variety of techniques, including in-barge and landside processing. Dewatering of sediments and stockpiling of material may be needed as part of the processing. Siting considerations and BMPs applied to a processing operation should minimize any water quality effects. The practices may include impermeable linings for raw material storage areas, covers over storage areas to prevent runoff and settling basins to collect runoff before it enters adjacent waterbodies. Permitting of the processing facilities would include requirements for these facilities to meet water quality standards.

b. The placement of stabilized dredged material requires time for the material to cure and site development may require a gradual build-up of material to meet site stability criteria. Although the stabilized material is highly impermeable, some surface erosion may occur while the material is exposed. Sediment runoff control would be applied to minimize any loss to adjacent waterbodies. After the initial cover layer is completed, sites would receive a final covering cap of clean material and then vegetated, as appropriate, related to the proposed use of the site. Cover may be physical structures (building, parking lots, etc.) or various vegetative covers depending on the habitat objectives. These final covers would prevent erosion and runoff from the stabilized dredged material after filling is completed. Vegetation planting would consist of species whose root systems would not exceed the cap depth and penetrate the processed dredged material.

c. There would be a significant beneficial impact on water quality from the control of runoff from the sites selected for remediation. Stabilized dredged material would be used primarily to create a relatively impermeable cover over remediation sites to isolate the in-place contaminants from precipitation. The use of dredged material at these sites would be as part of a comprehensive site remediation program, which could include other techniques such as slurry walls and leachate collection systems. The cumulative effect of remediating sites in such areas as the Hackensack Meadowlands and at NY City landfills would be a substantial reduction at the source of the contaminants that are currently in the Harbor sediments. This would be a major step in dealing with the long-term contaminant problems that plague the Port. There would also be beneficial impacts for terrestrial wildlife through reductions in exposure to contaminants. Additionally, benefits to wildlife could occur if rare habitat types (e.g., grasslands) are established and managed on the remediated sites. In the case of mine reclamation, the stabilized material may be used to seal deep shaft mines as well as cover strip-mined areas, eliminating acid mine drainage and establishing naturalized upland habitats.

5.3.3.4.2 Aquatic Resources

a. There would be a significant indirect beneficial impact on aquatic resources throughout the study area from the remediation of upland sites. Depending on the site, the control of contaminants would contribute to the long-term improvement in water and sediment quality in the study area. This improvement would reduce the levels of contaminants in aquatic biota and the human exposure that occurs when aquatic life is consumed for food. Food web transfers and subsequent biomagnification would be lessened by a general decline in contaminant levels. The potential improvement is a cumulative effect that increases in significance as more sites are remediated. A direct beneficial impact may occur in localized areas where contaminated discharges from land sources are causing toxic effects on biota in the near vicinity of these sites. Acid mine drainage, for example, can cause direct adverse effects on biota in receiving waters, and in some cases for substantial distances downstream. Remediation at such sites would eliminate these toxic effects. The loss of material into areas not intended for remediation could occur during handling and transfer that would be part of land remediation operations. However, those losses can be controlled and kept to a minimum through BMPs, particularly runoff control.

5.3.3.4.3 Upland Resources

a. There would be significant beneficial impacts on upland resources from the remediation of contaminated sites, depending on the current and future use of each site. Human and ecological receptors would no longer be exposed and the movement of contaminants off-site would be prevented by a surface cover. Upland sites that contain contaminants are generally degraded in terms of wildlife habitat value, but because many of these sites have been abandoned for long periods, new habitats attractive to wildlife may have developed. The remediation of sites requiring an extensive cap would generally result in the loss of any existing habitat. This loss of habitat may be a temporary adverse impact if the sites are redeveloped as habitat following remediation. If the site were not redeveloped as habitat, the loss of existing habitat would be permanent. However, such loss would generally be a small incremental adverse impact because these sites were highly degraded before and any new habitats developed. The new habitats are likely to still contain exposure pathways for contaminants. The significance of such a loss should be balanced against the substantial beneficial effect of eliminating direct human and wildlife exposure, and the indirect benefits of eliminating off-site effects and avoiding impacts to more valuable sites. Where the existing on-site habitat value is relatively high, mitigation for the loss would be appropriate. However, these sites typically have poorly developed biotic communities due to previous land use effects and thus would require little or no mitigation to compensate for losses of habitat.

5.3.3.4.4 Endangered and Threatened Species

a. Endangered and threatened species and other species of concern would generally benefit from remediation of contaminated upland sites. The significance of these beneficial effects would depend on the potential interaction of these species with the sites under remediation. These species would not be expected to be found at degraded sites, but exceptions, such as foraging by the formerly listed peregrine falcon in urban areas, can occur. In such a situation, the cumulative effect of the remediation of many contaminated sites could be significant and beneficial. Remediated landfills that are returned to wildlife habitat could be used as feeding areas for peregrines.

b. There would be no significant impact on these species from the stabilized dredged material while it is in place at the remediation site. This material is a poor medium for the development of vegetation, and a diverse biotic community would not be expected to develop prior to the placement of a final clean cover.

5.3.3.4.5 Essential Fish Habitat (EFH)

a. Little or no direct impact is expected as a result of the implementation of this alternative, since it is a land-based initiative. EFH would benefit indirectly from the general improvement in water and sediment quality through a reduction in contaminant sources. Use of best engineering practices would be utilized to help insure that the material to be placed at any given site would not enter surrounding waterways causing adverse effects to EFH.

5.3.3.4.6 Air Quality

a. Volatilization of contaminants from dredged material has become an issue of concern. Volatilization is the process whereby a compound passes into the air from a solid or liquid surface. For dredged material from the Harbor, volatile contaminants of concern include PAHs, PCBs, dioxin, and some metals. Contaminants may volatilize at varying degrees during each step of a dredging operation: dredging, barge transport, storage, dewatering/processing, and during and after placement.

b. The WES and Louisiana State University have developed laboratory procedures to obtain experimental data on the volatile emissions from exposed sediment (WES 1997, 1998a-c). These investigations are being used to develop and validate predictive volatile emissions models. In one study composite sediment samples from the Harbor (WES, 1998b) were tested in a flux chamber to measure volatile emissions of PCBs, PAHs, pesticides, and dioxins from the samples. Rewetting sediment was also tested for its effects on volatile losses. Preliminary results showed very low emission rates for all the parameters tested. Flux rates were typically highest during initial sediment placement (up to 1–2 days) and dropped sharply thereafter.

c. A series of controlled tests have been conducted to evaluate volatilization from contaminated dredged sediment. Table 5-1 summarizes the major findings of tests conducted between 1996 and 2000. Major functions that can influence the rate of volatilization include sediment characteristics, moisture content, porosity, percentage of oil and grease present, humidity and temperature. Re-wetting of dried sediments will cause a renewed release of contaminants. Among the contaminants tested, PCB’s are known to travel long distances in the atmosphere before being redeposited.

d. During handling and before the solidification/stabilization process is completed, some loss of contaminants such as semi-volatile organic compounds (SVOCs) may occur. The solidification/stabilization process would immobilize many of the contaminants and thereby reduce volatilization. Once all sediment placement is completed and the site is capped with clean material, further volatile loss from the sediment would be contained. Ongoing and future studies will monitor volatilization at active and completed land remediation sites.

e. Air concentrations resulting from sediment contaminant fluxes are site specific and are affected by factors such as wind speed and the location of the receptor. To illustrate the impact of sediment contaminant fluxes upon air concentrations, WES calculated air concentrations of a cubic meter of enclosed air overlying a square meter of exposed sediment. These calculated air concentrations are likely orders of magnitude higher than would be expected in the field, due to the conservative assumptions associated with the calculation. Even so, they still show the relatively low impact of sediment SVOC fluxes on air concentrations (WES 1999a).

f. Several measures can be undertaken to reduce volatile emissions from dredged material. During dredging and transport, maintenance of a water cover on the dredged material in a barge will minimize volatilization. For land remediation, the key factor in minimizing volatile emissions is the efficacy of the solidification/stabilization process and minimization of reworking prior to capping with clean fill.

g. Air quality impacts may arise due to transport of contaminants associated with particulate emission and volatilization between staging and placement sites. NJDOT/OMR has funded a modeling study to predict volatilization of dredged material and is currently funding research on air emissions (fugitive dust) from dredged material processing at the OENJ Bayonne Site. The field study data from OENJ Bayonne was collected during July of 2001. The modeling study predicts no significant impacts from volatilization (Korfiatis et al. 2003). Any impacts predicted would be minimized by proper handling and management techniques during operation. Long-term impacts would be minimized by capping the dredged material with clean material.

5.3.3.4.7 Cultural Resources

a. There is the potential for significant cultural resources at land remediation sites, specifically historic industrial structures and abandoned mine facilities. Cultural resources studies will need to be undertaken as sites are proposed for further work. Results will be coordinated with the SHPO offices of the respective states in which the facility and placement would occur.

5.3.3.4.8 Socio-Economic Factors

a. There would be significant direct and indirect beneficial impacts associated with land remediation through the generation of jobs and tax revenues depending on the use of the remediated site (e.g., commercial, residential, recreational, etc). These beneficial impacts would be cumulative as more sites are remediated in the study area. The socio-economic benefits also include the elimination of costs associated with the adverse effects of contaminants, as well as the economic gains associated with the redevelopment of land into viable commercial sites. The costs related to human health effects of the environmental contaminants are difficult to estimate and are not addressed in detail in this document. However, these costs are generally believed to be significant. There are additional costs associated with the loss of the availability of resources (fishing closures) and the need to monitor and protect contaminated sites that could be reduced by an extensive remediation program.

b. The revenue generated from the fee charged for dredged material disposal provides an economic incentive to remediate contaminated sites. This has environmental benefits in that more sites will be remediated more quickly than if this incentive were lacking. Many of the potential brownfields and landfill remediations in the study area are also contributing contaminants to the Harbor. The spreading of contaminants in the environment can be curtailed if major sources can be eliminated as quickly as possible, resulting in the long-term reduction in costs of dredging and managing sediment.

c. If remediation of these sites is delayed, more contaminants will continue to accumulate in the Harbor. The costs for dredged material disposal would decrease as sediments become cleaner. Thus, there is also an economic benefit from remediating these sites as soon as possible.

5.3.3.4.9 Other Impact Issues

a. Land and mine remediation options may have temporary localized adverse impacts on noise levels. The equipment associated with dredged material processing (if done at the remediation site) and heavy equipment for the transport and placement of material may generate relatively high noise levels beyond the site boundary. These effects would be site specific and management of adverse effects would require site planning. Most mines and many landfills are sufficiently far from residential areas to have no effect on local residential noise levels. The permitting for individual sites closer to residential areas would need to address this issue.

b. There would generally be beneficial impacts with regard to aesthetics. A remediated site can be expected to be more attractive than an environmentally degraded site, even if the site becomes a commercial development in the future. Commercial redevelopments would generally occur in existing commercial zones, but the redeveloped site would be subject to the current siting standards, which generally exceed those of the past. Local zoning ordinances would play a major role in the aesthetics of a commercial redevelopment.

5.3.3.5 PUBLIC PROCESSING FACILITY

a. As discussed in 3.2.3.4, the NYD and its Port Partners are considering the construction of a public processing facility to aid in the management of maintenance dredging operations. The facility would be operational after the Harbor Deepening Project is complete in 2014. Currently this project is in the reconnaissance phase and plans are underway to determine if the feasibility phase is warranted. As part of the any feasibility phase, a NEPA document would be promulgated for the proposed action. Because the current study is in a preliminary stage, the analysis of impacts will be addressed in a subsequent NYD document.

5.3.3.6 OTHER BENEFICIAL USE

a. Two additional options for using dredged material beneficially are construction aggregate and for beach nourishment. As a construction material, sand and processed non-HARS suitable dredged material may be used as fill or as a marketable aggregate product for use in manufacturing foundation blocks, tiles, and bricks. In construction applications, non-HARS dredged material is stabilized with various additives like coal fly ash and incinerator ash to sequester contaminants and to achieve specific geotechnical properties (see DMMP – Implementation Report, Section 2.3.5). Dredged sand is currently being mined from Ambrose Channel and used as a construction aggregate. Recent studies have been performed to evaluate the use of stabilized dredged material as fill for roadway embankments (SAI 2001) and roadway sub-base, embankment earth fill, retaining wall backfill, pipe trench bedding, and general earth fill (CAIT 2005). Construction aggregate facilities and land remediation facilities have common impacts (see Section 5.3.3.4 for a discussion on impacts).

b. Beach nourishment involves the placement of sand dredged from the Harbor to replenish eroded areas of existing beaches. Sand placement impacts (e.g., burial and alteration of the physical substrate) on beach community organisms have been demonstrated to be minor and temporary. Beach nourishment has been used for many years to maintain area beaches with no observable long-term impacts on natural resources (Burlas et al 2001).

c. The advantages of using dredged material as construction aggregate and for beach nourishment are a reduction in cost to obtain the material from other sources, and the elimination of the adverse environmental impacts associated with dredging the material from other areas of the estuary.

5.3.4 DECONTAMINATION TECHNOLOGIES

a. Section 405 of the WRDA of 1992, as amended, authorized USEPA Region 2 and the NYD to develop and implement the NY/NJ Harbor Sediment Decontamination Technologies Demonstration Program that demonstrates the feasibility of decontaminating dredged material from the Harbor to produce high value, environmentally acceptable beneficial use products. Working with Brookhaven National Laboratory, the WRDA Section 405 program has progressed through demonstrations of various technologies at bench and pilot scales and is now moving forward towards full and commercial scale demonstrations and implementation. The step-up procedure has resulted in the reduction in the number of participants based on technical performance, demonstration costs, cost sharing, and the availability of beneficial use for the processed material. To date, under the USEPA program, seven bench-scale, five pilot-scale, and up to three full/commercial-scale demonstrations are in construction and implementation for 2005 and 2006. The NJDOT/OMR is working in partnership with the USEPA program in developing commercial scale applications of these technologies with beneficial use applications. NJDOT/OMR has conducted four pilot-scale tests and will be overlapping with the USEPA in demonstrating over 2005–2006 up to three full/commercial scale technologies with high-value beneficial use applications.

b. Decontamination is a land-based option with sites generally expected to be adjacent to the shoreline. Sites for land remediation may be suitable for siting decontamination facilities. This assessment addresses impacts from the decontamination process and facility, including potential generic impacts to aquatic resources.

c. Site selection for a decontamination facility is important because of the potential impacts from the relatively high level of contaminants that may be present in the dredged material to be treated. Because these facilities will be upland, material processing could be close to human populations. In addition, these facilities may require stockpiling of sediments for efficient operation, and they could produce air emissions and effluents to an adjacent waterbody. These impacts can be managed using best available technology, including carbon activators and scrubbers, as appropriate.

d. The sites selected would be expected to be between 10–40 acres. Potential sites thus far identified have been impacted by human activity, and include landfills, brownfields, or currently used industrial sites. As such, these areas they have little habitat value for plants and animals. Abandoned sites not yet identified that have not been redeveloped may provide some wildlife value. Unless actively managed, however, these sites provide only minimal capacity for wildlife as compared to natural settings.

e. Full-scale decontamination facilities are similar to industrial facilities in that they process raw contaminated dredged material into a marketable product or a product that could be used beneficially in restoring the environment. The dredged material would be brought to a decon facility in raw form, which would require careful handling to prevent spills during off-loading and processing. Permitting of these facilities would need to address the specifics of each process.

f. The use of brownfields sites combined with process specific control techniques would substantially reduce the potential for adverse impacts. The following subsections address specific impact issues that are relevant to decontamination.

5.3.4.1 AQUATIC RESOURCES AND SURFACE WATER QUALITY

a. The potential impact of decontamination technologies on aquatic resources is limited to the effects of the processing facilities. Spills from dredged material handling, spills of processing chemicals (if used), runoff from storage piles (raw dredged material or finished product) and effluent to the waterbody are potential sources of adverse effects on aquatic resources. Spills and runoff are controllable through BMPs and on-site treatment systems, which would be stipulated in site permits. Based on the current and projected volumes of dredged material to be processed at these facilities, if spills were to occur, effects would generally be localized. Any chemicals used in the processing would need to be evaluated for their potential effect on aquatic life, as part of the permit process including their potential to leach from the finished product.

b. Effluent entering the water could produce adverse effects well beyond an individual facility. Any potentially harmful material in the effluents could be widely distributed by tidal currents. Effluents must meet existing water quality standards and it is presumed that monitoring would be required with appropriate controls and treatment as needed. The controls and treatment for the overall operation of decontamination facilities would be specified in each permit. With these controls, the potential for adverse impacts on aquatic resources would be reduced.

5.3.4.2 ESSENTIAL FISH HABITAT (EFH)

a. No adverse effects to EFH are expected from the implementation of the decontamination option. The use of control technologies and careful management and handling at facilities will help ensure against impacts to EFH.

5.3.4.3 UPLAND RESOURCES

5.3.4.3.1 Groundwater Quality

a. A stockpile of dredged material for a processing facility has the potential to adversely impact groundwater because contaminant levels in the material could be relatively high. Potential effects would be site-specific and depend on many factors. Where such an effect could occur, an impermeable liner under the stockpile area, a stockpile cover and a runoff collection system could be employed to protect the groundwater, as determined by each site-specific permitting action.

5.3.4.3.2 Biota

a. The potential for exposure of upland biota to a decontamination facility is considered to be very limited because the facility and any accompanying stockpiles would be contained. Raw dredged material could attract foraging birds, such as gulls or doves, which may in turn attract predators such as peregrine falcon. The dredged material may contain relatively high levels of contaminants so that a protective covering over the stockpile may be needed. Given the reported processing rate of dredged material, it should be feasible to cover the stored material. Cover would also control water runoff from the stockpile.

5.3.4.3.3 Endangered Species

a. The potential for the interaction of endangered and threatened species with a decontamination facility is very small. With the exception of peregrine falcon as mentioned above, conditions at these facilities would not be attractive to protected species. Siting is likely to be in a developed area, which is a factor in limiting the exposure of endangered and threatened species. Because these facilities may process sediments with relatively high levels of contaminants, they should probably not be sited in undeveloped areas where unexpected problems could release contaminants to non-human habitats.

5.3.4.3.4 Air Quality

a. Air quality impacts would be variable depending on the decontamination technology employed. Volatilization of contaminants in the dredged material can occur in stockpile areas. Effluents from thermal processing where fuel is burned in the process can also pose problems. Volatilization is addressed in Section 5.3.3.4.6 and is believed to be of low-risk, but site-specific studies would be undertaken and controls imposed, as needed. Air emissions from fuel burning would be subject to air quality standards and it is assumed that a facility would be built with appropriate air emission control devices, as required by a site permit. Decontamination facilities would be regulated based on expected potential impacts to include emission controls and limits. Impacts can be controlled through the use of BMPs.

5.3.4.3.5 Other Impact Issues

a. Siting decisions for decontamination facilities would be critical with regard to other potential effects. Siting of these facilities in previously impacted areas would minimize potential adverse effects on cultural resources, noise impacts and aesthetics. Noise levels may be a problem but would be of less concern if facilities were sited in areas now used for shipping and other industrial purposes. There is currently no information on noise levels at the demonstration facilities, which have all been of smaller than projected full-use size. Cultural resources and aesthetics would be issues if a facility were sited in a relatively undeveloped area.

5.3.5 CONFINED AQUATIC DISPOSAL (CAD) FACILITIES

a. This is an in-water disposal-only option involving the placement of dredged material in new or existing pits or cells below the level of the surrounding bottom. The placed material may be HARS suitable or non-HARS suitable, but the most valuable use of this option type would be for dredged material containing contaminants because the facilities can provide long-term, secure confinement. The secure confinement would be achieved by capping the site with suitable material to minimize loss of contaminants. The new cap surface would be, in many cases, cleaner than the former bottom area and have the potential to support a more diverse biotic community. The Newark Bay Confined Disposal Facility (NBCDF) is the only operational CAD facility in the study area. The permit authorizing this facility allows the construction of two other pits in designated areas of Newark Bay, if they are needed and meet regulatory constraints. Additional new facilities have been considered for construction in open water sites or in the bottom of existing navigation channels and berthing areas (Table 5-3), though none are permitted or have been submitted for permits.

b. Potential new CAD sites have been identified in the Lower Bay and the Upper Bay Complex (Figures 3-3 and 3-4). Subchannel CAD facilities would be located exclusively in the Upper Bay. The following assessment of this option type is limited primarily to new CAD facilities in open water, and new subchannel facilities. Existing pits are being considered as restoration options where appropriate, and are covered in more detail in Section 5.3.3.3, because they are not under consideration as disposal-only sites.

c. The potential impacts of CADs are summarized in Table 5-3 with other approaches to the confinement of non-HARS suitable dredged material (islands and nearshore fills). Because of the in-water locations of CADs, the disturbance of the substrate associated with their construction and impacts on benthic habitats and associated aquatic food web effects are the primary impacts of concern. The use of these facilities for contaminated materials raises concern for the potential redistribution of contaminants in the aquatic environment during and after placement, and on potential effects on living resources. The use of caps would create a new surface that would be, in many cases, cleaner and allow enhanced biotic communities to develop in an environment where they are separated from contaminants.

d. Pits have received substantial attention in the development of the DMMP because of their potential placement capacity. In recognition of the importance of effects on benthic habitats, the NYD has undertaken major habitat surveys and mapping of the Lower Bay Complex and portions of the Upper Bay Complex (Iocco et al. 2000) to aid in the siting of new pits.

e. For each of these CAD types there is a different emphasis with regard to impacts on benthic resources. No existing pit is being considered as a disposal only option. For new open water facilities, the selection of sites from among areas with different habitat types is important for minimizing impacts. Subchannel facilities would be located in areas that were previously disturbed and receive recurring disturbance during maintenance dredging. Although the channels are disturbed areas, some may have important habitat values such as wintering areas for fish and crabs. For all CAD types, the recovery of benthic habitat is an important impact consideration.

5.3.5.1 NEW CAD FACILITIES

a. The following assessments address open-water CAD facilities in the Upper and Lower Bays. The evaluations address issues specific to these areas, but do not repeat the individual impact issues addressed in Section 5.3.3.3 on existing pits. A significant advantage for new CAD facilities would be siting to minimize impacts and designs specifically to contain dredged material. In addition, in the process of constructing new facilities, particularly in Upper Bay, contaminated surficial sediments may be excavated and confined (by beneficial use or aquatic confinement, effectively removing a relatively small quantity of contaminants from exposure to the environment). Capping of new CAD facilities would promote the recovery of benthic habitat in the project area, because natural sedimentation rates may be very low. The cap would also isolate any underlying contaminants because the anaerobic conditions beneath the cap promote sorption of contaminants to the sediment, thus minimizing contaminant migration to the surface. The cap would also reestablish preexisting conditions or enhance the conditions if the original superficial sediments were degraded.

b. In general, new CAD facilities would have a temporary adverse impact on EFH because they would disrupt the bottom during construction and placement. Because the facility would be capped and the bottom returned to a similar substrate after use, full recovery would be expected, with the added benefit (in selected cases) of cleaner surface material.

5.3.5.1.1 Upper Bay

a. New CAD facilities could be placed at shoal areas on the east side of Newark Bay and at Constable Hook.

b. Remaining shoal areas of Upper Bay have been adversely affected by contaminants, but they have not been disturbed by channel construction and maintenance dredging. CAD construction in these areas would disturb previously undisturbed habitat (or habitat undisturbed for long periods of time), which may contain substantial quantities of contaminants that have accumulated throughout the past century. Such sediments would be removed during pit construction and treated offsite or disposed of in the bottom of the pit, leaving a cleaner sediment cap in its place.

c. An in-depth assessment of contaminants at shoal sites is needed to determine the constituents and volumes of dredged material present to evaluate the desirability of disturbing these areas for CAD construction.

d. Shoal areas would generally require the construction of an access channel to the facility that would enlarge the area of habitat disturbance. The extent of this impact would depend on the proximity to existing channels. For instance, the NBCDF required a very small access channel.

e. CAD facilities in shoal areas have the advantage of providing a more complete enclosing structure that would tend to minimize the loss of sediment during disposal compared to facilities in deep water. For shallow water CAD facilities, dispersion of material as it falls through the water column during a disposal event is relatively small due to the short distance between the water surface and the pit. For CADs in deeper water (as much as 40 ft between the water surface and the pit), dispersion of material during a disposal event is greater due to the greater water column depth. Monitoring at the NBCDF (a shallow water pit) has shown virtually no loss of sediment from the facility (PANY/NJ 1998). Temporary localized adverse impacts may occur during transport and placement of dredged material. However, the amount of material lost during placement can be minimized by placing material during low-flow, low tide conditions.

f. The effects on biota of new CAD facilities in Upper Bay would be limited by the spatial and temporal extent of the facility. Construction activity would temporarily eliminate the existing benthic community in the footprint of the facility and thus the area would be lost as a feeding area for fish. However, Upper Bay habitats generally have higher levels of contaminants and have experienced more disturbance than the other portions of the DMMP study area, often resulting in less diverse benthic communities with high potential for uptake and bioaccumulation of contaminants. When a facility is full, the site would be restored to existing contours and recolonization would restore the benthic community, but under less contaminated conditions. Hydrographic conditions in the vicinity of the facility would be the same as before facility construction so that habitat conditions should return to pre-project conditions. Capping with sand would produce a new clean substrate, but natural sedimentation could bring contaminants back to the CAD footprint.

g. Among the sites considered for CADs in shoal areas are Bay Ridge flats and Constable Hook flats. Limited sediment profile imagery and grab sampling indicate that the western side of the Bay Ridge flats has high functional value benthic habitat, and Constable Hook and the east side of Bay Ridge has lower functional value**.** The functional values and measurements established are discussed in Iocco et al. 2000**.** Site selection for new CAD facilities in the Upper Bay would consider the relative habitat value and contaminant levels if this disposal option were selected for implementation. Use of areas of low value and higher contaminant levels would serve to both lessen impacts to benthic organisms and provide greater clean-up potential.

5.3.5.1.2 Lower Bay Complex

a. The primary impact issue for new CAD facilities in Lower Bay depends upon siting the facility to minimize adverse effects on benthic communities. Contaminant levels tend to be lower and less widespread than in the Upper Bay, so attention is focused on benthic habitat value. Benthic habitat mapping (Iocco et al. 2000) provides a basis for placing new facilities in areas with relatively low habitat value (see Section 4.3.2). *Ampelisca* mats and shellfish beds provide high quality habitat, while sandy substrates without shellfish beds have intermediate benthic functional habitat value. Silty sediments with bacterial mats or low number of benthic organisms have been determined to have the lowest functional habitat value (Iocco et al. 2000). Based on the habitat mapping and other factors related to depth of sand and the potential for shoreline erosion and flooding, Zone 2 in Lower Bay was identified as the most likely area for new pits (see Figure 3-3). The selection process for the potential placement of CADs in the Lower Bay as reported in the DMMP – Implementation Report, Table 2-1, designated these facilities in the Lower Bay as not preferred options that are not under consideration for implementation under the DMMP.

b. Habitat loss in the footprint of a new pit facility would be followed by habitat recovery after closure. This recovery can be expedited by digging small pits that would be filled after one season allowing the area to begin recovery quickly by recruiting organisms from the nearby areas. This would also ensure that only a small portion of the community would be disturbed at a time. New CAD facilities in Lower Bay have the disadvantage of introducing contaminated sediments from the inner Harbor into an area where contaminant levels are generally low. Although CAD facilities can be designed to isolate the contaminated sediments, their movement from Upper Bay to Lower Bay would need to be done cautiously and only after studies have shown that CADs can successfully confine the placed material. For these reasons CADs in Lower Bay are relegated to a least preferred option status (see DMMP – Implementation Report, Table 2-1).

5.3.5.2 SUBCHANNEL CAD FACILITIES

a. Subchannel CAD facilities use existing navigation channels for the placement of dredged material below the elevation of the channel bottom. Sedimentation occurs continuously in the channels, thus there is a need for maintenance dredging which creates a recurring habitat disturbance. Capping and/or natural sedimentation would bring the bottom elevation back to the original channel depth. Site-specific studies of sedimentation would need to be conducted to evaluate the need to cap in addition to the natural sedimentation. Channel deepening is underway in some areas and being evaluated for others. Subchannel CAD facility design would have to take channel deepening into account to avoid disturbing placed material in the future. This option is limited to the Upper Bay Complex, with potential sites in Newark Bay, Port Jersey and Bay Ridge/Red Hook Channel.

b. Locating CAD facilities in navigational channels has the advantage of keeping contaminated sediments in areas of previous and ongoing disturbance. The construction and filling of these facilities would be similar to action at other CAD facilities, but there are some impact issues unique to subchannel locations.

c. The propwash from ships operating in channels could disturb sediments and cause their redistribution beyond the CAD facility. This potential problem could become more acute with the introduction of larger ships to the Harbor, although deepening of channels to accommodate these ships may offset their larger size. This potential adverse impact could be mitigated by putting a cap on the placed material, by site selection that does not place facilities in areas where ships are under full power, and by maintaining the pit surface lower than the bottom of the adjacent channel.

d. The placement of material in a subchannel CAD facility requires that the material pass through a greater depth of the water column in the channel before entering the confining walls of the facility than is the case with a CAD facility built in shallow water. The passage through the water column would provide more opportunity for material to disperse. Studies of dredged material discharge from a scow show that the material stays in a discreet mass with a small loss of material as it descends (Schroeder in prep.). Currents can deflect the mass, but the vast majority of material will contact the bottom. Once within the confining walls of the facility, the loss of material from the channel would be minimal (PANY/NJ 1998).

e. Modeling of Harbor sediments by WES (Schroeder in prep.) has shown a loss rate of 1.5% or less of the dredged material under worst case conditions. However, where the material is fine-grained it could contain a larger portion of contaminants than coarser, sandy sediments. Positioning of a scow and adjusting the timing of release relative to tidal currents are techniques that can be employed to minimize losses of sediment during disposal. The use of physical control devices such as tremie tubes, diffusers, and silt curtains would not generally be applicable to deep channel areas with ship traffic, but the use of physical controls should be evaluated for each potential CAD site to determine if they would be feasible and offer a more practical approach than limitations on the timing of disposal operations to minimize sediment loss.

f. The construction of subchannel CAD facilities would have a temporary, local adverse impact on benthic life and associated fauna similar to impacts with other types of CADs. The existing community would be lost during construction and eventually replaced by a recolonizing community after CAD closure. The community would be expected to be the same as before facility construction because sedimentation would reconstitute the same substrate type. The adverse impact of constructing a CAD facility would be no worse than maintenance dredging except that the bottom would be disturbed longer than during the maintenance work. The construction of a subchannel CAD facility would, in fact, include for maintenance dredging in that the accumulated sediments above the elevation of the authorized channel would be removed as part of the facility construction. In contrast with new CAD facilities in shoal areas and Lower Bay, subchannel CAD facilities would confine benthic impacts to areas where disturbances are a repeating pattern for the habitat.

g. Subchannel CAD facilities could have an adverse impact on habitat use by fish and megainvertebrates during the winter. Channel sampling in Newark Bay (Wilk 1997) revealed an abundance of striped bass juveniles and winter flounder. In addition, blue crabs are abundant in the channel at times, although recent unpublished data suggests that this area is not an important wintering area for them. Since CAD facility construction and use could span a full seasonal cycle some short-term disruption of winter habitat could occur, although the timing of construction could be such to avoid winter concentrations of fish.

h. The significance of habitat disruption would be limited by the extent of the area occupied by the CAD facility in relation to the total channel habitat. CAD facilities would be constructed on an as needed basis. It is unlikely that more than two facilities would be in operation at one time. After facility closure, the habitat should recover rapidly providing available habitat in the channel before more facilities (if needed) are constructed. Siting surveys to avoid prime wintering areas for fish and blue crabs would be important to minimize this adverse impact.

i. Sub-channel CAD facilities would affect EFH, but in most instances the habitat is currently adversely impacted by ship traffic and its associated prop wash, especially in channels most in need of dredging. Thus, while excavating the channel will cause disruption, the effects to EFH would be expected to be temporary.

5.3.5.3 OTHER IMPACT ISSUES RELATED TO CAD FACILITIES

a. The potential for adverse impacts related to air quality, noise and aesthetics are minimal. The potential sites are away from shore and the construction and operation of these facilities does not require any equipment that is not commonly used in harbor dredging and maintenance operations. New dredging would require site-specific assessment of general conformity with regional air quality standards. This assessment would be conducted as part of a permit application for a specific dredging project, which would be using a pit for placement. Since construction in rock would not be economical, drilling and blasting operations and their associated impacts would not occur. The air quality and noise impacts of equipment could represent intrusion in the local area, but where the facility is away from shore or where the site is an industrial area, there would not be a significant impact.

b. Surveys conducted for the DMMP show that CAD facilities may impact both prehistoric and historic resources (LaPorta, Sohl, and Brewer 1999; Cox 1998). The potential for submerged cultural resources in the Harbor would require site-specific surveys of any area that has not been surveyed. A recent survey of the potential for buried cultural resources undertaken by the Corps can provide guidance for sensitive areas of the study area.

5.3.6 CONFINED DISPOSAL FACILITIES (CDFS)

a. A CDF uses dikes or other retention structures to contain dredged material. The three types of CDFs that were considered in this DMMP were upland, nearshore, and island CDFs, which are created by building dikes on land, in water adjacent to land, or in open water, respectively. Once filled, a CDF is typically capped with clean material to permanently isolate dredged material from the environment. The capped CDF can then be used to create habitat for wildlife or for other beneficial use. All three types of CDFs have been used successfully in the U.S. and other countries for the disposal of dredged material. Similar to the CAD option type, the CDF option type can accept material either suitable or unsuitable for ocean placement. However, the most valuable use of this option in this region would be for non-HARS material because CDFs are designed to provide long-term, secure confinement of the disposed material. Table 5-3 summarizes the potential impacts of CDFs and includes CAD pits for comparison.

b. Upland and island CDF options are no longer under consideration (non-preferred, DMMP – Implementation Report, Table 2-1) as they offer little opportunity for beneficial use and may have greater impact to the environment than many CAD facilities. For nearshore CDFs several potential sites exist in the Upper Bay, but site screening is not complete. Because the nearshore CDF would be located in an aquatic environment, the major effects of concern include loss of benthic and aquatic habitat where the structure would be physically located. Also of concern are alterations to the current and sedimentation patterns in the vicinity of the structure that could adversely impact shorelines by creating changes in erosions and accretion patterns.

5.3.6.1 UPLAND CDFS

a. The site at Belford, NJ (N61), has historically been used for disposal of dredged material from the local area and for dewatering, with subsequent transfer to other adjacent locations such as a nearby landfill. At the request of State and County officials, the site may potentially be used for the future disposal of dredged material generated only from navigational projects in the waters of Monmouth County. However, at this time the likelihood of future use of the site for temporary or permanent placement of dredged material from Monmouth County waters is unknown. No other specific sites for upland CDFs have been identified for further consideration.

5.3.6.1.1 Surface Water and Groundwater Quality

a. Upland CDFs could adversely affect surface and groundwater quality through runoff from the placed material and the movement of water containing contaminants from the placed material. An upland CDF would require special facilities to contain the dredged material and provision to collect and treat water from the dredged material and from precipitation collecting on the facility. The discharge of treated water would require permitting and limitations on the discharge. An impermeable liner in the facility may be needed to isolate the sediments from contact with the native soil to prevent infiltration. With well-maintained facilities it should be possible to minimize the impacts to surface and groundwater. After the site is filled, a permanent protective cover of clean material would be placed to prevent runoff. The States would require geological investigations, and implementation of a groundwater protection plan (based on the geological investigation) before an upland CDF is approved.

5.3.6.1.2 Aquatic Resources

a. Other than the potential for runoff from an upland CDF to an adjacent waterbody there would be no effects on aquatic resources. This impact would be addressed by installation of appropriate controls, as outlined above, to meet permit standards.

5.3.6.1.3 Upland Wildlife

a. It is expected that an upland CDF would be constructed in an area where the existing upland habitat had low value because loss of high value habitat due to facility construction could probably not be compensated for by habitat restoration after the facility was completed. If, in fact, the existing habitat value was low, habitat enhancement/ restoration after facility completion could result in a net gain in habitat value.

b. During the placement of dredged material at an upland CDF, terrestrial wildlife may be attracted to the site with the potential for wildlife exposure to contaminants. A CDF could take a substantial time to complete, thus a vegetative community may develop on the dredged material that may be attractive to wildlife. Interim covers of clean material fencing and other measures to preclude site use may be needed to minimize the exposure of wildlife to the dredged material.

5.3.6.1.4 Endangered and Threatened Species

a. It is assumed that known habitats for endangered and threatened species would be avoided in siting an upland CDF. Transient species, which would be almost exclusively birds, may be attracted to feed at an upland CDF if a vegetative community developed. Protecting an upland CDF to prevent exposure of wildlife should provide the protection needed for endangered and threatened species.

5.3.6.1.5 Special Habitats

a. It is assumed that special upland habitats would be avoided in the siting of upland CDFs. Siting considerations should include the habitats adjacent to an upland CDF to minimize the potential for adjacent high quality habitat to become a source of individuals attempting to use whatever habitats develop in the CDF on an interim basis.

5.3.6.1.6 Air Quality

a. The placement of raw or treated dredged material has the potential for adverse impacts on air quality. Raw dredged material could be the source of odors to surrounding areas and a source of contaminants due to volatilization (see Section 5.3.3.4.6 for a discussion of the potential impacts due to volatilization). The control of unpleasant odors could be a problem because relatively large quantities of dredged material would have to be exposed to the air during transport, handling, and placement prior to installation of a final clean cover. The most practical approach may be to site upland CDFs a sufficient distance from humans to avoid odor problems. Once the site were covered and closed this potential problem would no longer be a concern.

5.3.6.1.7 Other Impact Issues

a. Upland CDFs would be a potential source of high noise levels from the heavy equipment needed to handle the dredged material. Depending on its location, an upland CDF may create traffic problems if material is hauled to the site by truck. Upland CDFs are not likely to impact cultural resources if the sites selected were previously disturbed. If an undeveloped site were proposed for an upland CDF, a cultural resources survey would be needed prior to development.

5.3.6.2 NEARSHORE CDFS

a. A nearshore CDF can be located at a number of sites of varying sizes throughout the Upper Bay. If any of the potential Port expansion sites utilize dredged material, or if any new CDFs are proposed specifically for dredged material disposal, these would have to undergo a NEPA review to consider a site-specific assessment of the impacts identified in this section. This is similar to the requirement that most of the options identified in this report would have to follow before implementation.

b. Creation of a nearshore CDF entails certain recognizable permanent impacts to the coastal environment. One impact that is particularly clear-cut is that there will be a permanent loss of existing Upper Bay bottom within the footprint of the CDF and the loss of the water column above it.

5.3.6.2.1 Surface Water and Groundwater Quality

a. Resuspension of contaminants during placement of dredged material would be a potential adverse effect associated with a nearshore CDF option. However, dispersal from the dredged material would be prevented by the exterior dikes (or other enclosing mechanism) of the CDF.

b. Dredged material placed in a confined disposal facility undergoes sedimentation with a resultant effluent (dewatering). This effluent may contain suspended solids that did not settle out and to a lesser extent contaminants. This effluent could impact the water column surrounding a CDF. Therefore, effluent would need to be tested and treated as necessary to meet applicable standards before release into the adjacent water column.

c. With regard to groundwater quality, a nearshore fill, which would extend from slightly above sea level to well below sea level would only affect local groundwater if the flow gradient of the groundwater would be toward the sea. If site-specific studies showed a potential for localized effects, lining of the CDF with low permeability material would address this concern.

5.3.6.2.2 Benthos

a. Impacts to benthos would be related to the specific sites where a nearshore CDF would be constructed. For instance, a CDF in a highly polluted dead-end basin that has been found to contain little habitat for most benthic species would have little direct or indirect impacts on the ecosystem as a whole. However, a near shore CDF would permanently eliminate the area for future benthic habitat after remediation.

b. If a nearshore CDF were proposed for waters where data show the potential for use by benthic fauna, direct impacts to the benthos are associated with the permanent loss of the area within the footprint of the near shore CDF, as discussed above. Species that are not mobile and occupy the area of the footprint would be directly lost due to construction of a nearshore CDF The effect of the permanent loss would depend on the value of the population and its size relative to the remaining population. Efforts to minimize the facility's size and locate it in areas already disturbed or degraded would reduce the significance of loss.

5.3.6.2.3 Fish and Megainvertebrates

a. The use of nearshore areas by fish and megainvertebrates is site specific depending on existing habitat quality. The shoreline areas proposed for nearshore fill have been highly modified for shipping or other uses, which generally entails bulkheading, pier construction and dredging. In addition, these areas may have poor water circulation or receive combined sewer overflows that create localized poor water quality. Generally, the landward ends of the pier areas exhibit lower water quality than next to channels. Despite these habitat limitations, interpier basins and other modified shoreline areas have been found to provide seasonally important habitat for such species as striped bass and winter flounder. Underpier habitat has been studied in the Hudson and East Rivers. These studies have shown that fish use this specialized habitat, but the significance of this use is not clear. Woodhead et al. (1999) studied benthos at underpier and interpier sites in the Harbor. The benthic in-faunal community beneath piers was approximately five times greater in density and biomass than in the open seabed between piers. Epifauna on piles averaged more than 30 times greater in biomass than the seabed biomass adjacent to the piles. The researchers found no difference in the abundance of epifauna on the piles of shipping piers at the periphery compared to piles in the interior of the piers. They found a distinct community of demersal fish living in association with the shipping piers, primarily juveniles. Many of the in-faunal and epifaunal forms were important fish food organisms.

b. The use of nearshore areas for dredged material disposal would eliminate aquatic habitat. Little potential for in-kind mitigation of the loss has been identified. Given the extensive loss of shoreline habitats that have occurred in the Harbor over the long-term, additional losses could be viewed as significant adverse impacts, particularly where there is a potential for an improvement in habitat conditions in the future. For sites where studies show the habitat is highly degraded and has little potential for recovery in the future, filling for dredged material disposal would be less detrimental, particularly if the fill eliminated a source of pollution. As with the benthos, the degree of impact varies with the site's use and the percentage of that habitat type affected.

5.3.6.2.4 Other Living Resources

a. The potential sites for nearshore fills are located in the Upper Bay Complex in industrial areas or among existing shipping facilities. The potential for interaction with terrestrial wildlife is minimal and the aquatic habitat would not be attractive to species other than the commonly occurring aquatic life in the Harbor.

5.3.6.2.5 Endangered Species

a. There is very little potential for the interaction of endangered species with the potential sites for nearshore fills. The aquatic species of concern originating in ocean waters, sea turtles, and whales, are seldom seen in the Upper Bay and the shallow, structure dominated habitat would not be inviting to these species. Atlantic and shortnose sturgeon occur in the Hudson River, and are species of concern or are endangered in NY and NJ. Neither of these species has been collected in the extensive sampling of interpier basins or shoreline areas around the Harbor.

5.3.6.2.6 Essential Fish Habitat (EFH)

a. A number of species have EFH ranges that include the Upper Bay Complex (see Table 4-5). The nearshore areas that would be used for fills are very small and are generally low quality habitat within the larger overall habitat grids that are used to define EFH ranges. The loss of this habitat would not be expected to be substantial with regard to EFH, but as discussed above the existing habitats may have important value for non-EFH species and other aquatic life. Site-specific assessments to further document this impact would need to be completed if this option were used.

5.3.6.2.7 Other Impact Issues

a. The use of nearshore fills for dredged material disposal has little potential for direct impacts on air quality, noise levels, and aesthetics, and would be minimal for the sites removed from residential areas. This potential impact on air quality from placement at a nearshore CDF would be addressed in site-specific environmental documentation. Noise levels would only be affected while heavy equipment is operating at the fill site. The potential for impacts to cultural resources of significance can be high due to the presence of historic industrial structures potentially eligible for the National Register of Historic Places. Future redevelopment of a nearshore fill area may actually improve local aesthetics if, for instance, the existing site is an abandoned shipping facility that is deteriorating.

5.3.6.3 ISLAND CDFS

a. This option is not preferred (preference 5), either in the NY Bight Apex or within the Lower Bay Complex because this option offers little opportunity for beneficial use and could have long-term impacts on the aquatic system. The analysis that follows is provided so that the document might assess impacts of all potential options as part of a comprehensive alternatives analysis.

b. Construction of an island CDF creates permanent impacts to the marine environment. One certain impact is the permanent loss of existing ocean bottom within the footprint of a CDF. Preliminary design showed that an island CDF would range from 300–750 acres depending on its proposed capacity. The island would have been designed so that the area lost would be minimized. Because of its smaller overall size the Lower Bay habitat would suffer greater impacts from an island than an ocean site. The size of the impact area can be controlled by using areas of lower habitat value and unavoidable habitat loss can be minimized. However, there is no direct mitigation (replacement) for the habitat loss and because there are lower impact options, island CDFs are not included in the DMMP – Implementation Report Recommended Plan.

c. An island CDF would eliminate the water column displaced by the island. This loss, while permanent, represents only a minimal loss to the entire water column of the bay or ocean. The loss, while adverse, is not considered substantial, but would be proportional to the size of the island and inversely proportional to the size of the waterbody in which it would be placed.

d. Modeling (WES 1998d) has determined that the placement of an island CDF in the NY Bight Apex (Zone 3) more than 3 miles from the coast would not adversely impact the shoreline. The placement of an island CDF in the Lower Bay Complex would cause changes in wavefields, and thus may affect shoreline littoral movement. This was one of the factors used in selecting Zone 2, because it was determined that the effects of coastal storms would be reduced in this zone. Before this option could ever be implemented, more site-specific modeling to determine local effects and methods to offset erosion would be needed.

5.3.6.3.1 Surface Water and Groundwater Quality

a. Resuspension of material unsuitable for ocean disposal during placement inside an island CDF is a potential effect associated with this option. However, dredged material would not be placed in an island CDF until the dikes were completed so as to prevent its spread to other areas of the bay or ocean.

b. During dewatering, dredged material placed in a confined disposal facility undergoes consolidation with a resultant effluent. This effluent could impact the water column surrounding a CDF. Therefore, an effluent would be tested, and treated as needed prior to its release to the water column.

c. Based on the data on existing groundwater resources at island CDF siting zones (Cartwright 1998) and the flow gradient within the NY Bight Apex and Lower Bay study areas, no long-term impacts to groundwater from the placement of material would be expected.

d. The potential for major storms to damage a confining dike has been investigated through modeling. The preliminary design of the dikes and the siting of the structure was done to determine if this potential adverse impact could be avoided. The modeling shows that an island could be developed to resist any expected storm event.

5.3.6.3.2 Benthos

a. Direct impacts to the benthos are associated with the permanent loss of the area as habitat and the loss of organisms living within the footprint of an island CDF, as discussed above. The projected size of an island CDF represents only a small portion of the overall habitat available in the Lower Bay Complex and an even smaller portion in the NY Bight Apex. However, given the historical loss of habitat in the Harbor, the loss due to an island would likely have cumulative effects beyond the area lost, especially in Lower Bay. Offsetting a loss of this type, would be the creation of vertical structural habitat at the submerged periphery of the island CDF, which would create a benthic community different from what currently exists on the bottom. The new benthic community would provide habitat for benthic invertebrates and fish, but could not replace the existing benthic community.

b. Loss could be minimized to the greatest extent practicable by excavating an interior pit to increase the capacity and reduce the overall size of an island CDF in the bay. This would reduce the direct loss of benthic habitat. The sheltering effect of an island on wave action and currents may affect the benthic communities in the waters in the surrounding an island CDF. This effect would need to be further evaluated in the event this option ever received further consideration.

c. A benthic survey conducted in the Lower and Raritan Bays (Section 4.3.2.2.1) was used as part of a comprehensive screening process that led to the selection of Zone 2 as the most appropriate location for an island CDF in the bay (USACE 1998b). The main feature of this zone was sandy sediment characterized by lower abundance and biomass of benthic organisms than is present in the more sheltered areas to the south (Iocco et al. 2000). Placement of an island CDF in Zone 2 would have potentially less adverse effects on the more productive and potentially valuable *Ampelisca* and shellfish habitat. Regarding the ocean placement of an island CDF, the nature of the substrate and benthic fauna suggests that the ocean zone (Zone 3) in which the potential island CDF could be built is not unique and does not currently contain substantial vertical structure.

5.3.6.3.3 Fish and Megainvertebrates

a. Fish and mobile megainvertebrates would evacuate a construction area during building of an island CDF, thus minimizing direct loss to these species. However, direct impacts would be expected for the species that are immobile or slow moving. Indirect impacts to fish and megainvertebrates would also occur due to a permanent loss of water column habitat that would be physically displaced by the facility, as well as the loss of benthic feeding areas. Although these impacts would be permanent, it would not involve a substantial portion of the water column compared to the overall habitat area of the Lower Bay Complex and even less of the NY Bight Apex. Therefore, this loss, while adverse, is not considered substantial and would be proportional in size to the CDF.

b. The existing habitat in the footprint area of a proposed island CDF would be permanently lost. Invertebrate species affected would include various species of bivalves. Fish species that would be adversely affected include flatfish such as summer flounder (fluke), winter flounder, and windowpane (sundial) as well as scup (porgy) which utilize the “flats” at various times of the year, although not in as concentrated groups as when using the channel. To minimize the direct and indirect losses, the zones selected for potential placement of any island CDF were chosen in part to avoid areas of highest fish abundance based upon data from Wilk (1998). However, some loss would be unavoidable.

c. Similar to the benthic analysis above, a small amount of vertical habitat would be gained in the hard structure associated with the periphery of the CDF. This structure would create a different macrobenthic community that may be characterized by barnacles, sea anemone, hard mussels and perhaps American lobster. Some fish species that are attracted to hard structures and thus would populate the border of the facility include tautog (blackfish), black sea bass, and cunner (bergal).

5.3.6.3.4 Other Living Resources

a. In the Lower Bay, the diamondback terrapin could be affected by an island CDF, although terrapins generally are found closer to marsh and creek areas at the edge of the Lower Bay Complex where they nest and feed. Terrapin populations are considered stable at present (USFWS 1997). No other (non-endangered) or threatened reptiles are expected to be affected by an island CDF.

b. Direct and indirect effects on passerine birds (e.g., land birds) would not be expected either because these birds would not frequent an island CDF or would spend only a brief period of time there. For example, during migration, weather might push birds offshore and they may seek refuge on the first landmass available, but would resume their migration as soon as rested, especially if no vegetation/food were available. Most water birds such as ducks, grebes and loons would also avoid a site that would not provide for their needs. If a

CDF island were considered further, the site design and final closure could be planned to provide habitat for the needs of some birds.

c. Members of the order *Charadriiformes* (gulls, terns and shorebirds) are potentially at risk. Shorebirds pose a concern because many pass through the area on their north and southbound migrations. Migrating shorebird's use of barrier beaches has been observed as a common behavior, especially during storms. Therefore it is possible that they would use the island CDF while migrating. This presents the problem of potential contamination while the site is used for refuge during construction when contaminated sediments would be exposed. Further, if muddy sediment is present on the CDF, they may attempt to feed, because many species normally use this substrate when feeding. In addition, several species of shorebirds are known to nest in the study area vicinity, including American oystercatcher, willet, killdeer, piping plover, and spotted sandpiper. Therefore, it is possible that these species might attempt to nest on an island CDF while dredged material is being placed. Gulls and terns may also roost on an island CDF, and over-wintering by gulls of several species is also possible.

d. The extent of food and amount of disturbance would determine if and what kind of bird species might attempt to nest and feed on an island CDF. Precautions to prevent feeding and nesting during operation of the facility may be required to prevent uptake of any contaminants by these birds. Such steps could include the use of netting and maintaining the majority of the site at water depths greater than 12 inches. Capping and other management measures could be used to isolate contaminants in selected areas and provide useful habitat, positively affecting these species. Use after the island CDF or cell of the island CDF were completed and capped would not have an adverse effect on birds.

e. The only types of mammals that would potentially be affected by an island CDF are marine mammals. In the ocean (NY Bight Apex), marine mammals potentially affected include great whales (covered below in Section 5.3.6.3.5), small cetaceans, and seals. Seals are usually found close to land, but the small cetaceans such as the bottlenose dolphin, common dolphin, and the harbor porpoise may be transients and feed in the area. In the Lower Bay Complex, potentially affected marine mammals include the harbor seal, harp seal, hooded seal, and, to a lesser extent, the gray seal and harbor porpoise. Direct effects of a CDF on marine mammals would likely be minimal since they could easily flee the area of construction. Indirect effects could include the permanent loss of potential feeding habitat for these species, but the loss would be expected to have minimal effects given the size of the waterbody left undisturbed and the relative infrequency that these areas are utilized by these species. Furthermore, it is possible that species such as seals could use the structure of an island CDF for hauling out, thus providing additional resting area for these species.

5.3.6.3.5 Endangered Species

a. Among the endangered species that live in the areas that were being considered for an island CDF, sea turtles could be exposed to adverse effects associated with this option. Four species of sea turtles occupy the area, mainly during the warmer months. They are the Federally listed endangered Kemp's Ridley, and leatherback sea turtle, and the threatened green and loggerhead sea turtles. The main concern is that during construction of the CDF the turtles could be killed or injured by machinery operations. However, such direct impacts are unlikely since these species can flee the area during construction. Studies have shown that only hopper dredges have been associated with mortality to sea turtles. Monitoring of a hopper dredge operation off NJ found very few turtles taken in by the dredge. Indirect impacts would include the potential loss of feeding areas where an island CDF is constructed, although such a loss would be small in relation to the total feeding area available to these turtles. The aerial extent of such a loss could be expected to be minimized where the zones for possible new island CDFs were chosen based on the lower biological productivity of these areas, including a lower number of crabs that the Kemp's Ridley and loggerhead sea turtles feed on.

b. Peregrine falcons, now recently delisted but still monitored by USFWS, also nest in the study area. Currently, at least three nests are within 10 miles of the center of Zone 2 of the Lower Bay Complex. One of these, at the Verrazano Bridge, is 5 miles from the center of Zone 2. In the NY Bight Apex (Zone 3), only one nest site exists within 5 miles of the proposed location for an island CDF. The next closest nest is located 11 miles away.

c. The use of an island CDF by local peregrine falcons, especially those nesting closer to the proposed sites, would be possible because these birds will travel some distance to capture prey, especially to feed their young. Peregrine falcons could be exposed to contaminants via ingestion of shorebirds that use the site during operation and ingest contaminated prey during feeding. Additionally, migrating peregrines could be attracted to the site if shorebirds were present in the area. Measures exist that could be employed to avoid/minimize use of the island CDF by these prey species before it is capped which would eliminate this contaminant pathway.

d. The bald eagle does not nest in the study area, but both subspecies do migrate through the area. Eagles' most important over-wintering site near the study area is along the Hudson River and Catskill Reservoirs (USFWS, 1997). Occasionally, several individuals of the northern subspecies over-winters in the Bight area. In the Lower Bay Complex, the closest likely roost site is at Sandy Hook about four miles from the center of Zone 2. Bald eagles could potentially be exposed to contaminants associated with an island CDF via ingestion of contaminated fish and waterfowl. The probability of this would be low for a variety of reasons. First, contaminants would be confined by a cap that would be placed over the dredged material after each cell is full. Second, the sites that were proposed for construction of an island CDF were located in relatively deep water where fishing by bald eagles would be expected to be very limited. Third, the number of individuals that would likely occupy the area is low, and last, the presence of bald eagles would likely be of short duration. All of these factors would limit potential uptake of contaminants by bald eagles, thus limiting potential impact to this species associated with construction and operation of an island CDF.

e. The piping plover and roseate tern also inhabit the areas surrounding the sites that were under consideration for placement of an island CDF. No direct impacts would be expected to occur to these species, but migrating birds could stop at the island CDF during their traverse of the area. The roseate tern consumes fish but the secure confinement of contaminants would preclude fish from becoming contaminated, thus avoiding exposure to contaminants via ingestion. In addition both of these species could potentially nest on an island CDF and thus be exposed to contaminated sediment and prey. The island could provide habitat for these species after it was capped to isolate any contamination. Precautions to prevent feeding and nesting during operation of the facility would be required to prevent uptake of any contaminants by these birds. Coordination with USFWS would need to continue were this option considered further. Use after the island CDF is capped would not have an adverse effect on these birds, and measures could be used to provide useful habitat, thus positively affecting these species.

f. No whale species are expected to be present in the Lower Bay Complex. However, some species may frequent the NY Bight Apex. No direct impacts to whales would be expected since they can easily avoid the construction area. Indirect effects on migration patterns of these species are not fully documented, but the likelihood of adverse effects would be low since whales are capable of adjusting for localized changes.

5.3.6.3.6 Essential Fish Habitat (EFH)

a. An island facility in the ocean (NY Bight Apex) would have adverse impacts on EFH since 35 species of fish and invertebrates with EFH designation are located in the grids of the Bight study area. An island CDF in the Lower Bay Complex would also have adverse impacts on EFH. Permanent loss of bottom habitat, and thus EFH, would occur in both the ocean and bay areas. Careful placement of the facility could reduce some impacts on some species, but avoidance of impacts on all life stages of all species would not be possible. Thus, mitigation would need to be ‘out of kind’ for most species, although some species such as black sea bass would have habitat created around the periphery of the facility (large boulder rip rap) that is similar or of greater habitat potential than some currently used reef material.

5.3.6.3.7 Other Impact Issues

a. An island CDF would affect aesthetics in off-shore areas, particularly while the facility was under construction and in operation. A CDF would be a low profile structure that would become a naturalized shoreline and island habitat over time. An island CDF that was considered was well off shore from the nearest populated areas and because of its low profile would have little influence on aesthetics as viewed from existing shorelines.

b. Air quality associated with the construction of an island CDF would be addressed as part of an environmental review of a specific proposal. Such a project would involve marine based construction equipment that would require an assessment of general conformity with regional air quality standards.

c. Recent surveys conducted for the DMMP indicate that island CDFs may impact both prehistoric and historic resources (LaPorta, Sohl, and Brewer 1999; Cox 1998). Any impact potential would be reduced with a location in the NY Bight Apex compared to a location in Lower Bay.

5.4 RISK ASSESSMENT

a. A screening-level ecological and human health risk assessment was performed on selected dredged material disposal options (WES 1999b). This assessment used 'worst case' assumptions for the levels of contaminants, the exposure pathways and potential receptor organisms. The options selected for evaluation included several that are no longer under consideration in the DMMP, or are options that are not in the preferred category in the recommended DMMP. Because this risk assessment does not apply to the preferred options in the DMMP, a detailed summary of the results of the assessment is not presented here. Risk evaluations on selected preferred options have been and are being performed to better characterize the pathway risks of those options. As results of these studies become available, they will be used by regulatory agencies in relation to any permit determinations and by implementing organizations to address concerns raised by the public. As appropriate, risk assessments will be included in the NEPA documents for individual DMMP options.

5.5 ENVIRONMENTAL JUSTICE

5.5.1 INTRODUCTION TO ENVIRONMENTAL JUSTICE

a. On February 11,1994, President Clinton issued Executive Order 12898 "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." The Executive Order requires each agency to identify and address, as appropriate, "disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." Attached to the Executive Order was a Memorandum to the heads of departments and agencies within the Federal government that specifically recognized the importance of procedures under the National Environmental Policy Act (NEPA) for identifying and addressing environmental justice concerns. The Memorandum emphasized the importance of public participation in the NEPA process and stated that potential effects and mitigation measures should be identified in consultation with affected communities. To understand how Executive Order 12898 relates to NEPA, a basic understanding of the principles of NEPA is necessary. The principal goals of NEPA include:

- To assure for all residents safe, healthful, productive, and aesthetically and culturally pleasing surroundings.
- To attain the widest range of beneficial use of the environment without degradation, risk to health or safety or other undesirable and unintended consequences.
- To preserve important historic, cultural and natural aspects of our natural heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice.
- To achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities.

b. The Council on Environmental Quality (CEQ) has developed a guidance document to assist agencies in identifying and addressing environmental justice concerns. The guidance document was used for the DMMP study to address environmental justice issues. According to the CEQ guidance, the Executive Order emphasized four issues that are pertinent to the NEPA process. Two of these issues are particularly applicable to the DMMP study: 1) collection, maintenance, and analysis of information on patterns of subsistence consumption of fish, vegetation, or wildlife, and 2) ensuring effective public participation and access to information.

c. The CEQ identifies six general principles that should be followed in addressing environmental justice concerns. In summary, these principles are:

- Consider the composition of the affected area to determine whether minority populations, low-income populations, or Indian tribes are present in the area affected by the proposed action. If present, determine whether the action disproportionately affects these populations.
- Consider relevant public health and industry data related to the potential for multiple or cumulative exposure, and historical patterns of exposure.
- Recognize the interrelated cultural, social, occupational, historical, or economic factors that might amplify effects of the proposed actions.
- Develop effective public participation strategies.
- Assure meaningful community representation.
- Seek tribal representation, if applicable.

5.5.2 PUBLIC MEETINGS

a. Public participation in the NEPA process is addressed throughout the CEQ guidance for NEPA (40 CFR 1500). Agencies are required, to the fullest extent possible, to encourage and facilitate public participation in agency decisions that affect the quality of the human environment. Agencies must also request comments from the public on environmental impact statements before a final decision is made and must make diligent efforts to involve the public in preparing and implementing NEPA procedures.

b. The EIS for the DMMP is being prepared in accordance with those guidelines, including those sections related to public participation. Public meetings were held throughout the planning process beginning early in 1997 to inform the public about the status of the project and to solicit input regarding the alternatives, strategies, and options that are being considered for the management of dredged material. The NYD held public scoping sessions in April 1998. Then meetings on the DMMP and Draft PEIS were held during November 1999. As site-specific NEPA documents are developed additional public meetings will be held. Extensive mailing lists of interested individuals and public organizations have been complied during the DMMP formulation. These lists continue to be used to transmit information and meeting notices directly to the public, in addition to the more formal Federal Register Announcements. Public input received during these meetings will be taken into consideration when making a final decision regarding the management of dredged material. Additional information about public involvement can be found in Chapter 6.

5.5.3 ENVIRONMENTAL JUSTICE ISSUES SPECIFIC TO EACH DREDGED MATERIAL MANAGEMENT OPTION TYPE

5.5.3.1 CONTAMINANT REDUCTION AND SEDIMENT REDUCTION

a. Contaminant reduction and sediment reduction management strategies are not likely to raise environmental justice issues. These strategies are watershed-based management approaches and are not associated with specific facilities or locations. Furthermore, since these strategies comprise management goals that are applicable across large landscapes (i.e., watersheds), the geographic locations associated with these strategies are likely to encompass many different socioeconomic classes, including low, middle, and high-income groups, minorities, and non-minorities. Therefore, the breadth of socioeconomic classes affected show that these options are unlikely to raise issues of environmental justice.

5.5.3.2 BENEFICIAL USE

a. The beneficial use strategy encompasses three options: 1) remediating the HARS, 2) land remediation, and 3) habitat creation, enhancement, and restoration. These options are discussed below with respect to environmental justice issues.

5.5.3.2.1 HARS Remediation

a. Similar to the Contaminant Reduction and Sediment Reduction discussed above, using dredged sediment to remediate the HARS is not likely to raise environmental justice issues because the HARS is located in an open water environment and thus is not associated with or adjacent to areas inhabited by humans.

5.5.3.2.2 Land Remediation

a. The land remediation option encompasses use of dredged material not suitable for ocean placement to remediate degraded lands, including landfills, brownfields, quarry sites, and abandoned mines. Currently permitted sites are located at Jersey City, Elizabeth, Bayonne, and Kearny. The Bark Camp Mine Reclamation Laboratory was an abandoned mine in Clearfield County, PA, and was the site of demonstration project for this type of remediation technology. The Lehigh Anthracite Mine in Pennsylvania has also been identified as a potential candidate for mine reclamation using dredged material. These and similar remediation sites are generally located in areas with disproportionately high numbers of minorities and low-income families. The likelihood of exposure to contaminants in the dredged material by populations residing near these facilities is low because the dredged material would undergo a solidification/stabilization process during which contaminants would be immobilized. Facilities may also be located in areas that require transportation of treated and/or untreated dredged material through communities that comprise primarily low-income or minority families. The likelihood that low-income and minority communities would be adversely affected by the transportation of dredged material through these communities is difficult to predict and depends, to a large extent, on the type of transport used. Truck use is usually the least economic, but sometimes the only means of conveyance available. The land remediation alternative would probably be accompanied by one or more dredged material processing and rehandling facilities. As this type of facility could be located in close proximity to the remediation site, it too could potentially be located near or among communities with disproportionately high numbers of low-income families or minorities.

b. The siting and permitting of individual processing facilities would include an environmental review, with consideration of environmental justice. Upland remediation sites are not selected in relation to socioeconomic factors, but are locations where there is a recognized need to control pollution. The use of processed dredged material to remediate contaminated sites has substantial environmental benefits for both the local area and the Harbor in general. Using the site design and operational controls described in Section 5.3.4 can protect the surrounding areas during site remediation.

c. Land remediation is expected to decrease the amount of contamination associated with abandoned mines and landfills. Acid mine drainage is expected to decline at abandoned coalmines that are remediated with stabilized dredged material. For landfills, the use of stabilized dredged material as a low permeability cap reduces the infiltration of rainwater into the historic fill thereby significantly reducing the leaching of contaminants from these facilities. After abandoned lands are filled with dredged material, they will be covered with clean material that can be colonized by vegetation or used for development. The reduction in contaminants leaching from these facilities, the increase in aesthetic value, and the restoration of these lands to beneficial use are outcomes that are expected to improve the adjacent areas. To the extent that these areas are inhabited by low-income or minority families, this option would have a positive impact on public health and the local economy.

5.5.3.2.3 Habitat Creation, Enhancement, and Restoration

a. This option includes using dredged material in a variety of ways: as fill for existing borrow pits or dead-end basins that exhibit degraded conditions; for upland habitat enhancement; for wetland/mudflat habitat creation or treatment; for oyster/clam habitat restoration; as landfill cover for creation of upland habitat; or to create wetlands for leachate infiltration. It should be noted that contaminated material would not be used for habitat creation, enhancement, and restoration unless treated and/or capped, since the contaminants in the sediment could potentially degrade wildlife habitat and thus be counterproductive. Because ocean suitable material would be used for this option in most cases, environmental justice is not an issue because exposure to contaminants would not occur and thus there would not be a disparity in exposure to contaminants between different socioeconomic groups. The use of processed dredged material for these options would need to utilize a secure cap to isolate contaminants.

b. Some of the habitat creation, enhancement, and restoration applications would occur in open water areas and thus would not likely be associated with environmental justice issues. Examples of this are oyster and clam bed restoration and use of suitable dredged material to recontour existing borrow pits. However, recontouring the pits in Jamaica Bay would take place near areas where incomes are relatively low.

c. Specific locations have been proposed for application of dredged material to aquatic sites that are near mainland areas. For example, for the upland habitat enhancement application, sites that have been proposed in the Beneficial Use Report (USACE 2001a) include Hoffman Island, Swinburne Island, Prall's Island, Shooter's Island, and south Brother Island. None of the areas are residential and thus would not have environmental justice issues associated with them. Floyd Bennett Field, which is part of the Gateway National Recreation Area, is a potential upland site that is used by a variety of people, including visitors to the recreation area that could potentially be adversely affected if this area were used for dredged material disposal. Information about the socioeconomic classes of individuals who visit this park on a regular basis is not currently available. Therefore, environmental justice concerns would be difficult to evaluate with respect to this location. Nevertheless, as discussed above, material unsuitable for the HARS is unlikely to be used for this type of habitat enhancement. Therefore, negative impacts to low-income or minority groups who may use this park on a regular basis would most likely be outweighed by the benefits of improving the aesthetic and ecological value of these lands.

d. Three dead-end basins have been identified that could potentially benefit from being filled: Newtown Creek, the Gowanus Canal, and Bowery Bay. Four locations have been proposed for wetlands/mudflats habitat creation or treatment: Jamaica Bay, the Arthur Kill, Newark Bay, and the Raritan River. Norton Basin and Little Bay borrow pits are currently being evaluated for the potential to use HARS-suitable dredged material in their to restoration. These proposed locations are in areas that may contain a disproportionate number of low-income families and minorities. As discussed previously, it is expected that only HARS suitable dredged material would be used for these applications initially. Any use of non-HARS material would include capping with appropriate material that would block exposure routes to neighboring communities (there are no plans to use non-HARS material in Jamaica Bay pit restoration). Furthermore, since these applications are in aquatic environments, they would not require ground transportation of dredged material and thus would not impact communities through which dredged material would otherwise be transported. Any minor negative impacts to low-income or minority communities that are near sites where dredged material will be used to create or restore habitat are outweighed by the benefits of improving the aesthetic and ecological value of these areas. In addition, this habitat enhancement would reduce the fish and shellfish exposure to contaminants so that subsistence fishing would represent a lower risk to the health of persons living and fishing in these areas.

e. No specific locations have been proposed for the creation of wetlands to filter leachate, although it is possible that this option could be established in areas with a disproportionately high number of low-income or minority communities. However, because non-HARS material is not likely to be used for these applications, or if used will be covered by appropriate cap material, minimal to no impacts to minority or low-income populations would be expected.

5.5.3.3 DECONTAMINATION

a. A variety of decontamination technologies have been proposed that treat contaminants in dredged material using chemical, thermal, biological and/or physical methods. These technologies include both low- and high-end processes. The low-end processes typically include solidification/stabilization, and manufactured topsoil production that binds contaminants rather than removing them from the dredged material. High-end processes include solvent extraction, sediment washing, and thermal processing.

b. An environmental justice issue could arise if a decontamination facility were located in an industrial zoned area dominated by minorities or low-income populations. Analysis of specific environmental justice issues associated with such an issue would be undertaken in the next tier of the NEPA process. In general, communities surrounding such a facility could potentially be exposed to contaminated sediment that is lost during transport or loading/off-loading of dredged material. In addition, ground transportation may be required to haul dredged material and other supplies and processing chemicals to the facility and clean materials and waste products from the facility. Trucking routes could potentially go through low-income or minority communities that might be adversely impacted by truck noise, emissions, and traffic volume, as well as potential spills. Careful material handling and control would be necessary to ensure that disproportionate adverse impacts from contaminants or air-borne emissions would not occur to these populations.

c. Another issue associated with decontamination is the waste product that would be generated as a result. In some cases, especially for the high-end processes such as sediment washing and solvent extraction, a highly concentrated toxic byproduct is expected. This byproduct will require disposal at a facility that could also potentially be located in a minority or low-income community. Furthermore, the trucking routes to transport the byproduct from the decontamination facility to a disposal facility could potentially be through minority or low-income communities, resulting in potential adverse impacts to these communities similar to those mentioned above. All of these considerations indicate that environmental justice is an issue of concern with regard to the decontamination strategy and thus should be analyzed in more detail when specific sites are considered for each of these technologies.

5.5.3.4 CONFINED AQUATIC DISPOSAL (CAD)

a. This strategy is not likely to be associated with environmental justice issues. Due to the location of this type of facility in open water, it is not expected to be associated with or adjacent to areas of human habitation. This strategy also would not require ground transportation of dredged material and thus would not impact communities through which dredged material would otherwise be transported. The confinement of existing sediments that contain contaminants would have a net positive impact on aquatic resources by lowering the exposure of fish and crabs to contaminants, which could ultimately be consumed by humans. Further analysis in the next tier of NEPA documentation should be conducted to evaluate the benefits and adverse effects of CADs.

5.5.3.5 CONFINED DISPOSAL FACILITIES (CDFS)

5.5.3.5.1 Island CDF

a. Since an island CDF would be located in an open water environment, it is not expected to be associated with environmental justice issues since it would not be located in areas of human habitation.

5.5.3.5.2 Upland CDF

a. No new specific sites are currently under consideration for the upland CDF option, so discussion of specific environmental justice issues associated with this option is not addressed in this document. However, if an upland CDF were sited in or near a community with a disproportionately high number of low-income families or minorities, these groups may be adversely impacted by a decrease in land values, as well as the potential to be exposed to contamination in the sediments being placed. The probability of significant volumes of dredged material being lost during off-loading would be low where controlled management and operation of a CDF would minimize such losses. An upland CDF may also require ground transportation of dredged material to the facility. Such transportation could potentially be through low-income or minority communities that might be adversely impacted by truck noise, air emissions, and traffic volume, as well as potential spills.

5.5.3.5.3 Nearshore CDF

a. Several potential sites for construction of a nearshore CDF have been identified throughout the NY/NJ Harbor. These include Long Slip Canal, Hoboken, NJ, River Terminals, Kearny, NJ, and South Brooklyn Piers, Brooklyn, NY. These and many other near-shore environments located in the Harbor are often in industrial/commercial areas that are located in or near low-income or minority-dominated communities. If a near-shore CDF were situated in or near such a community, low-income families or minorities may be adversely impacted by this option, although the likelihood of this is low. Land values would likely change depending on the current condition of the site (prior to construction of the facility) and especially the planned end use of the facility. Improved land values are more likely because formerly degraded areas would be generally improved through the use of this option. These communities may be exposed to contaminants in the sediment due to losses of sediment during off-loading operations. Fish that are exposed to sediment can also accumulate contaminants and thus expose humans consuming contaminated fish. The confinement of contaminated sediments would also reduce aquatic life exposure and the potential transfer to humans if fish and crabs are consumed. Effects would need to be evaluated during the next tier of NEPA review, particularly the balancing of contaminant loss during operation with the confinement of contaminants and an overall beneficial impact of cleaner harbor sediments.

5.5.3.6 NO-ACTION

a. The selection of the No-Action Alternative would likely result in the Harbor continuing to be dredged, but the dredged material would not be handled according to an established management plan. Such an uncoordinated effort could result in the use of dredged material disposal alternatives for which environmental justice issues were not considered. Prediction of whether low-income or minority communities would be disproportionately and adversely affected by the No-Action Alternative is problematic. However, since fewer controls would be placed on the use of disposal alternatives that would adversely impact low-income and minority communities, it is very possible that the No-Action Alternative could potentially have negative impacts on low-income and minority communities.

5.6 CUMULATIVE IMPACTS OF ALTERNATIVE PLANS

a. The impacts of the various dredged material management options types were discussed in Section 5.3. No single option type will be able to meet all the needs of the Port. In addition, many uncertainties exist with regard to actual dredging needs, the future quality of sediment from different parts of the Harbor, and the cost effectiveness of a number of newer management options. The challenge is then how best to combine the various options to meet the short and long-term needs of the Port, while balancing the economic and environmental advantages and disadvantages associated with each option type. The traditional approach would be to select an alternative based on proven solutions and lowest cost. However, this traditional approach would not sufficiently consider the environmental benefits associated with the options and thus would not meet the dual goals of the DMMP. In addition, the plan must be flexible enough to adapt to changes in the future. The time frame agreed upon by stakeholders for this DMMP is 60 years. This allows significant time for the development and demonstration of evolving technologies that are not currently feasible, but could be considered in the future.

b. Four alternatives are considered for the comprehensive DMMP: 1) the No-Action Alternative, 2) the Recommended Plan, 3) the Environmentally Preferred Alternative, and 4) the Base Plan (Economically Preferred Alternative). Each of these alternatives is described below, together with their associated cumulative impacts. With the exception of the No-Action plan, the alternatives are combinations of options that together would produce the desired outcome. Thus, the impacts of each alternative are the sum of the impacts of the option types that are included with that alternative and any cumulative effects that accrue from combining the option types. For the three alternatives other than No-Action, the impacts associated with the options combined to form each alternative were described previously for each option type (Section 5.3). The cumulative impacts for each alternative are summarized here to provide a comparison of the impacts of the four alternatives under consideration.

5.6.1 NO-ACTION ALTERNATIVE

a. The No-Action Alternative is defined as a lack of a comprehensive plan for dredged material management in the Harbor. The lack of a plan would leave in place the current process in which dredging and disposal takes place on a project-by-project basis with the USACE and states reviewing projects or permit applications for consistency with existing environmental regulations. Each project sponsor (including Federal agencies) presents a plan for dredging and disposal based on the most economical disposal option available that meets environmental requirements. Existing options (HARS for ocean suitable material; land remediation for non-HARS material) provide limited alternatives for dredged material and no long-term options are under consideration to replace existing options when their placement capacities are exhausted. While other sites are on the horizon, they may not be developed if there is uncertainty regarding the future of the Port for waterborne commerce. This is especially true for some of the more costly but desirable beneficial use options.

b. The DMMP, in addition to the coordinated planning it provides, is a statement that a commitment has been made by the stakeholders that the Harbor will be maintained as a competitive location for waterborne commerce, as well as a viable habitat for fish and wildlife, and as a recreational resource. The lack of a DMMP (No-Action Alternative) will lead to increased uncertainty in the future management of dredged material. In addition, planning for future navigation improvements is largely dependent upon the DMMP because the improvements will generate large volumes of dredged material for the placement sites. The lack of a DMMP could result in increasing costs for consumer goods, increased potential for environmental damage from accidents and spills, and delay in contaminated site cleanup with an associated loss of jobs and tax revenue because brownfields are not redeveloped into productive land uses. There would also be a delay in estuary-wide restoration efforts because contaminants would remain as a limiting factor for site-specific habitat restoration. Without navigation improvements there would still be a need for maintenance dredging for existing facilities. In the long term, if, through lack of a DMMP, few or no navigation improvements were made, the result might be an increase in cost of waterborne commerce with an associated reduction in the need for dredging and disposal. Waterborne commerce that remained in the Harbor would continue to use lightering to move cargo within the Harbor.

c. A decline in the need for dredging and disposal would have both adverse and beneficial impacts on environmental resources. The DMMP emphasizes the development of beneficial use options by viewing dredged material as a resource. A decline in dredging would limit the availability of the resource and increase the cost of environmentally beneficial actions such as land remediation, landfill capping, and habitat creation, enhancement and restoration. This occurs because these actions require large volumes of specialized soils for capping and land cover, which are very costly compared to dredged material. The beneficial effects of these option types are cumulative in that as more sites are remediated, enhanced, and restored, the combined effects represent far-reaching comprehensive improvements to the Harbor environment. Thus, although dredging and disposal are generally regarded as activities with potential adverse impacts, in this case where dredged material is a resource for environmentally beneficial use, the lack of a DMMP would result in a reduced opportunity for beneficial impacts.

d. The lack of a DMMP and the potential for a decline in dredging and disposal for navigation improvements would result in a reduction in the adverse effects associated with dredging. However, waterborne commerce would remain at facilities that use existing channels, which would still require maintenance dredging. The environmental benefit from a decline in dredging would be difficult to estimate, because dredged channel areas recover their habitat value relatively quickly. The habitat disturbance associated with deepening channels may be eliminated or reduced, but maintenance dredging would continue. The beneficial effect of reduced disturbance due to dredging would likely be small. In addition, any reduction in dredging would reduce the rate of removal of contaminated sediments, which would be managed in a coordinated way with a DMMP.

e. The lack of a DMMP and its implied lack of commitment to maintaining the Port could result in an adverse economic impact to the region served by the Harbor. There could be negative impacts both direct and indirect on jobs associated with shipping. In addition, a decline in shipping could result in an increase in the price of consumer goods that would no longer come directly through the local harbor, but rather would have to be transported to the region from other ports. This could also result in increased truck traffic leading to increased impacts on roadway, air emissions, traffic congestion, and overall lack of coordinated Port and regional planning.

f. The lack of a DMMP may also inhibit the development of long-term and innovative programs for dredged material management and those programs that are currently in a demonstration phase may not be advanced to full-scale facilities. Dredging represents an opportunity for the removal of in-place contaminants, or the confinement of contaminants depending on the option type implemented over time. Reduced dredging levels would reduce this benefit. Decontamination techniques may provide an opportunity to remediate in-water sites (hot spots) that have very high levels of contaminants. Removal and confinement in combination with sediment contaminant reduction should result in cleaner sediments that would have long-term cumulative beneficial impacts for aquatic life and human exposure to contaminants. Again, while dredging is generally regarded as an activity having adverse impacts, when dredging of contaminated sediments occurs in the context of a comprehensive plan for dredged material management it can result in cumulative beneficial impacts. The No Action Alternative would minimize the opportunity to implement option types that can provide cumulative benefits, thus No Action has adverse impacts on environmental resources.

5.6.2 RECOMMENDED PLAN

a. The recommended course of action was developed to meet the dual goals of the DMMP, which is to keep the Port open to meet the new generation of waterborne commerce (50-foot draft vessels) and to restore the environment of the estuary. These goals would be accomplished by cleaning up existing and future sediments and finding beneficial use for dredged material, minimizing long-term adverse impacts, and producing positive benefits for the estuary as a whole. The plan is broken down into two time periods, short term (2005–2014) and long term (2015–2065). The plan for the next 10 years takes into consideration all planned and existing deepening projects as well as the anticipated maintenance volumes of dredged material to keep the existing or improved channels/berthing areas open. The 10-year plan relies exclusively on preferred options (see DMMP – Implementation Report, Table 2-1, for volumes of dredged material and duration of option use). The selection process stressed beneficial use of dredged material, especially those with environmental restoration potential.

b. The short-term plan uses environmentally acceptable disposal only options as a contingency. The contingency options are confined aquatic disposal facilities at various locations. While the contingency options will continue to be developed, they would only be implemented if a more beneficial use option is not available. The options selected for the Recommended Plan in the short term are:

- HARS-Suitable Material
  - Ocean Remediation
  - Habitat Creation, Enhancement and Restoration
  - Land Remediation (untreated)
  - Beach Nourishment
- Rock Material
  - Fish Reefs, breakwaters, and shoreline protection
- Non-HARS Material
  - Habitat Creation, Enhancement and Restoration
  - Land Remediation: Landfills, Brownfield and Mine Remediation
  - Sediment Processing for Beneficial Use
  - Decontamination

c. The long-term plan covers the Port's needs for the 50 years following completion of the majority of the channel/deepening and other Port improvements. It is primarily aimed at managing the maintenance-related dredged material. This plan assumes that contaminant reduction programs will have been implemented, reducing the volume of non-HARS material produced from maintenance dredging. Similar to the short-term plan, the long-term plan relies heavily on beneficial use such as land remediation, decontamination methods, and remediation of the HARS. Implementation of contaminant and sediment reduction programs is anticipated to increase the percentage of dredged material suitable for HARS placement in the long-term. However, it is also anticipated that the HARS will continue to be utilized throughout the long-term due to its potential high capacity. If HARS remediation continues to be successful, the concept may be considered for expansion to other degraded ocean sites. The options selected for the long-term plan are:

- HARS-Suitable Material
  - Ocean Remediation
  - Habitat Creation, Enhancement, and Restoration
  - Land Remediation
  - Beach Nourishment
- Non-HARS Material
  - Land Remediation: Mine Remediation, Landfills, and Brownfields
  - Sediment Processing for Beneficial Use
  - Decontamination
  - Habitat Creation, Enhancement, and Restoration

d. Mined land reclamation, has the potential to be implemented because evaluation of the initial phase of study confirmed that processed dredged material could achieve remediation objectives. The beneficial use involving habitat restoration/creation would only be undertaken at sites that are permitted for the chosen activity (e.g., HARS, fishing reefs), or at sites where studies confirmed the presence of degraded habitats and the consensus of stakeholders and resource agencies supports habitat restoration.

e. Because the primary options of the recommended course of action rely exclusively on beneficial use options, the cumulative impacts of the recommended course-of-action are expected to be beneficial. Remediation of the HARS is expected to isolate existing contaminants from the surrounding water column and restore or maintain healthy benthic habitat conditions. After the site is restored to a productive benthic habitat, associated food web benefits are expected to occur, including the colonization of the area by fish and a decrease in contaminants accumulating in the food chain. Similarly, the use of HARS-suitable dredged material, to cap the Newark Bay CDF would also isolate contaminated material from the water column and return the facility footprint to productive benthic and fish habitat.

f. Environmental benefits would also be attained from the creation, restoration, and enhancement of degraded habitats. Filling and capping degraded pits is expected to improve water quality and restore the area to one that can support fish and other organisms. Pit restoration would follow after confirmation of the degraded nature of the pits and a determination that the initial filling at the smaller pits shows it can be safely and effectively accomplished. The creation of oyster and shellfish habitat would have a beneficial impact on these organisms, as well as potential socioeconomic benefits by increasing invertebrate and fish populations for recreational fisheries. These beneficial impacts are cumulative in that as more sites are restored and enhanced, the overall environmental conditions in the Harbor for aquatic and upland wildlife are improved. Another important socio-economic benefit of the Recommended Course of Action would occur as a result of redevelopment of abandoned industrial sites that would create jobs and increase tax revenues.

g. The use of land and mine remediation/reclamation options is also expected to provide net benefits in that they confine and decrease the release of contaminants into the environment. This will result in a decrease in the volume of such contaminants that enter the food chain, as well as a decrease in exposure to these contaminants by humans. In addition, remediated and reclaimed landfill and mine sites have the potential to be converted to viable wildlife habitat or other beneficial use (such as recreation or commercial uses) in the future. These outcomes are expected to have cumulative ecological, human health, and socioeconomic benefits. In the case of brownfields, the use of these sites for commercial developments may offset the adverse impacts of using existing undeveloped land.

h. The use of suitable sandy dredged material for construction aggregate and beach nourishment is an existing practice. Benefits from these types of uses are expected because the incorporation of these options in the DMMP would reduce the need to use materials mined from other parts of the Harbor, thus decreasing the adverse impacts associated with such mining. The recommended course-of-action would restore degraded habitats from previous mining operations (borrow pits) with HARS and non-HARS material, and avoid the excavation of new ones.

i. Decontamination technologies are options that have the potential for multiple effects, depending on the process employed. Some of the potential effects are the same as those associated with other options, and some are unique to the processes employed to treat contaminated dredged material. These facilities would be handling large volumes of contaminated dredged material and process chemicals that would require transport and may require stockpiling. The processing may produce air emissions, liquid effluents, and solid wastes. All these potential sources of pollution can be controlled with conventional techniques that would minimize any adverse effects from these facilities. In addition, these facilities would likely be sited in existing industrial areas or at brownfield sites. Many environmental benefits are expected as a result of using sediment processing and decontamination. After decontamination, the clean end product can be used in less restricted applications, such as the beneficial use applications discussed above. Decontamination will convert dredged material into a marketable end product such as clean soil or blended cement that has socioeconomic benefits, and will help to defray the processing cost. Where the potential adverse impacts associated with the decontamination and treatment options are minimized by the use of appropriate controls, any small residual adverse impacts would be outweighed by the benefits associated with the use of the end products.

j. In the event that the beneficial use options do not meet disposal needs due to the uncertainties associated with planning, the recommended course-of-action includes a disposal only option as a contingency. The preferred contingency option is confined aquatic disposal (CAD pits) sited in the same subarea of the Harbor from which the dredged material is produced. However, flexibility in siting is needed because it may be desirable to place relatively clean material from Lower Bay into the Upper Bay. This approach confines associated contaminants to an already contaminated location. As discussed in Section 5.3.5, new CAD pits in areas such as Newark Bay or Upper Bay would cause temporary, localized adverse impacts to aquatic resources. The existing NBCDF is operating as planned with no unexpected environmental problems. No significant long-term impacts are anticipated from this facility. These contingency options, however, also yield fewer long-term benefits than the preferred beneficial use options.

k. The CAD pits preferred for contingency development are located in Upper Bay and would be developed on an as needed basis in discrete units that would be sited to minimize the temporary adverse impacts. This approach fits with the flexibility of the DMMP in that the number of CAD pits would be limited to the number needed to meet a short-term shortfall in beneficial use disposal capacity. Because the CAD pits have only temporary adverse impacts they do not diminish the cumulative beneficial impact of the recommended course-of-action and they provide assurance that the economic goal (Port viability) of the DMMP will be met. Because they provide a secure containment area for dredged material they help remove the contaminants from surface sediments and isolate them from the environment.

l. The recommended course-of-action would achieve both the economic goal (maintain Port facilities) and the environmental goal (restore estuarine environments) of the DMMP. The recommended course-of-action protects remaining significant upland and aquatic habitats, and provides opportunities to reduce contaminant levels, restore and enhance upland and aquatic habitats, while achieving the economic goal of the DMMP. The plan has cumulative beneficial impacts in that both the regional economy and the estuarine environment would accrue benefits greater than the sum of the individual components of the plan.

5.6.3 ENVIRONMENTALLY PREFERRED ALTERNATIVE

a. The environmentally preferred alternative is based solely on environmental benefits to the estuary, irrespective of cost, proven reliability, or local support. This alternative focuses solely on options such as beneficial use and habitat restoration and does not include any containment disposal options. Compared to the recommended plan of action, this plan assumes that restoration options such as filling of degraded pits are feasible and relies on them more heavily in lieu of contingency disposal options, such as new CAD pits. Therefore, it is less costly than the recommended course of action. This alternative also maximizes the use of decontamination technologies. However, this alternative is based on newly emerging methods of habitat improvement and thus the expected environmental benefits from these options, and the economic goal of the DMMP (port viability) may not be attained. The options that together comprise the environmentally preferred alternative are as follows:

- HARS Remediation
- Contaminant Reduction
- Decontamination
- Remediation of hot spots
- Land remediation (treated and untreated)
- Construction uses

- Creation/restoration of oyster, shellfish and bird habitat
- Filling existing degraded pits and dead-end basins

b. As discussed in Section 5.6.2 above, decontamination is associated with some potential adverse impacts, such as release of contaminants into the air and water, resulting in potential exposure of both wildlife and humans. Pollution control technology would minimize these potential adverse effects, as would careful facility siting. The benefits derived from the beneficial use of the materials obtained from decontamination processes are expected to outweigh the minimal adverse impacts associate with this option.

c. Material dredged from off-channel hot spots would likely be managed through decontamination technologies. The identification of potential hot spots for remediation and their effects on the recovery of the ecosystem has not been determined. Therefore, the environmental impacts of this option would need further evaluation. However, it is assumed that remediation of hot spots in the Port will effectively isolate highly contaminated areas from the water column and thus decrease or eliminate the exposure of aquatic organisms to contaminants. This would have obvious beneficial impacts by decreasing the amount of contamination that enters food webs in the Harbor.

d. As discussed in Section 5.3.3.4 above, land remediation of contaminated sites is expected to provide net benefits by reducing the release of contaminants into the environment. In addition, remediated landfill sites have the potential to be converted to viable wildlife habitat or other beneficial use in the future. These outcomes are expected to have ecological, human health, and socioeconomic benefits.

e. The use of suitable dredged material (sand and gravel) for construction aggregate has been a common practice in the Harbor for many years.

f. Filling and capping degraded pits such as those in Jamaica Bay is expected to improve water quality and restore the areas to a level that can support fish and other organisms. Testing which confirmed these benefits would overcome much of the oppositions to this option and permit widespread use. Additional ecological and socioeconomic benefits would be realized from the creation and restoration of oyster, shellfish and bird habitat.

g. The environmentally preferred alternative would be expected to have cumulative environmental benefits greater than those expected from the recommended course-of-action assuming that all potential uses provide the expected benefits. This is not surprising since the environmentally preferred alternative only considers those options that provided environmental benefits without consideration of cost. However, the environmental benefits expected to be obtained from some of the uses incorporated in this alternative need further evaluation. Therefore, some of the benefits derived from this alternative are less certain than those associated with the recommended course-of-action including the economic benefit related to maintaining and improving the Port. Nonetheless, the environmentally preferred alternative would be expected to have the most environmental benefits of the four alternatives under consideration. Since this approach avoids containment options it could be detrimental to orderly planning for Port maintenance and especially its improvement. If some of the placement options are not feasible, too costly to implement or slow to come on line there could be substantial shortfalls and less deliberative planning to keep the Port viable.

5.6.4 BASE PLAN (ECONOMICALLY PREFERRED ALTERNATIVE)

a. The Base Plan (economically preferred alternative) identifies the least cost, environmentally acceptable plan as required by USACE Planning Guidance (USACE 2000). This alternative serves to determine what, if any, added costs would have to be incurred to implement an alternative approach, such as the recommended course-of-action or environmentally preferred plans identified above.

b. The primary difference between this alternative and the recommended course-of-action is the reliance on new pits in Newark Bay and on further restoration of degraded pits in Jamaica Bay, which is an unproven restoration technique. The options that constitute the economically preferred alternative are as follows:

- Contaminant reduction
- HARS remediation
- Additional ocean remediation
- Filling/restoration of existing degraded pits in Jamaica Bay
- Construction aggregate
- Capping of the Newark Bay CDF (NBCDF)
- New CAD facilities in Upper Bay
- Remediation of upland NJ sites

- Decontamination
- Marsh creation

c. The base plan's reliance on restoring habitat at degraded pits in Jamaica Bay and new CAD pits in Newark Bay to provide significant disposal capacity diminishes the availability of dredged material for other beneficial use applications and runs contrary to the DMMP recommendations to avoid use of existing pits as disposal options prior to testing and evaluation**.** The potential impacts of CAD pits were addressed in Sections 5.3.5 with regard to contingency options. The potential impact of new CAD pits could involve pits in shallow water (Newark Bay areas 2S and 2N, and east channel sites, and Constable Hook in Upper Bay) that would have greater potential impacts than pits in subchannel areas. Shallow water pits would disturb previously undisturbed substrate (some shallow areas may have been disturbed in the past, but have not been disturbed recently) and extend the temporary impacts beyond the channels where regular maintenance dredging now occurs. In addition, the shallows may contain higher contaminant levels due to long-term accumulation during the peak of effluent discharges into the watershed. The channels, on the other hand, may be less contaminated because maintenance has removed the contaminated sediments on a regular basis. Although much of the channel sediments from past dredging have been deposited at HARS, this area would be remediated as part of all alternatives.

d. A reliance on new CAD pits in shallow and subchannel areas would increase the substrate area of the Harbor that would be disturbed at any one time and would extend the impacts over a greater period of time than if CAD pits were only a contingency option. Thus, while the adverse impact of an individual new CAD pits is temporary and localized, there would be a long-term adverse impact in that more pits would likely be in operation over a longer period of time under the base plan. Eventually the footprints of the new CAD pits would recover to usable habitat for benthos and fish, although more area of the bay bottom is likely to be impacted at any given time.

e. The base plan increases the area of Harbor substrate that would be disturbed and increases the dispersal of existing contaminants compared to the other alternatives. Although, with precautions, these impacts could be environmentally acceptable, they occur at the expense of some of the environmental benefits of the recommended course-of-action. The Implementation Report addresses the costs associated with the alternatives, but the value of the environmental benefits of the alternatives is difficult to quantify. It is important in comparing alternatives to recognize that the effects of the base plan includes both temporary adverse impacts, as well as diminished environmental benefits.

5.7 MITIGATION

a. A consideration of the need for mitigation is a required part of an environmental impact statement. With regard to this planning function, mitigation can be addressed only in general terms because the details of most plan components have not been developed at this time. For those plan components that exist, mitigation was addressed as part of the permitting process of those facilities. For example, the Bayonne and Seaboard land remediation sites were required to mitigate for small wetland losses even though these sites will have significant beneficial impacts through remediation of contaminated upland areas. All components of the DMMP that are not currently the subject of permit applications, would be evaluated for the need for mitigation if they are implemented after finalization of the DMMP. These mitigation plans, as needed, would be part of the second tier of NEPA review for specific sites and techniques. Generally, the options identified for the various alternatives seek to minimize adverse impacts; thus the need for mitigation, if any, is not expected to be great.

b. The DMMP includes many options that represent mitigation of past adverse impacts that were not mitigated at the time they occurred. Filling degraded pits, landfill closure, land and mine remediation and habitat creation, enhancement and restoration are needed to address existing environmental problems. Minor adverse impacts could be associated with these options, but would not require mitigation. Other minor impacts not requiring mitigation could include dredging of access channels for filling degraded pits, construction activities associated with sediment processing and decontamination facilities, and the need to apply BMPs to CAD facilities.

c. The need for large-scale mitigation action has been avoided by the rejection of options that could have significant adverse impacts. Ocean and bay island CDFs, and extensive nearshore fills are no longer being considered because of the permanent loss of aquatic habitat associated with these options, among other concerns. Because of the magnitude of the impacts associated with these options, in-kind mitigation could not be sufficient to meet the requirements of federal agencies. In addition, because of the extensive shoreline development in the study area and the high value of shoreline property, it is unlikely that enough off-site mitigation area could be found for these options, making their use even less tenable given the environmental improvement goal of the DMMP.

5.8 LIST OF PREPARERS

a. The preparers of the PEIS are listed in Table 5-4.

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6.0 PUBLIC INVOLVEMENT

6.1 COOPERATING AGENCIES

a. The following agencies have agreed to cooperate with the NYD in the preparation and review of this EIS in accordance with NEPA guidelines: USEPA, USFWS, NMFS, NYSDEC, NYSDOS, NJDEP, NJDOT/OMR, and the PANY/NJ. As cooperating agencies they have provided technical input and reviewed the document with regard to their areas of expertise and jurisdiction.

b. The DMMIWG was formed to bring together the various dredging working groups that are part of the HEP. The DMMIWG is composed of representatives from Federal resource agencies, the States, the PANY/NJ, Port users, and environmental organizations including the Environmental Defense Fund, Clean Ocean Action and the Bay Keeper. This format provides the opportunity for this diverse group of stakeholders to have input in HEP's CCMP for the Harbor and NY Bight Apex. The DMMIWG is a formal operating group under HEP. The CMMP has been signed by all major agencies that are responsible for the Port of NY and its environment. The DMMIWG has also served as a cooperating entity providing review input to the DMMP as well as other technical reports related to dredged material management.

c. The RDT, composed of representatives from the PANY/NJ, NYD, the States, NJDOT/OMR, and USEPA, meets monthly to discuss the future of the Port, its needs, and dredged material placement and management options for the long term. Future updates to the DMMP will be coordinated by the RDT. Additionally, other meetings were held with working groups assembled by the borough presidents of Brooklyn and Staten Island.

6.2 SCOPING

a. With the participation of other agencies and the interested parties, public scoping is performed in order to determine significant issues to be analyzed in depth in a PEIS. Scoping generally follows publication of a Notice of Intent to prepare a PEIS in the Federal Register. In this case, agencies and the public were provided a draft outline of the proposed scope of the PEIS for comment, and the Notice of Intent was published in the Federal Register on February 27, 1998 and mailed to all stake-holders and interested parties.

6.2.1 SCOPING PROCESS AND MEETINGS

a. Meetings were held to inform the public and other agencies of the content of the DMMP, including a description of the proposed Federal action, areas of concern, and potential consequences of the action(s) that would be addressed in the PEIS. Several public meetings were held before the NEPA meeting described below. These meetings took the form of poster sessions with extensive opportunity to speak with USACE representatives on a variety of topics in an informal setting. These meetings were held to discuss the various options and the additional overall planning process identified in the Interim Report (USACE 1996a). Scoping meetings that included posters on the scope of the PEIS, verbal overviews of the

DMMP process, alternatives, and taped question/answer periods for the public were held early in 1998 (between February and April) after release of the Progress Report, and after publication of the NOI to prepare the PEIS in the Federal Register (including a copy of the proposed PEIS Scope).

b. As part of the continuing public involvement under NEPA, an additional four public meetings were held in November 1999 to receive comments on the draft PEIS and the DMMP. Stenographers recorded the comments at the meetings. Written comments and comments made verbally at meetings were taken into account in the promulgation of the final PEIS. Written comments and the NYD responses are contained in the PIA that accompanies this volume.

6.2.2 DOCUMENTS

a. Two reports were circulated prior to the public meetings: the Interim Report (USACE 1996a), which laid out the DMMP process and alternatives to be considered, and the Progress Report (USACE 1997), which reported the study status of each alternative. Written comments on these reports were considered, along with oral comments from meetings held on the revised PEIS scope. Notices of Availability concerning the NEPA meetings were sent to an extensive mailing list that included all past commenters and meeting attendees. Comments from the public and governmental agencies have been incorporated in the DMMP and PEIS where appropriate.

6.3 PUBLIC CONCERNS

a. Results from the meetings following the Interim Report and the EIS scoping meetings show that there is a high level of public concern about the dredged material composition (i.e., contaminants), and those areas where the material will be placed, as well as the methods used for placement. These views were expressed to NYD personnel at the poster sessions and in writing after the 1996 - 1997 meetings, and again at the meetings held in 1998 that included oral and written statements. The statements included those of elected officials, most of whom supported the need to keep the Port of NY/NJ as a viable major destination for shipping. They also reflected the concerns of their constituency regarding the issues surrounding siting, various potential management options, and their impact on environmental and human health.

b. There was a public misperception regarding the nature of dredged material. Dredged material was often incorrectly characterized as “toxic sludge”. Dredged material that fails to pass current tests for ocean placement due to toxicity or bioaccumulation in marine organisms in most cases would not be characterized as hazardous waste under standard testing for hazardous substances. Such material is not an immediate threat to human health.

c. Listed below are the major themes of the comments that have been considered in the preparation of this programmatic EIS:

- What steps would be needed to site a dredged material island CDF in the ocean and what is the status of the dredged material placed there (i.e., should an ocean island

CDF be constructed, would dredged material used to fill the facility be considered ocean disposal)?
- What are the benefits from capping sub-channel CAD pits?
- What kind of mitigation would be needed/appropriate for aquatic alternatives, including the 'out of kind' mitigation that might be necessary, especially an island CDF?
- Can groundwater contaminants be released by moving through the filled CAD pit?
- The dredged material placed into CAD pits will consolidate with time. Will contaminants be released into the water column along with the pore water that is expelled from the sediment?
- What is the potential for contaminants to be carried from a CAD pit into aquifers?
- What is the potential for contaminants to be carried from a CAD pit into overlying waters?
- How can contaminants in fine-grained dredged material be prevented from being lost during disposal, especially into pits, and spreading to other areas that are less contaminated?
- How can habitat values of an existing pit be demonstrated to be degraded enough to justify filling it?
- How will a cap survive storms and still retain and isolate sediments and contaminants?

d. A variety of statements were made at the various public meetings ranging from condemnation to strong support. A sample of the more representative views in no particular order of preference or priority are presented below:

- I prefer the disposal of dredged material at an upland site.
- An island CDF in the Apex could be used as a station for ship pilots.
- The Port must be kept open.
- I don't want NJ's dredged material dumped in NY State waters.
- I don't want NY's dredged material dumped in NJ State waters.
- Why move the stuff around and contaminate new areas?
- I don't believe that covering borrow pits with clean sand will work because wave-action associated with storms will eventually destroy the cap, releasing contaminants.
- I am concerned about currents and storms releasing contaminated material from the pits and about erosion caused by/to CAD pits.
- Toxic materials should not be dumped into our waterways.
- You will kill the fishing if you put this stuff in our waterways.
- The waters are becoming cleaner; the dredging will cause harm.
- Filling pits will destroy the good fishing there.
- The costs displayed on the poster boards options seem too low.

e. One of the major themes of the public’s comments was that the material should be kept at or near the place of origin (e.g., Newark Bay material should be kept there). Another concern was that the Lower Bay complex (e.g., Lower Bay, Raritan Bay) should not be used for the placement of dredged material, especially in an island CDF or existing pit, because those using the complex have noticed a return of fish and shellfish species. These individuals were also concerned with a loss of habitat associated with an island. This was a special concern of the citizens of Staten Island and the NJ communities along the shoreline of Raritan Bay.

f. General support was expressed for decontamination/treatment technologies, land remediation, and pollution prevention as the best options for the management of dredged material. The public recognized the need to reduce contaminant levels in sediment in the future. Comments were directed primarily at the potential management options and to the PEIS Scope.

6.4 COORDINATION OF THIS PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT

a. The following elected officials and organizations were contacted by NYD during the public involvement program.

6.4.1 FEDERAL ELECTED OFFICIALS AND AGENCIES

- **a.** United States Coast Guard
- **b.** United States Department of Commerce
- **c.** National Oceanographic and Atmospheric Administration
- **d.** National Marine Fisheries Service
- **e.** National Ocean Survey
- **f.** United States Department of Interior
- **g.** Fish and Wildlife Service
- **h.** Mineral Management Service
- **i.** National Park Service
- **j.** United States Department of Transportation
- **k.** United States Environmental Protection Agency

6.4.1.1 NEW YORK STATE REPRESENTATIVES

- **a.** U.S. Senator Hillary Clinton
- **b.** U.S. Senator Charles Schumer
- **c.** Congressman Gary L. Ackerman
- **d.** Congressman Joseph Crowley
- **e.** Congressman Eliot L. Engel
- **f.** Congressman Vito Fossella
- **g.** Congressman Benjamin A. Gilman
- **h.** Congresswoman Sue W. Kelly
- **i.** Congressman Peter T. King
- **j.** Congresswoman Nita M. Lowey
- **k.** Congresswoman Carolyn B. Maloney
- **l.** Congresswoman Carolyn McCarthy
- **m.** Congressman Gregory W. Meeks
- **n.** Congressman Jerrold Nadler
- **o.** Congressman Major R. Owens
- **p.** Congressman Charles B. Rangel

- **q.** Congressman Jose E. Serrano
- **r.** Congressman Edolphus Towns
- **s.** Congressman Nydia M. Velazquez
- **t.** Congressman Anthony D. Weiner

6.4.1.2 NEW JERSEY STATE REPRESENTATIVES

- **a.** U.S. Senator Jon Corzine
- **b.** U.S. Senator Frank Lautenberg
- **c.** Senator Robert Toracelli
- **d.** Congressman Mike Ferguson
- **e.** Congressman Rush D. Holt
- **f.** Congressman Robert Menendez
- **g.** Congressman Frank Pallone
- **h.** Congressman Bill Pascrell
- **i.** Congressman Donald M. Payne
- **j.** Congressman Steven R. Rothman
- **k.** Congressman Christopher H. Smith

6.4.2 NEW YORK STATE ELECTED OFFICIALS AND AGENCIES

- **a.** Governor George E. Pataki
- **b.** Secretary of State
- **c.** Commissioner of NY Department of Environmental Conservation
- **d.** Executive Director, Empire State Development Corporation

6.4.3 NEW JERSEY STATE ELECTED OFFICIALS AND AGENCIES

- **a.** Acting Governor Richard Codey
- **b.** Governor Elect Jon Corzine
- **c.** Commissioner of NJ Department of Environmental Protection
- **d.** Department of Transportation Office of NJ Maritime Resources (NJDOT/OMR)

6.4.4 BI-STATE AND OTHER STATE AGENCIES AND ORGANIZATIONS

- **a.** Port Authority of NY and NJ
- **b.** Bi-State Clean Ocean and Shore Trust
- **c.** Pennsylvania Department of Environmental Protection

6.4.5 COUNTY AND NEW YORK CITY ELECTED OFFICIALS AND AGENCIES

- **a.** Monmouth County Executive
- **b.** Middlesex County Executive
- **c.** Union County Executive
- **d.** Essex County Executive
- **e.** Hudson County Executive

f. NY City Department of Environmental Protection
g. Borough President of Staten Island (Richmond)
h. Borough President of Brooklyn (Kings)

6.4.6 ENVIRONMENTAL GROUPS, PRIVATE ORGANIZATIONS, GENERAL PUBLIC

a. American Littoral Society
b. NY/NJ Bay Keeper
c. Clean Ocean Action
d. DMMIWG
e. Concerned Individuals

Previous reports and the PEIS were mailed to anyone who provided written comments in the past, or specifically requested copies of the PEIS. The Notice of Availability letter was also mailed to all attendees at prior meetings (Leonardo, Newark, Manhattan, Brooklyn, Middletown).

6.5 COMMENTS ON THE DRAFT PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT

a. The availability of the DPEIS was announced in a Public Notice dated September 10, 1999, at which time written comments were requested. On October 12, 1999, a Notice of Public Meetings was sent to all recipients of the DPEIS and at the same time the comment period was extended to December 3, 1999. The public meetings were distributed around the harbor and scheduled for evenings to provide an opportunity for interested elected officials and individuals to comment on the DPEIS. The public meetings were held in November 1999. The public meetings included a poster session that summarized the recommendations of the DMMP, and forms were provided to meeting attendees to encourage written comments.

b. The written comments and the transcripts of the public meetings were reviewed by the NYD and used to revise the Draft DMMP – PEIS, Implementation Report, and the Technical Appendix, for the Final PEIS. All written comments received a response in the PIA, which accompanies this volume. Where comments were the same or similar a response was given once and subsequent comments referred to the first response. The following subsections provide a brief summary of the comment/response process and a discussion of the future of the DMMP.

c. The written comments were grouped into the following categories: Federal elected officials, state elected officials, resources agencies, municipal jurisdictions, organizations, environmental protection groups and a citizen category that also included some individuals commenting on behalf of a local organization. The written comments received are listed in Table 6-1. The comment letters were received via regular mail, by fax, and by e-mail. The comment letters are contained in the PIA with an assigned designation number. The District responses follow each comment letter, where appropriate. The responses are keyed to lettered paragraphs in the margin of the comment letters. In the case of Clean Ocean Action (COA), a marked-up copy of the DPEIS was submitted in addition to a comment letter. The responses to

COA include both responses to the comment letter and responses to the major comments in the draft PEIS markup.

d. The written comments on the DPEIS, Implementation Report, and Technical Appendix ranged from detailed technical comments to statements regarding an individual's position on the overall plan or selected aspects of the plan. It was clear from these letters and the public meetings that important aspects of the DMMP were not well understood by many individuals. The revisions to the PEIS based on all comments received should help the general public better understand the DMMP.

e. The transcripts of the public meetings are available for review at the District office at 26 Federal Plaza. The individuals who spoke at the public meeting are listed in Tables 6-2 and 6-3. There were no speakers at the meeting held in Newark, NJ, on November 17, 1999. A number of elected officials and individuals who provided written comments also spoke at the public meetings. Generally, the speakers spoke in favor of or in opposition to the DMMP or selected aspects of the plan. The public meetings did not provide significant technical comments requiring a revision to the DMMP. The written comments attached to the Final PEIS provide a good representation of the position of the elected officials and citizens who spoke at the public meetings.

6.6 PERIODIC UPDATES OF THE DMMP

a. As discussed in the Implementation Report, the DMMP is a working document that provides a long-term plan for dredged material management. The need for dredging and the technology for dredged material management will change over time, which will require adjustments to the plan. In addition, the testing criteria for sediments may become more stringent in the near future. Sediment and pollutant source and control programs are expected to significantly reduce the quantity of contaminants entering water bodies that discharge into the Harbor.

b. The NYD will prepare periodic updates of the DMMP – Implementation Report to address these changing conditions. The RDT will coordinate these future updates. Updates will be made available to the public for review and comment.

c. The implementation of the Recommended Plan will entail permitting of site-specific management options. Required permitting will follow NEPA requirements for public involvement in the scoping of studies and the review of the draft NEPA document for each project. The NYD has developed an extensive list of elected officials and concerned citizens who have shown an interest in dredging and dredged material management. It is the NYD's intent to keep the public involved in the continued management of dredging in the Harbor.

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APPENDIX A

United States Fish and Wildlife Service

Fish and Wildlife Coordination Act
Section 2(b) Report

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FISH AND WILDLIFE COORDINATION ACT
SECTION 2(b) REPORT

ASSESSMENT OF THE DREDGED MATERIAL MANAGEMENT PLAN FOR THE PORT OF NEW YORK AND NEW JERSEY

Prepared by:

U.S. Fish and Wildlife Service
Ecological Services, Region 5
New Jersey Field Office
Pleasantville, New Jersey

December 2003

United States Department of the Interior

FISH AND WILDLIFE SERVICE

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In Reply Refer to:

FP- 03/56

DEC 8 2003

Colonel John B. O'Dowd
District Engineer, New York District
U.S. Army Corps of Engineers
26 Federal Plaza
New York, New York 10278-0090

Dear Colonel O'Dowd:

This is the final revised report of the U.S. Fish and Wildlife Service (Service) regarding anticipated impacts on fish and wildlife resources from the U.S. Army Corps of Engineers, New York District's (Corps) proposed Dredged Material Management Plan (DMMP) for the Port of New York and New Jersey. This revision supercedes the Service's previous report on the DMMP dated August 2000. This report was prepared pursuant to Section 2(b) of the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 U.S.C. 661 *et seq*.), provided in accordance with our Fiscal Year-2003 scope-of-work agreement, and is based on information provided by the Corps. This final report reflects comments received by the New Jersey Division of Fish and Wildlife, the New York Department of Environmental Conservation, and the Corps.

Additional information regarding this report can be provided by John Staples or Diana Raichel of my staff at (609)646-9310 extensions 18 or 45, respectively.

Sincerely,

Clifford G. Day

Clifford G. Day
Supervisor

Enclosure

FISH AND WILDLIFE COORDINATION ACT
SECTION 2(b) REPORT

ASSESSMENT OF DREDGED MATERIAL MANAGEMENT PLAN FOR THE PORT OF NEW YORK AND NEW JERSEY

Prepared for:

U.S. Army Corps of Engineers
New York District
New York, New York 10278-0090

Prepared by:

U.S. Fish and Wildlife Service
Ecological Services, Region 5
New Jersey Field Office
Pleasantville, New Jersey 08232

Preparer: Diana L. Raichel
Assistant Project Leader: John C. Staples
Project Leader: Clifford G. Day

December 2003

EXECUTIVE SUMMARY

The U.S. Fish and Wildlife Service (Service) reviewed the Dredged Material Management Plan (DMMP) for the Port of New York and New Jersey Implementation Report Update, Technical Appendix, and the draft Final Programmatic Environmental Impact Statement (EIS) provided by the U.S. Army Corps of Engineers, New York District (Corps). This is the Service's revised Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401; 16 U.S.C. 661 *et seq.*) Section 2(b) report regarding potential impacts to fish and wildlife resources and their supporting ecosystems in the New York/New Jersey Harbor Estuary (Harbor Estuary), and supercedes the Service's previous report, dated August 2000. This report provides an assessment of the proposed DMMP and recommendations to avoid adverse impacts on fish and wildlife resources.

The goal of the DMMP is to provide a regionally supported, comprehensive management plan to economically meet the dredged material management needs for the Port of New York and New Jersey while also protecting the environment and supporting the restoration of the Harbor Estuary, respectively. The dredged material addressed in the DMMP is categorized according to whether or not it is suitable for placement at the Historic Area Remediation Site (HARS). The HARS is an area in the New York Bight Apex designated by the U.S. Environmental Protection Agency, Region 2 (USEPA) for the purpose of remediating adverse impacts from past ocean disposal practices. These two broad categories of dredged material, HARS-suitable and HARS-unsuitable, are determined by contaminant concentration criteria established by the USEPA. Dredged materials determined to have toxic levels of contaminants, or to have the potential to bioaccumulate to unacceptable concentrations witbin biological tissue, are excluded from placement at the HARS. Dredged material characterized as hazardous under the Federal Resource Conservation and Recovery Act (P.L. 94-580; 90 Stat. 2795; 42 U.S.C. 6901-6992) standards are not managed under the DMMP, but regulated by the appropriate responsible agencies and disposed of at a permitted hazardous waste facility.

Management options that are under consideration in the DMMP include: sediment contaminant reduction, sediment/dredging reduction, habitat creation, enhancement, and restoration; land-site remediation; confined aquatic disposal (CAD) facilities; sub-channel CAD facilities; and confined disposal facilities (CDF). The factors considered in evaluating management options include environmental impacts, economic benefits and costs, availability, capacity, and support by non-federal sponsors.

The Harbor Estuary and adjacent New York Bight Apex support a wide diversity of valuable fish and wildlife resources that includes migratory and resident marine mammals, fishes and birds, shellfish, and benthos. These waters also support species designated as threatened, endangered, or of some management concern at both the federal or State levels (Appendix A). The Service (1996a) has identified areas of the Harbor Estuary that support concentrations of these species groups or that support rare or unique vegetation communities and mapped these areas as Regionally Significant Habitat Complexes. In addition, the Harbor Estuary is designated as "Essential Fish Habitat" for 24 species by the National Marine Fisheries Service (NMFS). The Magnuson - Stevens Fishery Conservation and Management Act of 1996 (P.L. 94-265) requires that the essential habitat of any species managed by the Regional Fishery Management Councils be recognized and specifies that attempts be made to avoid degrading these habitats.

The Service's primary recommendations include the following.

- Consult with the Service, NMFS, and the appropriate State agencies in New Jersey and New York regarding potential adverse impacts on species of management concern.

- Conduct a more comprehensive testing of sediments to identify contaminated "hotspots" and to consider effects on higher trophic level organisms. Avoid reliance on invertebrate analyses. Develop and implement a chronic exposure test, using a demersal fish common to the Harbor Estuary.

- Address how the DMMP will be integrated into other contaminant-related initiatives to improve water and sediment quality in the Harbor Estuary.

- Briefly discuss point sources of pollution in the DMMP and EIS to include accountability of the responsible parties and how these parties may affect dredged material.

- Coordinate with the USEPA and State regulatory agencies to ensure effective implementation of existing federal and State laws aimed at controlling point and non-point sources of pollution to the aquatic environment.

- Employ Best Management Practices, such as utilizing constructed wetlands to treat water in areas where water quality is poor and restoring riparian wetlands to reduce the amount of sediment entering the Harbor Estuary. Avoid structural means of reducing sedimentation.

- Follow the initiatives set forth in the Harbor Estuary Program's Comprehensive Conservation and Management Plan.

- For advanced maintenance dredging, avoid widening channels located in areas that may be serving as critical habitat for finfish and invertebrates and set limits on the quantity of material removed to prevent excess dredging, which may result in poor water quality (*i.e.*, anoxia caused by poor circulation).

- Do not locate decontamination facilities within wetlands or upland cover types considered to be rare in this geographic area. Site these facilities in brownfields when possible.

- Use Category I or cleaner dredged material for projects intended to benefit fish and wildlife resources.

- Consider bioturbation in land remediation projects and the potential adverse effects to fish and wildlife as a result of contaminant exposure.

- Do not place upland CDFs in sensitive habitats or where the facility may be breached by storms.

- Employ the nearshore CDF disposal option only if located within highly degraded habitats.

- Eliminate the island CDF disposal option and the CAD facility option from further consideration due to the high potential for adverse environmental impacts to aquatic resources.

- Continue studies to obtain information on the distribution patterns of the early life history stages of demersal fishes in the Harbor Estuary using appropriate statistical tests to analyze the data collected.

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I. INTRODUCTION

The Port of New York and New Jersey (Port) is located within the New York - New Jersey Harbor Estuary (hereafter referred to as the Harbor Estuary). The Harbor Estuary, as defined by the U.S. Environmental Protection Agency's (USEPA) National Estuary Program, extends from its juncture with the New York Bight Apex at the Sandy Hook - Rockaway Transect north up the Hudson River to Piermont Marsh (Figure 1). The Harbor Estuary includes all tidally influenced portions of rivers flowing into the harbor including the Hackensack, Passaic, Raritan, Shrewsbury, and Navesink rivers and the East River from the Battery to Hell Gate (U.S. Fish and Wildlife Service, 1996a).

The development and operation of port facilities constitute a substantial portion of the human influence on the Harbor Estuary ecosystem. The Port is one of the busiest cargo ports-of-entry in the United States, requiring large amounts of land for mooring facilities and cargo storage and handling areas, as well as an extensive transportation network. Due to the shallow natural draft of the Harbor Estuary, substantial dredging has been required to establish and maintain navigation channels adequate to accommodate modern shipping. Most modern vessels require a channel depth of at least 45-feet for safe navigation (U.S. Army Corps of Engineers, 1996, 2003). Much of the channel sediment is contaminated with a variety of compounds including dioxins, polychlorinated biphenyls (PCBs), dichlorodiphenyltrichloroethane (DDT), pesticides, and heavy metals. The large dredging requirements generate a need for sites to dispose of dredged material and contaminated sediments complicate the task of locating suitable disposal sites. Overall, the Dredged Material Management Plan (DMMP) must provide a framework to manage a total (maintenance and new dredging) of approximately 181 million cubic yards of material over the next 60 years (U.S. Army Corps of Engineers, 2003).

The U.S. Fish and Wildlife Service (Service) has reviewed the DMMP for the Port of New York and New Jersey Implementation Report Update, Technical Appendix, and draft Final Programmatic Environmental Impact Statement supplied by the U.S. Army Corps of Engineers, New York District (Corps). This is the Service's revised Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401; 16 U.S.C. 661 *et seq.*), Section 2(b) report regarding impacts to fish and wildlife resources and associated ecosystems in the project area. This report supercedes the Service's previous FWCA report, dated August 2000, and is provided in accordance with a Fiscal Year 2003 interagency agreement with the Corps. This revised FWCA report provides an assessment of the proposed plan. Recommendations to avoid adverse impacts on fish and wildlife resources are based on an updated review of the project area and recent information provided by the Corps. The content of this report is also based on review of Service files and library materials, and coordination with the New Jersey Department of Environmental Protection (NJDEP), Division of Fish and Wildlife (NJDFW), the New York Department of Environmental Conservation (NYDEC), and the National Marine Fisheries Service (NMFS).

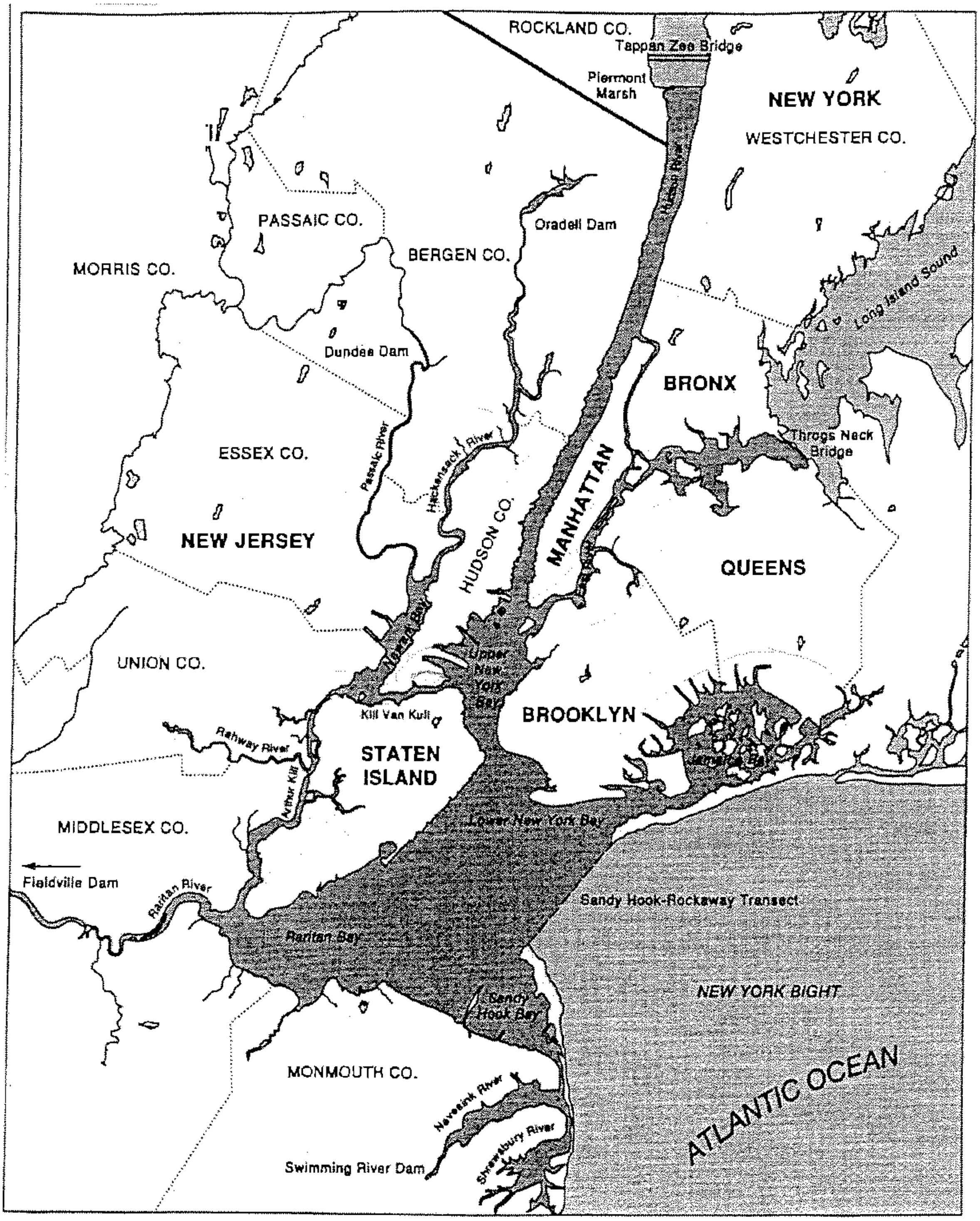


Figure 1 - Location of New York / New Jersey Harbor Estuary

II. PROJECT DESCRIPTION

A. OVERVIEW

The DMMP is intended to provide a comprehensive, long-range plan for the management of dredged material originating from the Harbor Estuary. In addition to identifying a range of options for disposing of dredged material, the Corps identifies strategies for reducing the need for maintenance dredging through sediment reduction programs and strategies for reducing the amount of contaminated dredged material through pollution and contaminant reduction programs, and sediment decontamination technologies. Options for the disposal of dredged material include: beneficial uses such as the remediation of the Mud Dump Site; habitat creation, enhancement and restoration; land remediation; and beach nourishment and construction material; as well as upland Confined Disposal Facilities (CDFs) and Confined Aquatic Disposal (CAD) pits (U.S. Army Corps of Engineers, 1999, 2003). The Corps ranks disposal options on a scale of 1 to 5 as follows: 1 - preferred option, 2 - fallback option, 3 - uncertain option, 4 - least preferred option, and, 5 - non-preferred option (U.S. Army Corps of Engineers, 1999, 2003). The following sections provide brief descriptions of each of these management options.

B. HISTORIC AREA REMEDIATION SITE (HARS)

Historically, most of the material dredged from the Harbor was disposed of at the Mud Dump Site, located in the Atlantic Ocean approximately 6 miles east of Sandy Hook. Decades of use have left certain areas of the Mud Dump Site with levels of contamination that are higher than considered acceptable (U.S. Environmental Protection Agency, 1997). The dredged material addressed in the DMMP is categorized according to whether or not it is suitable for placement at the Mud Dump Site, now renamed the Historic Area Remediation Site (HARS). The placement of this material is for the purpose of capping contaminated areas. These two broad categories of dredged material, HARS-suitable and HARS-unsuitable, are determined by contaminant concentration criteria established by the USEPA.

Based on current New York District projections, it will take approximately a decade to fulfill the minimum capping requirements for the HARS with suitable dredged material (U.S. Army Corps of Engineers, 2003). However, the New York District has also estimated that as little as one-third of maintenance dredged material is suitable as remediation material at the HARS.

C. SEDIMENT CONTAMINANT REDUCTION

Part of the strategy for the long-term management of contaminated dredged material is to reduce the input of contaminants, thus lessening the future amount of contaminated sediment requiring disposal. As noted above, the New York District estimates that approximately two-thirds of the dredged material from maintenance projects may not be suitable for remediation at the HARS, and that the long-term average volume of this unsuitable material to be 1.3 million cubic yards per year (U.S. Army Corps of Engineers, 2003). The Corps goal is to reduce the annual amount of HARS unsuitable dredged material placement to 0.5 million cubic yards by the year 2040. The Harbor Estuary Program (HEP) (see Section II, B) is coordinating a regional Contaminant

Assessment and Reduction Program to assist dredged material managers in quantifying contamination trends in the Harbor Estuary. Stakeholders include the States of New York and New Jersey as well as the Corps. To date, approximately $30 million has been invested by the non-federal stakeholders. In addition, the State of New Jersey and the Port Authority of New York and New Jersey (Port Authority) have appropriated $2.9 million for the development of a harbor-wide contaminant fate and transport model. The New York District is providing data management for the program and both States are funding a quality assurance / quality control program. The data, interpretation, and modeling are expected to be used to identify the sources and extent of contaminants and to reduce and prevent contamination.

D. SEDIMENT / DREDGING REDUCTION

Sediment reduction is defined as decreasing the amount of sediment settling within navigation channels for the ultimate purpose of reducing the amount of dredging necessary. The four sediment reduction strategies being studied are: watershed sediment reduction controls, channel design optimization, advanced maintenance dredging, and structural modifications.

Watershed sediment reduction controls are strategies that incorporate Best Management Practices (BMPs) to reduce the amount of sediment and other non-point source pollutants from reaching waterbodies from such events as runoff from adjacent uplands and the erosion of streambanks. Channel design optimization would include activities such as realigning channels to decrease the sedimentation rate. The higher water velocity entrains a larger percentage of material in the water column, thus decreasing the amount of material settling out and accumulating in the channel. Advanced maintenance dredging would result in dredging below the desired channel depth to reduce the frequency of dredging. Structural modifications either within or outside of channel boundaries would be designed to keep sediment moving through channels and berth areas, thereby minimizing the amount of sediment that settles in these areas.

E. DECONTAMINATION AND TREATMENT

Decontamination and treatment technologies work by reducing contaminant concentrations, contaminant mobility, and/or the toxicity of dredged material by means of mechanical, chemical, thermal, or biological processes, or combinations thereof. Contaminants are eliminated, removed, or immobilized, thereby reducing the likelihood of contaminants moving into the environment. Dredged material that has undergone treatment may be acceptable for beneficial uses, but not for uses primarily intended to provide suitable fish and wildlife habitat.

F. BENEFICAL USES

The DMMP identifies three main categories of beneficial uses for dredged material: remediation of the HARS; habitat creation, enhancement and restoration; and land-site remediation.

The USEPA is now performing a public and scientific peer review process of the HARS dredged material testing framework. This review may result in a change of standards for determining if dredged material is suitable for placement at the HARS. In the DMMP, the current standards for remediating the HARS are assumed to not change. Beneficial uses that focus on habitat creation, enhancement, and restoration fall into two categories: proven and potential. Proven applications are wetland creation and enhancement, creating reefs with dredged or blasted rock, establishing oyster beds, and creating upland bird habitat. Potential beneficial uses are those applications that require data collection and demonstration before implementation. These potential applications include, but are not limited to, restoring fish and benthic habitats in degraded borrow pits, filling degraded dead-end basins, creating treatment wetlands, creating shellfish habitat, and creating submerged aquatic vegetation beds and mudflats. Preference 1 options (most highly preferred) for use in the DMMP include the use of rock for artificial reefs; creation of shorebird habitat, saltmarsh restoration, and creation of oyster or shellfish habitat; and a demonstration project to determine the potential for restoration of ecologically degraded borrow pits.

The land site remediation category includes the closure of landfills (*e.g.*, capping), the remediation of brownfields, and the reclamation of quarries and abandoned coal mines. Prior to use, dredged material would be amended or processed with binding agents to improve its structural properties. This process also immobilizes contaminants within the material to prevent leaching and bioavailability. The development of a regional bi-State re-handling facility for low-end processing and shipment of amended dredged material would ensure full-scale use of these beneficial use options. There are six independent dredged material processing facilities permitted in New Jersey. The New Jersey Office of Maritime Resources (NJMR) is proposing a State-owned and privately operated processing facility, and is cooperatively investigating a contractual arrangement with the Port Authority and the New York District. In this arrangement, the NJMR would act as a broker of dredged material from New York District and Port Authority projects. The dredged material processing and re-handling facilities are New York District preference 1 options.

G. CONFINED DISPOSAL FACILITIES (CDF)

Confined disposal facilities would be used to dispose of dredged material that is too high in contaminant levels to be used beneficially (U.S. Army Corps of Engineers, 1997). Additionally, dredged material classified as suitable for beneficial uses may be placed in confined disposal facilities when transporting the material to beneficial use sites is not logistically feasible. Three basic types of confined disposal facilities are proposed: aquatic, upland, and island.

1. Aquatic

a. <u>Contained aquatic disposal pits (CAD)</u>

The CAD option involves the placement of dredged material into excavated pits within a waterbody. This option includes the construction of CAD facilities either outside channels or within channels (sub-channel).

Currently, constructing new pits outside of channels is not one of the Corps' high-ranking options for dredged material disposal (U.S. Army Corps of Engineers, 2003) due to potential biological impacts. If pits are constructed, excavated material that meets acceptable contaminant standards would be used beneficially, then the pits would be filled with Category II or III (most highly contaminated) dredged material and capped with Category I material (clean).

The construction of sub-channel CADs involves placing dredged material in an area excavated below authorized or maintained depths within an existing channel or berthing area. Once the material is placed, it would be left to be capped by natural sedimentation, or capped with HARS-suitable material. The Corps is considering this a contingency option when other cost-effective management options are not available.

b. Nearshore containment areas

Nearshore containment facilities would be constructed in aquatic habitats with one side of the facility abutting land. When filled and covered, these facilities would produce a "containment peninsula." Four sites have been identified by the Corps as potential nearshore containment areas. All of which are listed as preference 3 options because they will require extensive studies to evaluate their feasibility.

2. Upland CDF

Creation of an upland CDF would require construction of dikes or other retention structures and, depending on the site, include a liner (to isolate contaminants) and a stormwater runoff collection system. Currently, all potential upland CDF sites have been dropped from further consideration in favor of remediation and restoration of upland sites with treated dredged material.

3. Island CDF

Island CDFs, or containment islands, would be constructed and used for dredged material disposal over many years or decades. Due to the potential for significant coastal storms in the region, the dike of an island CDF must be designed to withstand extreme conditions and to prevent loss of the material placed within the facility. An environmental assessment has determined that this option is cost effective and feasible from an engineering standpoint, but unacceptable due to potential negative environmental impacts to aquatic resources. Therefore, island CDFs are a preference 5 option (lowest preference) for the Corps and are no longer under consideration.

III. NEW YORK AND NEW JERSEY HARBOR ESTUARY ECOSYSTEM

A. OVERVIEW

Despite extensive human-induced alterations, the Harbor Estuary continues to support an impressive diversity of habitats and an abundance of fish and wildlife resources that are of substantial commercial, recreational and ecological importance. As part of the National Harbor Estuary Program, the Service conducted studies and identified species groups and ecological communities of management concern within the Harbor Estuary, which included fisheries, shellfisheries, migratory birds, and species designated as threatened or endangered at the State or federal level. As part of this study effort, the Service also identified areas of the Harbor Estuary that support concentrations of these species groups, as well as rare or unique vegetation communities, and mapped these areas as Regionally Significant Habitat Complexes (Figure 2) (U.S. Fish and Wildlife Service, 1996a). The following describes the physical environment and the ecological significance of the Harbor Estuary, and discusses the species of management concern within the Harbor Estuary. Additionally, the Regionally Significant Habitat Complexes within the Harbor Estuary are described.

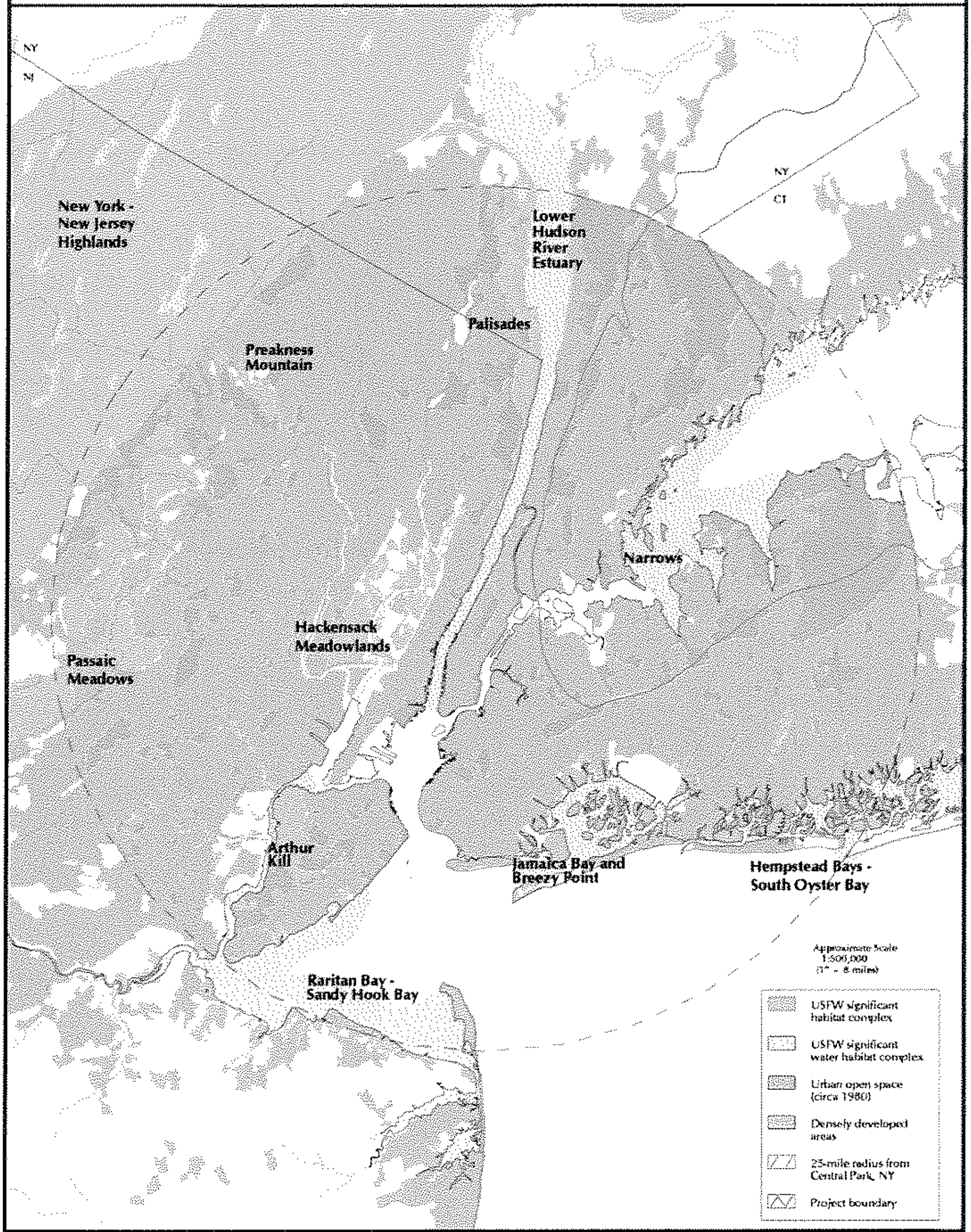
B. PHYSICAL ENVIRONMENT

The Harbor Estuary extends from its juncture with the New York Bight Apex at the Sandy Hook-Rockaway Transect north up the Hudson River to Piermont Marsh near the Tappan Zee Bridge. The Harbor Estuary includes all tidally influenced portions of rivers flowing into the harbor including the Hackensack, Passaic, Raritan, Shrewsbury, and Navesink rivers, and the East River from the Battery to Hell Gate. The project area encompasses marine environments where salinities exceed 30 parts per thousand (ppt) with little or no dilution; estuarine environments that extend upstream to salinities as low as 0.5 ppt; palustrine environments that include all non-tidal wetlands and tidal areas where salinity, due to ocean-derived salts, is less than 0.5 ppt (primarily occurring adjacent to streams and rivers beyond the limit of tidal influence within the study area); and upland environments, which have, for the most part, been significantly altered by human activity.

1. Geology

Several physiographic provinces converge at the Harbor Estuary, including the Atlantic Coastal Plain Province, the Piedmont Province, and the New York - New Jersey Highlands and the Manhattan Hills extensions of the New England Province. This convergence of physiographic provinces provides a great diversity of landforms; from the sands, gravels and clays of the Atlantic Coastal Plain, to the sandstones, shales and igneous intrusions of the Piedmont, to the metamorphic crystalline rock ridges of the New England Province. This mix of landforms is further complicated by the presence of terminal moraine from the Wisconsin glacial advance. The moraine is a linear and ridge-like landform of gravelly, stony, and bouldery materials that forms the lengthwise spine of Long Island extending southwest to the southern tip of Staten Island and then trending northwest into the New York - New Jersey Highlands. Glacial till and lake sediments are found north of the moraine and glacial outwash sediments occur immediately south of the moraine.

Figure 2. SIGNIFICANT HABITAT COMPLEXES IN THE NEW YORK - NEW JERSEY HARBOR AREA
(Source: U.S. Fish and Wildlife Service, 1996)



Large areas of Raritan and Sandy Hook Bays are dominated by sandy-mud sediments, with smaller areas of sand, mud, shell and gravel sediments (New Jersey Department of Environmental Protection, 1988; Iocco *et al.*, 2000). Fine-grained sediments dominate the head of the bay primarily because the area is far from the open ocean (hence turbulent mixing is minimal) and because fine sediments drop out of the water column where water velocity slows substantially as it enters the estuary. A fine-grained sediment plume originating from the Raritan River flows through the deeper, center area of the bay almost to Sandy Hook (Multer *et al.,* 1984).

2. Circulation

Currents in Raritan Bay generally circulate counter-clockwise (Jefferies, 1962). Ocean water enters from the east and travels west along the coast of Staten Island toward the Raritan River. Raritan River water enters from the west and travels east along the southern shore of the estuary. This circulation pattern influences other physical and chemical characteristics of the bay (*e.g.*, salinity gradients, dissolved oxygen, water clarity, sedimentation). The literature review revealed little information on the circulation patterns of the study area outside of Raritan Bay and Sandy Hook Bay.

The Hudson Plume is an important feature of the New York Bight. The Hudson Plume is a discharge of low-density water from the estuary into the New York Bight. River plumes are generally important features of coastal marine systems because they regulate the exchange of sediments, nutrients, pollutants, and organisms between the estuarine and marine environment (Wilber and Will, 1994). When Hudson River discharges are high and winds are light, the plume usually flows south along the New Jersey coast. When discharges are low and winds to the northeast, the plume can flow directly into the New York Bight Apex beyond the Mud Dump Site (Wilber and Will, 1994).

Raritan Bay appears to be relatively well-mixed, as indicated by similarities in physical and chemical data (*e.g.*, dissolved oxygen, temperature, salinity, nitrate, nitrite, phosphate, and iron) between surface and bottom waters (Draxler *et al.*, 1984). Thorough mixing is facilitated by a combination of factors: the shallowness of the bay; a long fetch from most directions; and, turbulent mixing of tides, river discharge, and wind. Additionally, the bay completely flushes within 60 tide cycles or 28 days (Jefferies, 1962).

3. Human Alterations

The Harbor Estuary is one the most densely populated and heavily industrialized areas in the world. This dominant human presence has dramatically altered the ecology of the Harbor Estuary; resulting in the near elimination of many upland plant communities, and the loss of approximately 300,000 acres of tidal wetlands and shallow water habitats (U.S. Fish and Wildlife Service, 1996a). In addition to the direct loss of habitat due to urban development, human influence in the area has resulted in massive degradation of remaining habitats through industrial effluent and sewage discharges, chemical and oil spills, storm water runoff, air pollution, and the introduction of invasive, non-native plants and animals.

Upland systems within the study area have, for the most part, been significantly altered by human activity. Much of the study area has been intensively developed and now provides few habitats for fish and wildlife populations. Due to the paucity of undeveloped uplands (*e.g.*, forests, grasslands) within the study area, remaining undeveloped areas often provide valuable habitats for many species, especially migratory birds.

C. THE ECOLOGICAL SIGNIFICANCE OF THE NEW YORK - NEW JERSEY HARBOR ESTUARY

The Harbor Estuary was designated an "Estuary of National Significance" in 1988 under Section 320 of the Clean Water Act (33 U.S.C. 1251 *et seq.*), and became one of 28 estuaries in USEPA's National Estuary Program (NEP). Under the NEP, the New York/New Jersey Harbor Estuary Program (HEP) was formed to protect the Harbor Estuary's watersheds and restore a healthy and productive ecosystem. The HEP is a regional partnership of citizens, scientists, and federal, state, interstate, and local agencies. The HEP Comprehensive Conservation and Management Plan (CCMP) serves as a blueprint for the management of the Harbor Estuary and New York Bight and includes long-term strategies and intermediate actions to protect, restore, and enhance fish and wildlife habitats. The CCMP also contains guidance for developing strategies to prevent and reduce pollutants entering the Harbor Estuary. The HEP Habitat Workgroup was formed to fulfill the habitat objectives of the CCMP (New York - New Jersey Harbor Estuary Program, 2001).

The greatest ecological significance of the Harbor Estuary is its regional and national importance to many migratory species. This significance relates to several factors. Several major river systems, Hudson, Raritan, Passaic, Hackensack, and Navesink/Shrewsbury, drain into this estuary, all with a common outlet and connection to the New York Bight portion of the Atlantic Ocean. This confluence serves to concentrate marine, estuarine, anadromous, and catadromous fish in the estuary. The Harbor has a strategic location at the Apex of the Bight, at a bend in the Atlantic coastline where the east-west oriented shoreline of New England and Long Island meets the north-south oriented shorelines of the mid-Atlantic. This coastline bend concentrates those species of birds, insects, and fish that seasonally traverse these shores in both directions, and funnels them into the Harbor Estuary and urban core. The north-south oriented migratory corridors of the New York - New Jersey Highlands, Watchung Ridges, and the Hudson River Valley also concentrate overland migrating species through or near to the urban core. The complex geography and geology of this area result in a diversity of habitat types within a relatively small area. These natural geographic and geologic features coupled with the intensity of human development and use renders much of the land and water area unavailable to, or unfavorable for, many native species of fish and wildlife. All of the migratory and resident species that are concentrated by the geography of the area are further concentrated into the small amount of remaining terrestrial and aquatic open space within the urban core. All remaining open space is critical to these species. For example, the Hackensack Meadowlands, which is a

8,400 acre area, represents the largest remaining contiguous wetlands area in the Harbor Estuary, and has become a major stopover for migratory birds on the Atlantic Flyway.

1. Migratory Birds

The primary use of the Harbor Estuary by waterfowl is during fall migration (peaking in November) and as wintering areas, although several species breed there. Relatively few shorebird species breed in or near the Harbor Estuary, but nearly 30 species of shorebirds regularly use and migrate through the area and depend on the marshes, flats, and shallow water areas to replenish their food reserves before continuing on their migration. Migration in the spring (March to June) and fall (July to November) extends over most of the year. Significant foraging and staging areas for shorebirds include East and West Ponds in Jamaica Bay National Wildlife Refuge, the tidal flats along the Staten Island and New Jersey shorelines of Raritan Bay and Sandy Hook Bay, and the Kingsland Impoundment in the Hackensack Meadowlands. Minor foraging areas occur along shorelines throughout the Harbor and its tributaries. Sandy Hook and Breezy Point extend into the entrance of the Harbor and support some of the largest nesting populations of piping plover (*Charadrius melodus*) (federally listed as threatened), least tern (*Sterna antillarum*) (State-listed as endangered in New Jersey), common tern (*Sterna hirundo*), and black skimmer (*Rynchops niger*) (State-listed as endangered in New Jersey) in the region. Other terns that nest in small numbers in or near the Harbor include Forster's tern (*Sterna forsteri*), gull-billed tern (*Sterna nilotica*), and the federally listed (endangered) roseate tern (*Sterna dougallii*). Regionally significant colonies of herons, egrets, and ibises historically occurred in the Arthur Kill and Kill van Kull. The small mammal and songbird populations of the urban core provide an abundant prey base for resident and migratory raptor populations. Both short- and long-distance migrant songbirds migrate through the Harbor Estuary and adjacent uplands, and small numbers of many species nest and/or winter in the urban core area.

2. Sea Turtles

Four species of marine turtles, loggerhead (*Caretta caretta*), green (*Chelonia mydas*), leatherback (*Dermochelys coriacea*), and Atlantic Ridley (*Lepidochelys kempii*), regularly occur in the New York Bight and the higher salinity areas of the Harbor Estuary. The estuarine northern diamondback terrapin (*Malaclemys t. terrapin*) is found feeding and nesting in salt marshes and adjacent uplands throughout the harbor from Jamaica Bay up to Piermont Marsh. Aside from these marine and estuarine turtles, all other amphibians and reptiles in this region are dependent on freshwater wetlands and uplands, and their distribution is limited to the small remaining areas of open space.

3. Marine Mammals

Marine mammals extensively use the nearby waters of the New York Bight and occasionally come into the Harbor Estuary. The most commonly observed marine mammal is the harbor seal (*Phoca vitulina*), which winters in the Harbor and hauls out onto islands in Jamaica Bay, Sandy Hook, Staten Island, and the Westchester and Connecticut shorelines of the Long Island Sound

Narrows. Although less frequent, the grey seal (*Halichoerus grypus*) is regularly seen in similar locations. Cetaceans (whales, dolphins, and porpoises) also occur in the Harbor Estuary. Historical records indicate that the harbor porpoise (*Phocoena phocoena*) may have once been a regular visitor to the Harbor Estuary. A few years ago, a Florida manatee (*Trichechus manatus laterostris*) migrated through the Harbor Estuary.

4. Shellfish and Finfish

The waters of the Harbor Estuary have traditionally supported productive shellfish and finfish populations of commercial, recreational, and ecological importance. However, over the past 100 years, these populations have significantly declined because of overfishing, habitat destruction, and declining water quality. The Harbor Estuary has been contaminated with pathogens for decades as a result of under- or untreated sewage discharges. With wastewater technology upgrades over the past two decades, water quality has been improving. The Service reviewed available literature regarding fisheries of the Arthur Kill and noted an increase in fish species diversity over the past 20 years, coincident with increased dissolved oxygen levels (U.S. Fish and Wildlife Service, 1996a), likely resulting from improved wastewater treatment. However, combined sewer overflows still causes substantial water quality degradation in the Harbor Estuary.

Historically, hard and soft-shell clam (*Mercenaria mercenaria* and *Mya arenaria*), Atlantic surf clam (*Spisula solidissima*), eastern oyster (*Crassostrea virginica*), blue mussel (*Mytilus edulis*), ribbed mussel (*Geukensia demissa*), and blue crab (*Callinectes sapidus*) were the most common species of shellfish inhabiting the Harbor Estuary. Recent Corps' surveys identified these species, and the amethyst gem clam (*Gemma gemma*), as the most common bivalves in the Harbor Estuary (Iocco *et al.*, 2001).

Direct consumption of shellfish is restricted in nearly all areas of the Harbor Estuary, although commercial quantities of hard clam are harvested for depuration or relay. The NJDEP's (2002) Shellfish Growing Water Classification Charts show the majority of the Lower Bay as a "special restricted area," with the majority of Raritan Bay and waters east and northeast of Sandy Hook as prohibited areas. Special restricted areas are waters condemned for the harvest of oysters, clams, and mussels; however, harvesting for further processing may be conducted under special permit from the NJDEP. Prohibited areas are waters condemned for the harvest of oysters, clams and mussels. In 2000, the New Jersey Bureau of Shellfisheries, with support from both the Rutgers University Cooperative Extension and commercial shellfishermen, conducted the first comprehensive stock assessment of hard clams in Raritan and Sandy Hook bays since 1983. This area provides over 50 percent of the State's commercial hard clam landings via the relay and depuration programs. The study's findings estimate the hard clam resource in Raritan and Sandy Hook Bays to be 601.7 million and 342.7 million clams, respectively. These estimates represent increases of 379.9 million clams in Raritan Bay and 171.1 million clams in Sandy Hook Bay when compared to the previous survey in 1983 (New Jersey Division of Fish and Wildlife, 2003).

Common crustaceans inhabiting the Harbor Estuary and New York Bight are blue crab, horseshoe crab (*Limulus polyphemus*), American lobster *(Homarus americanus)*, rock crab (*Cancer irroratus*), lady crab (*Ovalipes ocellatus*), common spider crab (*Libinia emarginata*) and the cryptic mantis shrimp (*Squilla empusa*) (Waldman, 1999). Intertidal benthic invertebrates common to the Harbor Estuary include fiddler crab (*Uca* spp.), white-fingered mud crab (*Rhithropanopeus harrisii*) nonnative Japanese shorecrab (*Hemigrapsus sanguinea*), and ribbed mussel.

The abundance of American lobster in New Jersey trawl surveys from 1989 to 1999 was variable from year-to-year, but relatively constant over time. However, a recent decline (2000 – 2002) has been observed off southern New England, south of Cape Cod. Speculation about the causes of this decline include: overfishing, increased mortality from handling of thrown back undersized individuals, increased predation by striped bass, and disease (Byrne, pers. comm., 2003).

The Harbor Estuary is designated as "Essential Fish Habitat" for 24 species by the National Marine Fisheries Service (NMFS) (Appendix B). Anadromous and catadromous fishes that occupy the Harbor Estuary include species of herrings (Family: Clupeidae), temperate river bass (Family: Moronidae), sturgeon (Family Acipenseridae), and American eel (*Anguillidae rostrata*).

The New Jersey Marine Sciences Consortium is currently sampling finfish and benthos in the Harbor Estuary as part of a 5-year grant from the USEPA known as the National Coastal Assessment (NCA) (Weinstein, pers. comm., 2003). These data, as well as water quality, sediment quality, and biological pathogen and toxicity data are being coordinated and reviewed by the National Health and Environmental Effects Research Laboratory's Atlantic Ecological Division in Narrangansett, Rhode Island. The NCA trawl data from August 2000 showed a total of 25 species for the Harbor Estuary, with bay anchovy (*Anchoa mitchilli*) and weakfish the most numerous species (U.S. Environmental Protection Agency, 2002).

A 1998-1999 study conducted by the Corps was carried out to obtain information on utilization patterns of channel and shallow habitats, primarily by demersal species, as part of the New York/New Jersey Harbor Navigation Study. The data show that species composition at shoal/interpier stations was similar to channel stations. A greater concentration of eggs and larvae were collected at shallow-water interpier stations compared to the channel stations. The Corps conducted a follow-up study to obtain additional information on the distribution patterns of the egg and larval stages of demersal species in the Upper New York Bay and Arthur Kill/Newark Bay channels and shallow water locations. A total of 26 fish species representing 16 families were identified. Eggs were the dominant life stage collected by plankton net (72.2 percent) during the seven-month survey period (December 2000 – June 2001), with peak density in June. Windowpane flounder (*Scophthalmus aquosus*) comprised the largest percent, followed by tautog (*Tautoga onitis*) and cunner. Post yolk-sac larvae represented 19.0 percent of the total ichthyoplankton density with peaks in May and June. The dominant species were winter flounder (*Pleuronectes americanus*), weakfish (*Cynoscion regalis*), grubby sculpin (*Myoxocephalus aenaeus*), and herrings (Family: Clupeids). Yolk-sac larvae accounted for 7.7 percent of the total ichthyoplankton density with peak density in May. Atlantic menhaden

(*Brevoortia tyrannus*) dominated the total catch. Winter flounder eggs were only collected from sampling sites within the Upper New York Bay, while the previous Harbor Navigation Study in 1998-1999 had collected eggs throughout the Harbor (U.S. Army Corps of Engineers, 2001).

The Service recommends continuing studies to obtain information on the distribution patterns of the early life history stages of demersal fishes in the Harbor Estuary. Especially important is the use of appropriate statistical analyses to interpret data and determine correlations between the abundance of the various stages and substrate type, habitat type (*e.g.*, shoals and navigation channels), locations within the Harbor Estuary, and other environmental parameters. The use of multivariate statistical tests such as multiple analysis of variance or stepwise multiple regression (Sokal and Rohlfe, 1981), will provide more meaningful information for evaluating the effects of dredging on winter flounder and other important demersal fishes in the study area, and aid in the management of these species.

5. Benthos

The New York District commissioned studies of benthic habitats within the New York/New Jersey Harbor in 1994 and 1995. The objective of these studies was to map benthic habitats in a geographic information system using data collected from sediment profile imagery, sediment surface imagery and benthic grabs. This mapping is intended to provide preliminary information for evaluating the potential environmental impacts of the various dredged material disposal options. Results of these surveys indicate that the most common benthic invertebrates found within the Harbor Estuary area include Capitellid thread worms (*Heteromastus filiformis* and *Mediomastus ambiseta*), oligochaetes (family Tubificidae), tube-building amphipods (*Ampelisca* spp., and mudworm (*Streblospio benedicti*) (Iocco *et al.*, 2000). Threadworms, oligochaetes, and mudworms are important food resources for bottom feeding fishes such as spot *(Leiostomus xanthurus)* and winter flounder (Grosslein and Azarovitz, 1982). Their dominance in the benthic community is generally associated with polluted conditions (Cook and Brinkhurst, 1973; Gosner, 1978; and Reish, 1979), as they are tolerant of high levels of organics. Also found to be common was the marine bacteria *Beggiatoa* spp., which is also generally indicative of environmental degradation (Bernard and Fenchel, 1995).

6. Rare Natural Communities

There are several rare natural communities in the vicinity of the Harbor Estuary, including the coastal dune woodlands and maritime forest found on Sandy Hook (Raritan Bay - Sandy Hook Bay complex), the brackish tidal marsh complex at Piermont Marsh (Lower Hudson River), the marine rocky intertidal habitats found in the Westchester County shoreline of Long Island Sound (the Narrows), and the swamp forests, oak hybrid forests, and serpentine barrens found on Staten Island.

D. SPECIES OF MANAGEMENT CONCERN

1. Federally Listed Species

Federal trust resources that occur in the study area include species populations of migratory birds and fishes, marine mammals, and numerous federally listed endangered or threatened species.

a. Migratory birds

All migratory birds are protected by the Migratory Bird Treaty Act (40 Stat. 755 as amended; 16 U.S.C. 703-712). Situated at the hub of several bird migration routes, the Harbor Estuary region is ecologically connected to the Great Lakes, Hudson River Valley, New England, and coastal Long Island and New Jersey. Thirty-two native species of waterfowl regularly use the wetlands and adjacent uplands of the Harbor Estuary (U.S. Fish and Wildlife Service, 1996a). The Hackensack Meadowlands alone supports 16 species of native waterfowl, and is considered a regionally significant waterfowl breeding area for some species of dabbling ducks (U.S. Fish and Wildlife Service *et al.*, 2000). Little Neck Bay, Manhasset Bay, and Hempstead Harbor of the Narrows complex are collectively the most important waterfowl wintering concentration areas in the Harbor Estuary (U.S. Fish and Wildlife Service, 1996a).

Colonial nesting birds and wading birds are important avifaunal components of the Harbor Estuary. The bays and islands of the estuary provide important nesting and foraging areas for herons, egrets, ibises, and cormorants. These birds prefer to nest in large colonies in shrubs and trees on salt marsh, dredged material or rocky islands such as the islands of the Arthur Kill and Narrows complexes. Jamaica Bay National Wildlife Refuge also supports heronries.

Shorebird migration in the spring (March to June) and fall (July to November) extends over most of the year in the Harbor Estuary. Migrating shorebirds rely on a mosaic of shallow coastal or freshwater wetlands and adjacent upland areas for resting, foraging, and nesting.

b. Anadromous and catadromous fishes

The federally listed (endangered) shortnose sturgeon (*Acipenser brevirostrum*) is known to occur within the tidal portions of the Hudson River and may enter the estuarine environment. Shortnose sturgeon begin their spawning migration in early spring, spawning in April and May in a freshwater region of the Hudson River south of Troy, New York. Newly-hatched sturgeon larvae are bottom-dwelling and are transported downriver to the estuarine portion of the study area. This species suffered serious declines due to its commercial value as a source of caviar. Although now protected, the main threats to this species are loss or degradation of habitat due to pollution and physical barriers (*e.g.*, dams).

Other migratory fishes that occupy the Harbor Estuary include species of herrings (Family: Clupeidae), temperate river bass (Family: Moronidae), Atlantic sturgeon (*Acipenser oxyrhynchus*), and American eel.

c. Whales and other marine mammals

Federally listed (endangered) whale species that may occur within the Harbor Estuary and New York Bight include finback (*Balaenoptera physalus*), humpback (*Megaptera novaeangliae*), northern right (*Balaena glacialis*), sei (*B. borealis*), and sperm (*Physeter macrocephalus*).

Finback whales are most abundant in the New York Bight in the fall through early winter, as they move offshore along the continental shelf. Mid-winter through early spring, these whales may occur within a mile of the shoreline along the eastern portions of Long Island and the New York Bight Apex, apparently feeding on high densities of herring and mackerel. The humpback whale is regularly observed in the New York Bight; however, its abundance fluctuates widely. Humpbacks are often found in shallow water and have been observed within Long Island Sound, Block Island Sound, and Gardiners Bay for periods exceeding a week (U.S. Fish and Wildlife Service, 1996a). The greatest abundance of humpback whales in the New York Bight occurs as they feed on schooling fish concentrations from June through September, and again in December and January. The northern right whale is sighted regularly each year in the New York Bight, mostly from March through June as the animals move through the region on their migration route north. Sei whales are infrequently sighted in the New York Bight; however, they have been found occasionally in association with finback whale aggregations principally during July and August. Sighted frequently, sperm whales apparently rely on the deep waters of the New York Bight for their various life stages.

Other marine mammals that have been documented within the Harbor Estuary include harbor seal, harp seal (*Phoca groenlandica*), and hooded seal (*Cystophora cristata*). Dolphin species, including common, bottle-nosed, white-sided (*Lagenorhynchus acutus*), and striped (*Stenella coeruleoalba*), as well as pilot whales (*Globicephala melaena*), may be encountered in the Raritan - Sandy Hook Bays and Jamaica Bay. One of the rarest visitors to the Harbor Estuary was a Florida manatee several years ago.

These mammals are protected under the Marine Mammal Protection Act of 1972 (P.L. 92-522, 86 Stat. 1027; 16 U.S.C. 1361-1407), which established a moratorium on the taking and importation of marine mammals as well as products taken from them.

d. Sea turtles

Federally listed (endangered) sea turtles that have been documented within the study area include the Atlantic ridley, loggerhead, leatherback, green, and, rarely, hawksbill (*Eretmochelys imbricata*).

Portions of Jamaica Bay and Raritan-Sandy Hook Bay complexes are foraging waters for Atlantic Ridley, loggerhead, and leatherback sea turtles. Atlantic Ridley has also been observed foraging Long Island Sound, Block Island Sound, Gardiners Bay, the Peconic Estuary, and Horseshoe cove along Sandy Hook. Juveniles of the Atlantic Ridley and larger age classes of the loggerhead often enter the Harbor and bays during summer and fall. Loggerhead sea turtles have been reported as strandings along beaches adjacent to Jamaica Bay and observed on the northern shore of Sandy Hook. Juvenile loggerhead sea turtles are found in bays and Long Island Sound. The leatherback is a common species in the New York Bight from May through November. Hawksbill turtles are apparently rare to the New York Bight. They are not reported frequently in shallow, coastal systems exhibiting high turbidity and soft bottoms, which are common in the study area. Green turtle distribution is related to submerged aquatic vegetation such as sea lettuce (*Ulva* spp.) and green fleece (*Codium* spp.) and may occur in the New York Bight from June through October in relatively shallow, protected waters (U.S. Fish and Wildlife Service, 1996a).

e. Piping plover

The federally listed (threatened) piping plover occurs in the Harbor Estuary from late March to mid August, utilizing the coastal beach and dune habitats of the Raritan Bay-Sandy Hook Bay and Jamaica Bay Complexes as nesting and brood-rearing areas. Areas with particularly high numbers of nesting plovers include Sandy Hook, Breezy Point, and Jones Beach Island East. Data based on pair estimates in New York for 15 years of surveys show an overall increasing trend in the population. However, it is unknown if this increase is due to an actual increase in population or an increased survey effort over the years (New York State Department of Environmental Conservation, 2002). This small sandy-colored shorebird feeds on marine macroinvertebrates such as marine worms, fly larvae, beetles, crustaceans, and mollusks in the intertidal beach zone as well as estuarine mudflats. The piping plover is threatened primarily due to loss of habitat to recreational development, predation, and increased disturbance of nesting areas.

f. Roseate tern

The federally listed (endangered) roseate tern is exclusively coastal, breeding on small islands or occasionally on barrier beaches, and has been documented nesting at Breezy Point, within the Jamaica Bay Complex. Other documented nest sites include Goose Flat and Jones Beach Island East in Babylon; East Inlet Island in Brookhaven; Gardiners Island Cartwright Point and Gardiners Point Island in East Hampton; Greater Greenbacks Island, Lanes Island, and Warner Islands South Island in Southampton; and Great Gull Island in Southold. Peak of season totals for the years 1988 to 1999 show an overall increasing trend (New York State Department of Environmental Conservation, 2002). Within the New York Bight, roseate terns arrive between late April and early May and often nest in association with common tern colonies. Protecting beach habitats in the Harbor Estuary and the New York Bight is essential to the recovery goal of increasing the species nesting population.

g. Bald eagle

There are no known nesting sites of the federally listed (threatened) bald eagle (*Haliaeetus leucocephalus*) within the study area. However, bald eagles winter regularly at the Oradell Reservoir, an impoundment of the Hackensack River (Kane and Githens, 1997), and also along the lower Hudson reach with a roost site in the Palisades (U.S. Fish and Wildlife Service, 1996a). Eagle populations and nesting range in New Jersey has been expanding in recent years. Bald eagles now nest in two locations in Monmouth County: along the Swimming River and Manasquan Reservoirs. As habitat for this species is limited, bald eagles may eventually attempt to nest within the study area.

h. Northeastern beach tiger beetle

The federally listed (threatened) northeastern beach tiger beetle (*Cicindela dorsalis dorsalis*) once had a coastal distribution from Cape Cod south to central New Jersey, and along both shorelines of the Chesapeake Bay. There were approximately 24 historical occurrences on the barrier beaches of the New York Bight, but the beetle was extirpated from these areas due mainly to destruction and disturbance of natural beach habitats (U.S. Fish and Wildlife Service, 1996a). The northeastern beach tiger beetle now occurs on Sandy Hook within the Gateway National Recreation area as a result of a Service reintroduction effort. The Service has worked cooperatively with the National Park Service on the reestablishment of this species.

i. Seabeach amaranth

The federally listed (threatened) plant seabeach amaranth (*Amaranthus pumilus*) is known to occur within Kings, Queens, Nassau, and Suffolk Counties, New York and along the shorelines of Monmouth County, New Jersey, with Sandy Hook and Sea Bright Borough having particularly large populations. Seabeach amaranth is an annual plant that is endemic to Atlantic coast barrier islands. The plant persists in disturbed areas such as overwash flats and accreting ends of islands or spits and is out-competed by other vegetation in stable environments. The plant's survival appears dependent on extensive areas of barrier islands, beaches, and inlets functioning in a relatively natural and dynamic manner, allowing the plant to move about the landscape and occupy suitable habitat as it becomes available. Threats include attempts to control beach erosion and hardened or stabilized shorelines (*e.g.*, bulkheads, riprap) (U.S. Fish and Wildlife Service, 1996b).

j. Sandplain gerardia

The federally listed (endangered) plant sandplain gerardia (*Agalinis acuta*) is known to occur within Nassau County, New York. Sandplain gerardia appears to require periodic disturbance (*e.g.*, fire, grazing) to maintain its dry, sandy, open habitat. Loss of habitat to development, and encroachment by invasive exotic competitors are the main reasons why this plant is considered to be in imminent danger of extirpation (U.S. Fish and Wildlife Service, 1989).

k. Peregrine falcon

The peregrine falcon *(Falco peregrinus*), which feeds on songbirds, gulls, terns, shorebirds, and wading birds, is found nesting and hunting in urban areas of the Harbor Estuary. Peregrine falcons are known to nest on bridges and buildings within the project area. In August 1999, the

Service removed the peregrine falcon from the list of endangered and threatened species, removing all protections currently provided to the species under the ESA. However, section 4(g)(1) of the ESA requires implementation of a monitoring program for a minimum of 5 years. The Service has elected to monitor the peregrine falcon for 13 years, to provide data that will reflect the status of at least two generations of peregrines. If it becomes evident during this period that the peregrine is not maintaining its recovered status, the species could be relisted under the ESA. The peregrine will continue to be protected by the Migratory Bird Treaty Act, which prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests except when specifically authorized by the Department of the Interior.

2. State-listed Species and Species of Special Concern

a. Wading birds

The State of New Jersey lists the black-crowned night heron *(Nycticorax nycticorax)* and yellow-crowned night heron (*Nyctanassa violacea*) as threatened species. Within the study area, the Arthur Kill is the most notable habitat complex for these species, followed by the Raritan Bay-Sandy Hook Bay and the Hackensack Meadowlands. These species nested in heronries or rookeries shared by other wading birds on Isle of Meadows, Shooter's Island, and Prall's Island. A cause of concern, Shooter's Island and Prall's Island are no longer supporting nesting populations of these wading birds. This concern is discussed in more detail in Section E, 4. Coincidentally, black-crowned night herons as well as great egrets (*Casmerodius albus*), snowy egrets (*Egretta thula*), and glossy ibis (*Plegadis falcinellus*), are apparently increasing on Hoffman Island and Canarsie Pol. Overall, black-crowned night heron numbers in the Harbor Estuary appear to be declining slightly (New York City Audubon Society, 2001). Although the yellow-crowned night heron has only nested on Goose Island and Isle of Meadows in recent years, it is speculated that these birds may be expanding their range into residential and urban settings, away from the traditional island colonies (New York City Audubon Society, 2001). American bittern (*Botaurus lentiginosus*) (New Jersey State-listed as endangered, New York State-listed as species of special concern) least bittern (*Ixobrychus exilis*) (species of special concern in New Jersey , New York State-listed as threatened), great blue heron (*Ardea herodias*) (species of special concern for breeding in New Jersey), and little blue heron (*Egretta caerulea*) (species of special concern for breeding and non-breeding in New Jersey) also occur in the Harbor Estuary habitat complexes.

b. Shorebirds

New Jersey State-listed shorebirds of the Harbor Estuary habitat complexes include piping plover, roseate tern, and least tern as endangered, black skimmer and red knot (*Calidris canutus*) as threatened, and common tern and black tern (*Chlidonias niger*) as species of special concern. New York lists roseate tern, black tern, and piping plover as endangered and common tern, least tern as threatened, and the black skimmer as a species of special concern. These shorebirds utilize the Raritan Bay-Sandy Hook Bay complex, the Hackensack Meadowlands complex and the Jamaica bay complex for nesting and foraging. The greatest threats to these and other shorebirds that use the coastal areas of the Harbor Estuary are loss and degradation of coastal habitats and human disturbance (U.S. Fish and Wildlife Service, 1996a).

c. Passerine birds

Neotropical birds breeding in successional habitats have declined in the Northeast as have forest-nesting species. Grassland birds in particular have been identified as experiencing significant population declines due to habitat succession and development. State-listed grassland-nesting and foraging neotropical migrant birds of the Harbor Estuary include the endangered upland sandpiper (*Bartramia longicauda*), vesper sparrow (*Pooecetes gramineus*), and Henslow's sparrow (*Ammodramus henslowii*), and the threatened grasshopper sparrow (*Ammodramus savannarum*), savannah sparrow (*Passerculus sandwichensis*), and bobolink (*Dolichonyx oryzivorus*). For the majority of these grassland-nesting species, breeding populations are rare to the Harbor Estuary. Supporting habitats for these species in the Jamaica Bay and Hackensack Meadowlands are the primary focus areas in the Harbor Estuary with respect to preservation and management of remaining grassland cover types. Management of public and privately-owned areas, such as parks and landfills, within these complexes has been identified as a strategy for the conservation of grassland bird populations (U.S. Fish and Wildlife Service, 1996a).

Other New Jersey State-listed passerines that occur in the Harbor Estuary include sedge wren (*Cistothorus platensis*) and red-headed woodpecker (*Melanerpes erythrocephalus*). Probable reasons for the sedge wren's decline are loss of large blocks of native vegetation along the upper reaches of its salt marsh breeding habitat and invasion of these areas by common reed (*Phragmites australis*). The red-headed woodpecker is a woodland cavity-nesting bird that has likely declined due to the loss of large blocks of mature deciduous forest.

d. Raptors

New Jersey State-listed raptors that breed or forage in the Harbor Estuary include the endangered bald eagle, peregrine falcon, red-shouldered hawk (*Buteo lineatus*), northern harrier (*Circus cyaneus*), northern goshawk (*Accipiter gentilis*), and short-eared owl (*Asio flammeus*), and the threatened osprey (*Pandion haliaetus*), Cooper's hawk (*Accipiter cooperii*), and long-eared owl (*Asio otus*), and the species of concern, the common barn owl (*Tyto alba*). Many of these raptors have been observed using the more extensive open areas of the Hackensack Meadowlands during fall migration (Kane and Githens, 1997). Northern harriers and short-eared owls have been documented using the Arthur Kill and Jamaica Bay area for foraging. Short-eared owls and barn owls have also been documented as breeding in the Jamaica Bay area. As previously discussed, peregrine falcons are known to nest on tall buildings, high bridges, and nest platforms or towers within coastal marshes and to forage along the shorelines of the Harbor Estuary. Red-shouldered hawks have been observed during spring migration at Sandy Hook and the Raritan Bay - Sandy Hook Bay habitat complex, as have ospreys, Cooper's hawks, and northern harriers. Ospreys nest within the islands of the Jamaica Bay National Wildlife Refuge (U.S. Fish and Wildlife Service, 1996a).

e. Northern diamondback terrapin

The northern diamondback terrapin is a federal and New Jersey State species of special concern that is known to utilize habitats throughout the Harbor Estuary for nesting and feeding. Much of the shorelines of Jamaica Bay and Raritan - Sandy Hook Bays contain sandy areas with little vegetative cover, which this turtle prefers for nesting. Threats to this species include loss of habitat and mortality in crab traps (U.S. Fish and Wildlife Service, 1996a). Protection of salt marshes, mud flats, and sandy nesting habitats are essential for this species' recovery.

f. Other species of concern

The common loon (*Gavia immer*) is known to occur in the Narrows complex and is listed as a special species of concern in New York. The pied-billed grebe (*Podylimbus podiceps*) also occurs within the Harbor Estuary and is listed as endangered for breeding in New Jersey, and listed as threatened in New York.

3. Interagency Coordination

The Service recommends that the Corps continue to consult with the Service and NMFS throughout the planning and implementation of the DMMP to avoid adverse impacts to federally listed species and requests annual updates from the Service and NMFS on the presence of listed and candidate species within the study area.

Principal responsibility for federally listed marine species is vested with the NMFS. Therefore, in addition to continuing consultation with the Service, the NMFS must be contacted to fulfill consultation requirements pursuant to Section 7(a)(2) of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*). The NMFS may be contacted at:

National Marine Fisheries Service
Habitat and Protected Resources Division
Sandy Hook Laboratory
Highlands, New Jersey 07732 Telephone: (732) 872-3000

The Service also recommends that the Corps consult with appropriate State agencies in both New York and New Jersey regarding potential impacts of the proposed project on State-listed species.

E. REGIONALLY SIGNIFICANT HABITAT COMPLEXES

The Service has identified Significant Habitats and Habitat Complexes within the study area (Figure 2) (U.S. Fish and Wildlife Service, 1996a): Jamaica Bay and Breezy Point, Raritan Bay - Sandy Hook Bay, Hackensack Meadowlands, Lower Hudson River, and the Narrows.

1. Jamaica Bay and Breezy Point

Jamaica Bay is located on the southwestern tip of Long Island in the boroughs of Brooklyn and Queens, New York City and the Town of Hempstead, Nassau County, New York (Figure 2). Breezy Point is the western tip of the Rockaway barrier beach to the south of Jamaica Bay and Rockaway Inlet is the eastern terminus (Figure 2). Jamaica Bay is a saline to brackish, eutrophic estuary covering about 25,000 acres, with a mean depth of 13 feet. The bay is connected with Lower New York Bay and the Atlantic Ocean via Rockaway Inlet.

Jamaica Bay has been disturbed by dredging, filling, and development, including the construction of Floyd Bennett Field and John F. Kennedy Airport. About 12,000 acres of the original 16,000 acres of wetlands in the bay have been filled, mostly around the perimeter of the bay (U.S. Fish and Wildlife Service, 1996a). Despite these disturbances, Jamaica Bay continues to provide an important nursery ground for commercially and recreationally important fish. In a recent study conducted by the Jamaica Bay Ecosystem Research and Restoration Team (JABERRT) in 2000 and 2001, 49 fish species were collected by seining and trawling throughout the 13-month survey period (Appendix C) (U.S. Army Corps of Engineers, 2002).

The most abundant finfish caught by seine was the juvenile Atlantic silverside (*Menidia menidia*), which comprised 61 percent of the total catch. This fish consistently remains one of the most abundant juvenile fish in the bay and also throughout the Middle Atlantic Bight. *Fundulus* species comprised 25 percent of the seine collections. Other prevalent species caught by seine included Atlantic menhaden, striped mullet (*Mugil cephalus*), bluefish (*Pomatomus saltatrix*), striped bass (*Morone saxatilis*), and winter flounder.

The predominant species collected by trawling was winter flounder, comprising nearly 31 percent of all fish trawled. The second most abundant species was summer flounder (*Paralichthys dentatus*), which comprised 10 percent of the total catch. Windowpane flounder, spotted hake (*Urophycis regia*), and tautog were also abundant. All of these species are commercially and recreationally important fish.

Anadromous fish species that use Jamaica Bay include blueback herring (*Alosa aestivalis*), Atlantic sturgeon, alewife (*Alosa pseudoharengus*), American shad (*Alosa sapidissima*), and striped bass.

Mollusks that occur within the Jamaica Bay complex include the intertidal soft-shelled clam, hard clam, amethyst gem clam, ribbed mussel and blue crab (U.S. Army Corps of Engineers, 2002).

The JABERRT conducted a study to determine the habitat suitability for the American horseshoe crab at 12 sites proposed for ecological restoration. Results of the study indicate that Dead Horse Bay, a small portion of Bayswater State Park, portions of Dubos Point, and Brant Point contain suitable spawning substrate for this species (U.S. Army Corps of Engineers, 2002).

Jamaica Bay has significant wintering waterfowl concentrations, with greater scaup (*Aythya marila*), American black duck (*Anas rubripes*), brant (*Branta bernicla*), Canada goose (*Branta canadensis*), bufflehead (*Bucephala albeola*), canvasback (*Aythya valisineria*), mallard (*Anas platyrhynchos*), ruddy duck (*Oxyura jamaicensis*), red-breasted merganser (*Mergus serrator*), snow goose (*Chen caerulescens*), and American wigeon (*Anas clypeata*) among the most abundant species. Jamaica Bay supports some of the largest wintering populations of greater scaup and American black duck known to occur in New York State (U.S. Fish and Wildlife Service, 1996a). Regularly occurring waterfowl in lesser numbers include horned grebe (*Podiceps auritus*), green-winged teal (*Anas crecca*), gadwall (*Anas strepera*), northern shoveler (*Anas clypeata*), and common goldeneye (*Bucephala clangula*).

Jamaica Bay is one of the most important migratory shorebird stopover sites in the New York Bight region, especially during fall migration (July to November) (U.S. Fish and Wildlife Service, 1996a). Jamaica Bay National Wildlife Refuge represents the largest protected area for over 300 species of migratory and resident birds on Long Island (Brown *et al.*, 2001). The shorebirds utilize much of the bay, but tend to focus on the intertidal areas during low tide and move to East and West Ponds on Ruler's Bar Hassock during high tides.

The JABERRT documented six species of birds in Jamaica Bay that depend on salt marshes for their entire breeding season. These species are clapper rail (*Rallus longirostris*), willet (*Catoptrophorus semipalmatus*), Forster's tern (*Sterna forsteri*), saltmarsh sharp-tailed sparrow (*Ammodramus caudacutus*), seaside sparrow (*A. maritimus*), and boat-tailed grackle (*Quiscalus major*) (U.S. Army Corps of Engineers, 2002).

Breezy Point supports some of the highest concentrations of beach-nesting birds in New York State and in the entire New York Bight coastal region. This site consistently supports one of the largest piping plover nesting populations in the entire New York Bight coastal region, with an average of 17 pairs during the period 1994 to 1999. The area also supports one of the largest concentrations of least terns, with an average of 340 nesting pairs from 1985 to 1995, and an average of 115 pairs during 1996 to 1999. Black skimmers averaged 194 pairs, and common terns averaged 2,284 pairs during 1994 to 1999. Oyster catchers, herring gulls (*Larus argentatus*), and great black-backed gulls (*Larus marinus*) have also been documented nesting at Breezy Point in lesser numbers (New York State Department of Environmental Conservation, 2002).

2. Raritan Bay - Sandy Hook Bay

Raritan Bay and Sandy Hook Bay form the southeastern portion of the Harbor Estuary between the southern shoreline of Staten Island, Richmond County, New York, and the northern shoreline of Monmouth County, New Jersey (Figure 2). The boundary includes the nearshore portions of Raritan and Sandy Hook Bays, adjacent tidal wetlands, and small remnant freshwater wetlands and palustrine forest on the New Jersey and Staten Island shorelines.

The estuarine habitats of the Raritan Bay and Sandy Hook Bay are regionally significant for shellfish and marine, estuarine, and anadromous fishes, as well as for its significant migratory and wintering waterfowl concentrations. The wetlands and uplands along the shoreline of the bay are important as fish nursery areas, foraging areas for shorebirds and waterbirds, nesting and foraging areas for northern diamondback terrapins, migratory and wintering stopover habitat for songbirds and raptors, and as sites of rare communities and plants.

Over 90 species of fish have been reported in various fisheries investigations of the Raritan Bay-Sandy Hook Bay Complex (U.S. Fish and Wildlife Service, 1996a). The most abundant are some of the estuarine species that use the lower salinity areas as their permanent residence, including mummichog, white perch (*Morone americana*), and hogchoker (*Trinectes maculatus*). The bay complex supports recreational fisheries for weakfish, bluefish, winter flounder, summer flounder, striped bass, black sea bass (*Centropristis striata*), tautog, scup (*Stenotomus chrysops*), and spot. The southwestern portion of Raritan Bay is designated as Essential Fish Habitat by the NMFS for many species (included in Appendix B). A commercial fishery exists for American shad. American eel and American lobster are landed in pot fisheries, and blue crab and horseshoe crab are taken in a dredge fishery. Although the bays are closed to direct market harvest of shellfish due to pollution, there are commercial quantities of hard clam and soft-shelled clam, which are harvested for relay and depuration. Beds of blue mussel, common oyster and Atlantic surf clam also occur in the vicinity of the study area. Various oyster reef restoration projects are currently underway in the Raritan Bay Estuary as a result of volunteer efforts overseen by the New York/New Jersey Baykeeper.

The migratory and mid-winter concentrations of waterfowl in the Raritan Bay-Sandy Hook Bay complex are especially important, with 20-year midwinter averages of over 60,000 birds. The shorelines of Raritan Bay, both the south shore in Monmouth County, New Jersey, and the Staten Island, New York shoreline, concentrate migratory shorebirds and neotropical landbirds. Shorebird surveys done in the early 1980s have indicated the importance of the greater Raritan Bay for spring and fall shorebird migrations with seasonal totals of over 20,000 birds based on weekly surveys (Burger, 1983). The peak months are June and August, and the primary concentration areas are Great Kills on Staten Island, the flats inside Sandy Hook, and the south shore between Chingora Creek and Conaskonk Point; three species, sanderling (*Calidris alba*), ruddy turnstone (*Arenaria interpres*), and semi-palmated sandpiper (*Calidris pusilla*), comprise about 85 percent of the total of migratory shorebirds using this area.

Sandy Hook (Figure 2) is the only undeveloped barrier beach area on the northern end of the New Jersey coastline north of Island Beach State Park, which is located 34 miles to the south. Sandy Hook is an important nesting area for the piping plover, typically supporting about one-third of the nesting pairs in New Jersey. The number of nesting pairs of piping plovers has steadily increased at Sandy Hook from 8 pairs in 1985 to 35 pairs in 2002. However, numbers of nesting least terns have fluctuated, with 305 nesting pairs in 1995, 76 pairs in 1998, and back up to 222 pairs in 2002 (New York State Department of Environmental Conservation, 2002). Common terns and black skimmers have nested at Sandy Hook in the past, but have not been recently sited. Sandy Hook also supports the second largest population of seabeach amaranth in

New Jersey, the only occurrence of northeastern beach tiger beetle, and numerous other protected species including ospreys and peregrine falcons.

3. Hackensack Meadowlands

The Hackensack Meadowlands are located in northeastern New Jersey, approximately 7 miles west of the Borough of Manhattan, New York, and 5 miles north of Newark, New Jersey (Figure 2). The Meadowlands are located in the lower Hackensack River drainage that flows into the northern end of Newark Bay, spanning the municipalities of Carlstadt, East Rutherford, Jersey City, Kearny, Little Ferry, Lyndhurst, Moonachie, North Arlington, North Bergen, Ridgefield, Rutherford, Secaucus, South Hackensack, and Teterboro that lie within Bergen and Hudson Counties.

The Meadowlands are a large wetland complex dominated by intertidal and intermittently flooded common reed marshes and lesser areas of the following wetland types: shallow tidal bay / mudflat; low salt marsh dominated by saltmarsh cordgrass (*Spartina alterniflora*); remnant high salt marsh dominated by high marsh cordgrass (*Spartina patens*); brackish impoundments; freshwater impoundments; and remnant palustrine forest dominated by pin oak (*Quercus palustris*), red maple (*Acer rubrum*), and swamp white oak (*Quercus bicolor*). Grassland, shrubland, and early successional forest are the upland habitat types on landfills, with small undeveloped uplands scattered around the edge of the Meadowlands.

In the 1600s, the Meadowlands were predominantly a freshwater tidal river system, with Atlantic white cedar (*Chamaecyparis thyoides*) swamps occupying much of the wetland system and northern bogs occurring in other areas. However, since then, the Meadowlands has been continuously impacted by human activities such as installation of tide gates, ditching, diking, and filling. In 1922, a dam was constructed on the Hackensack River in Oradell, impeding freshwater flow to the Meadowlands and allowing brackish water to intrude further upriver. In recent decades, filling of wetlands in the area has reduced their extent from over 20,000 acres to about 8,400 acres. Although now debunked, as recently as a few years ago, the Corps and EPA Region 2 were promoting a Special Area Management Plan that would have allowed the filling of over 450 acres of wetlands for non-water dependent development. Today, the Meadowlands remains the largest contiguous block of coastal wetlands in the Harbor Estuary. Presently, there is a partnership agreement among the Service, Corps New York District, and the New Jersey Meadowlands Commission to conduct a feasibility study, the outline of which has been formulated under a Project Management Plan. The feasibility study of environmental restoration within the entire Hudson - Raritan Estuary will provide the foundation toward the development of a Comprehensive Restoration Implementation Plan. Addressing the overall restoration needs of the estuary, this plan will include an ecosystem restoration strategy for the Meadowlands. These remaining wetlands are especially important, if not critical for numerous federal trust species and fish and wildlife resources of concern at the State level.

The Meadowlands support a surprisingly diverse avifauna. The tidal mudflats and impoundments in the Meadowlands provide important habitats for thousands of shorebirds, both in spring and fall migrations. Counts of waterfowl from midwinter aerial surveys over the Meadowlands average over 2,000 birds, including significant numbers of American black duck, mallard (*Anas platyrhynchos*), Canada goose, and canvasback, with lesser numbers of greater scaup, gadwall, and American coot *(Fulica americana)*. Green-winged teal have also been noted as abundant in Mill Creek, Cromakill Creek, and other small creeks in the fall and winter (U.S. Fish and Wildlife Service, 1996a). Breeding waterfowl and waterbirds in the Meadowlands include Canada goose, mallard, American black duck, gadwall, green-winged teal, blue-winged teal (*Anas discors*), ruddy duck (*Oxyura jamaicensis*), pied-billed grebe, American coot, common moorhen (*Gallinula chloropus*), black-crowned night-heron, yellow-crowned night-heron, least bittern, American bittern, and green heron (*Butorides striatus*). A few freshwater ponds that have formed on top of the landfills have become important shorebird and waterfowl habitats, and are especially productive habitat for gadwall (U.S. Fish and Wildlife Service, 1996a).

Small mammal populations occurring on landfills and marshes support owls and hawks, including osprey, northern harrier, rough-legged hawk (*Buteo lagopus*), red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), short-eared owl, and long-eared owl throughout the year, and especially in winter. Primary prey items for the owls are house mouse (*Mus musculus*) and meadow vole (*Microtus pennsylvanicus*). Important roosting and feeding areas for raptors include Berry's Creek, Kearny Marsh, and Sawmill Creek.

Despite its polluted condition, including high sediment concentrations of contaminants and low levels of dissolved oxygen in the summer, the Hackensack River and the marshes in the Meadowlands support at least 34 species of fish, and provide important nursery habitats for both anadromous and marine species. A dominant fish is the resident estuarine mummichog, which is tolerant of fluctuations in salinity and water quality. Other common resident fishes include striped killifish, inland silverside (*Menidia beryllina*), Atlantic silverside, white perch, brown bullhead (*Ictalurus nebulosus*), white catfish (*Ictalurus catus*), carp (*Cyprinus carpio*), and bay anchovy. Anadromous fish using the Hackensack River and marshes include alewife, blueback herring, American shad, American eel, and striped bass. Marine fishes such as Atlantic menhaden, Atlantic tomcod *(Microgadus tomcod)*, winter flounder, weakfish, and bluefish also occur in the Meadowlands (U.S. Fish and Wildlife Service, 1996a). The NMFS has declared the estuary "Essential Fish Habitat" for a number of species that include black sea bass, bluefish, red hake, scup, silver hake, summer founder, and winter flounder. The lower reaches of the Hackensack River support blue crab.

In 1986 the Service identified the Meadowlands as a "Priority Wetland Site" under the Emergency Wetlands Resources Act (P.L. 99-645; Stat. 3582), and 10 years later, as a "Regionally Significant Habitat Complex" in the New York Bight Watershed. Others recognize the environmental importance of the Meadowlands. The National Marine Fisheries Service declared the Hudson-Raritan Estuary (including the lower Hackensack River) "Essential Fish Habitat" for 8 species of fish. The EPA identifies the Meadowlands as an "Aquatic Resource of National Importance." The Meadowlands are included within a "Joint Venture Area" under the North American Waterfowl Management Plan. What truly makes the area special is its proximity to almost 20 million people. The conservation importance and scientific, educational and recreational potential for this natural area, within view of the New York City skyline, has yet to be realized.

4. Arthur Kill Complex

The Arthur Kill complex includes the northwestern corner of Staten Island in New York City, adjacent portions of the Arthur Kill and Kill van Kull in both New York and New Jersey, and tributaries and wetlands draining into the Arthur Kill from Union and Middlesex Counties, New Jersey (Figure 2). The Arthur Kill complex is located in the Townships of Clark, Carteret, Elizabeth, Linden, Rahway, Scotch Plains, Union, Westfield, and Woodbridge in Middlesex and Union Counties, New Jersey, as well as Staten Island, Richmond County, New York.

Vast modifications of the physical features of the Arthur Kill have been made to serve the harbor area. This highly industrialized waterway is dredged to an average channel depth of 30 feet and much of the shoreline is bulkheaded or riprapped, particularly along the islands. However, 55 percent of the total shoreline still remains as natural mudflats and marshes.

The focal points of this complex are the three island heronries: Shooter's Island, Prall's Island, and Isle of Meadows. For years, Prall's Island, Shooters Island, and Isle of Meadows hosted large numbers of herons, egrets, and ibises. In 1995, these heronries collectively contained nearly 1,400 nesting pairs of colonial wading birds of special regional emphasis or management concern, including black-crowned night heron, glossy ibis, snowy egret, great egret, cattle egret (*Bubulcus ibis*), yellow-crowned night-heron, green heron, and little blue heron. The largest number of nesting great egrets, cattle egrets, snowy egrets, and yellow-crowned night herons in New York State occurred at these colonies. In addition, herring gull, great black-backed gull, and double-crested cormorant nested on these same sites, constituting one of the southernmost nesting areas for the Canadian sub-population of the cormorant. Collectively, this was the largest heronry in New York State and accounted for about 25 percent of all the waders that breed in coastal New Jersey, New York, and Connecticut (U.S. Fish and Wildlife Service, 1996a). In 1995, the total pairs of glossy ibis on these islands were 267, with the majority of the pairs occurring on Isle of Meadows. The same year, 1,565 pairs of snowy egret, 623 pairs of black-crowned night heron, 105 pairs of great egret, and 10 pairs of green heron were documented. Surveys in 1998 showed that Shooter's Island and Prall's Island did not support nesting pairs of any of these species, except one nesting pair of green herons on Prall's Island. Great black-backed gulls and herring gulls were also not observed on Prall's Island or Shooter's Island during the 1998 surveys. Although yellow-crowned night heron nesting pairs were low in 1995, surveys in 1998 did not observe nesting pairs on any of the three islands. One pair of yellow-crowned night heron was observed on Isle of Meadows in 2000. Isle of Meadows also suffered a precipitous decline in the abundance of nesting waders and gulls in 2001 (New York City Audubon Society, 2001). The abandonment of Shooter's Island and Prall's Island continues to date (New York City Audubon Society, 2000, 2001; Brewer, pers. comm., 2003). The exact cause of the decline of wading birds and gulls on these islands is not yet confirmed. However, it is suspected that high levels of contaminants in the sediment and benthos have led to unsuccessful reproduction (Brewer, pers. comm., 2003). Human disturbances such as visits by boaters and intensive searches, as well as predation may also have been factors in the decline of the heronries. While populations on the Arthur Kill-Kill van Kull islands have declined precipitously, populations on Hoffman, Goose, and Huckleberry Islands have increased in the past few years (New York City Audubon Society, 2001)

Nesting waterfowl that occur in the Arthur Kill complex include American black duck, gadwall, mallard, green-winged teal, blue-winged teal, Canada goose, and wood duck *(Aix sponsa),* and also breeding Virginia rail *(Rallus limicola),* common moorhen *(Gallinula chloropus),* least bittern, American coot, and pied-billed grebe. Goethals Bridge Pond is an important feeding area for migratory shorebirds, particularly black-bellied plover (*Pluvialis squatarola*), red knot, pectoral sandpiper *(Calidris melanotos),* semipalmated sandpiper, sanderling, common tern, and least tern. Wintering waterfowl of regional importance occurring in the open waters and marshes in this complex include greater and lesser scaup, canvasback, brant, American black duck, Canada goose, mallard, bufflehead, and American wigeon. Northern harriers forage over many of the marshes of this complex, particularly in winter, as did numbers of short-eared owls until the mid-1980s (U.S. Fish and Wildlife Service, 1996a).

5. Lower Hudson River

The lower Hudson River estuary is the portion of the Hudson River extending from the Battery at the southern tip of Manhattan north to Stony Point at the northern end of Haverstraw Bay (Figure 2). The Lower Hudson River estuary complex includes the municipalities of Alpine, Edgewater, Englewood Cliffs, Fort Lee, Guttenburg, Hoboken, Jersey City, North Bergen, Tenafly, Weehawken, and West New York, within Bergen and Essex Counties, New Jersey; and Bronx, Clarkstown, Cortland, Greenburgh, Haverstraw, Manhattan, Mount Pleasant, Nyack, Orangetown, Ossining, Peekskill, Stony Point, and Yonkers, within Bronx, New York, Rockland, and Westchester Counties, New York. The Habitat Complex boundary for the lower Hudson River estuary follows the shores of the Hudson River from the tip of Battery Park, Manhattan (river mile 0) north to the Stony Point area (river mile 41). The complex includes all riverine and estuarine habitats, including open water and tidal wetlands in this stretch of the river. This section of the river includes the moderate and high salinity zones (mesohaline and polyhaline salinity zones) of the river.

The Hudson River is highly valued regionally as a productive estuary and is one of only a few major tidal rivers on the North Atlantic coast of the United States. The lower Hudson supports regionally significant fish populations as well as populations of wintering and migratory birds that feed on the rich fish and benthic resources. This is the primary nursery and overwintering area for striped bass in the Harbor Estuary, and striped bass from the lower Hudson River account for an impressive portion of the total North Atlantic population (U.S. Fish and Wildlife Service, 1996a).

Shellfish species are abundant, including northern quahog, soft-shelled clam, and common oyster; however, the waters are not certified for human consumption of shellfish. The predominant crustaceans include grass shrimp, sand shrimp *(Crangon septemspinosa),* and blue crab. Early life stage blue crab larvae require high salinities; therefore, the lower Hudson River is a prime spawning region for reproductive blue crab. Various oyster reef restoration projects are currently underway in the lower Hudson as a result of volunteer efforts being overseen by the New York/New Jersey Baykeeper.

Many marine fish use the lower Hudson River as a nursery area. The area provides ideal habitats for the early, critical life stages of invertebrate and fish species, and is ranked among the most productive systems on the northern Atlantic coast for fisheries. Marine finfish that use this area include Atlantic menhaden, fourbeard rockling (*Enchelyopus cimbrius*), bluefish, weakfish, northern pipefish (*Syngnathus fuscus*), American eel, and longhorn sculpin *(Myoxocephalus octodecemspinosus).* Estuarine fish that spawn in this stretch of the Hudson include winter flounder, bay anchovy, hogchoker, and mummichog (U.S. Fish and Wildlife Service, 1996a).

The southern portion of the Lower Hudson River Complex (Manhattan upriver to Piermont Marsh) provides important wintering habitat for young-of-the-year striped bass between mid-November and mid-April. These fish spawn upriver of Haverstraw Bay and utilize nursery areas in Haverstraw Bay and the Tappan Zee before moving downriver to overwinter, feeding on the abundant invertebrates found in this area. Substantial numbers of young-of-the-year winter flounder also occupy this stretch of the river in the winter. Haverstraw Bay and Tappan Zee occupy the area between Piermont Marsh and Stony Point. This area provides a major nursery for striped bass, white perch, Atlantic tomcod, and Atlantic sturgeon that spawn elsewhere in the Hudson River and provides habitat critical to the estuarine-dependent fish that the Hudson River system contributes to the New York Bight. The shortnose sturgeon winters in the Hudson River (U.S. Fish and Wildlife Service, 1996a).

The lower portion of the Hudson River supports significant concentrations of wintering waterfowl, especially canvasback, with lesser numbers of scaup, mergansers *(Mergus* spp.), mallard, and Canada goose. Waterfowl use is extensive during the spring and fall migration periods for feeding and resting. Small numbers of wintering waterfowl include mallard, American black duck, Canada goose, mergansers, canvasback, common goldeneye, and scaup (U.S. Fish and Wildlife Service, 1996a).

Bald eagles have been observed overwintering along the lower reach of the Hudson River, with a roost site in the Palisades. Peregrine falcons have consistently nested in a box on the Tappan Zee Bridge since about 1985, but have had low fledging success (U.S. Fish and Wildlife Service, 1996a).

6. The Narrows

The Narrows constitutes the westernmost section of Long Island Sound between Hell Gate, at the convergence of the Harlem and East Rivers, and the Hempsted Sill, a major shoal area extending north and south across the sound from Matinecock Point on Long Island, near Glen Cove, Nassau County to the New York - Connecticut boundary (Figure 2). This complex also includes a small area of southwestern coastal Connecticut in the vicinity of Greenwich. The Narrows complex lies within Greenwich, Fairfield County, Connecticut, New Rochelle, Mamaroneck, and North Hempstead, Nassau and Queens Counties, New York. The primary boundary of this complex corresponds approximately with that of the Narrows proper, and includes most of the nearshore waters and islands of western Long Island Sound and portions of the East River within this area. Specifically included are three major bays on the north shore of western Long Island in Nassau and Queens Counties: Little Neck Bay, Manhasset Bay, and Hempstead Harbor. These three bays provide an interrelated complex of regionally significant fish and wildlife aquatic habitats.

Otter Creek has been designated by the U.S. Fish and Wildlife Service as a "Priority Wetland Site" under the federal Emergency Wetlands Resources Act of 1986. The New York Department of State has designated several "Significant Coastal Fish and Wildlife Habitats" within this complex, including Hempstead Harbor, Huckleberry Island, Little Neck Bay, Marshlands Conservancy, Playland Lake and Manursing Island flats, Manhasset Bay, Premium River - Pine Brook wetlands, and Prospect Point. Long Island Sound was designated by the USEPA as an "Estuary of National Significance," initiating development of a Comprehensive Conservation and Management Plan (New York - New Jersey Harbor Estuary Program, 1996).

Offshore islands constitute a significant habitat type in the Narrows Complex, with colonial wading bird rookeries, rocky intertidal areas, and tidal wetland areas consisting of various combinations of salt and brackish marshes, mudflats, tidal creeks, and protected open-water coves. The most important islands in this group for breeding birds are Huckleberry Island, Great Captain Island, North and South Brother Islands, and Pelican Island. These small, rocky islands are mostly covered with deciduous forest composed of sassafras *(Sassafras albidum),* white oak *(Quercus alba),* Norway maple *(Acer platanoides),* chestnut oak *(Quercus prinus),* black locust *(Robinia pseudoacacia),* and tree-of-heaven. In recent years (1995 and 1998), Huckleberry Island has supported high numbers of double-crested cormorant, great egret, black-crowned night-heron, herring gulls, and great black-backed gulls (New York State Department of Environmental Conservation, 2002). In 2001, a count of 189 black-crowned night heron nests was the highest in comparison to the previous 5 years (New York City Audubon Society, 2001).

The three north shore bays, Little Neck Bay, Manhasset Bay, and Hempstead Harbor, are collectively among the most important waterfowl wintering concentration areas in the Harbor Estuary, particularly for greater and lesser scaup, canvasback, and American black duck, along with lesser numbers of brant, Canada goose, common goldeneye, oldsquaw (*Claugula hyemalis*), bufflehead, red-breasted merganser, and American wigeon. These bays are also productive nursery and feeding areas for marine shellfish and finfish, including striped bass, scup, bluefish, Atlantic silverside, Atlantic menhaden, winter flounder, and tautog, and contain important hard clam beds. Although few and small, sand beaches in this area provide nesting habitats for piping plover, least tern, and northern diamondback terrapin. Marshlands associated with the bays are valuable feeding and nesting areas for green heron, clapper rail, and American black duck, and feeding areas for several species of wading birds.

F. NEW YORK BIGHT APEX

The New York Bight Apex also provides valuable habitats for numerous commercially valuable finfish and shellfish, and is designated by NMFS as "Essential Fish Habitat" for many species (included in Appendix B). This area is also important for cetaceans and sea turtles passing through and/or foraging in the area.

Common mega-invertebrates in the New York Bight are longfin squid (*Loligo pealei*), northern shortfin squid (*Illex illecebrosus*), horseshoe crab, American lobster, Jonah crab (*Cancer borealis*), Atlantic rock crab (*Cancer irroratus*), lady crab, and starfish (*Asterias sp.*) (Wilk *et al.*, 1992). Other mega-invertebrate species documented in the New York Bight include northern moon snail (*Lunatia heros*), sea star (*Stelleroidea sp.*), common spider crab, surf clam, blue crab, sand dollar (*Echinarachnius parma*), and sea scallop (*Placopecten magellanicus*) (U.S. Fish and Wildlife Service, 1996a).

IV. PROJECT–RELATED EFFECTS TO FISH AND WILDLIFE RESOURCES AND SERVICE RECOMMENDATIONS

Given the values of the Harbor Estuary and adjacent marine habitats to fish and wildlife, and the broad scale of the DMMP, disposal of dredged material has a high potential to adversely affect fish and wildlife resources. The following discussion addresses the general impacts associated with each of the potential management options, and includes Service recommendations.

A. ENVIRONMENTAL CONTAMINANTS

Much of the sediment requiring removal from the Harbor is comprised of fine silt likely to contain contaminants. Dredging would result in resuspension of this sediment, increasing concentrations of contaminants in the water column either in dissolved form or adsorbed to the sediment (Weston *et al.*, 2002). In either form, contaminants are bioavailable to fish and wildlife through direct contact with the skin or gills or through ingestion (Seelye *et al.*, 1982). Many of the contaminants present in sediments requiring dredging are especially of concern for fish and wildlife because of their bioaccumulative properties. Such contaminants, even in very small concentrations in the water or sediment, can bioaccumulate in organisms and then potentially biomagnify from one trophic level to the next. This process occurs for some metals (Kraus, 1989) and organic compounds (Hickey and Anderson, 1968; Cade *et al.*, 1971; Braune and Norstrom, 1989) resulting in a variety of adverse effects, such as impaired reproduction and predatorial capabilities. The harbor sediments are especially high in groups of compounds known for their persistence and ability to bioaccumulate and biomagnify, such as PCBs, polychlorinated dibenzo-*p*-dioxins (dioxins), polychlorinated dibenzofurans (furans), and methyl mercury. In the Harbor Estuary, these compounds occur at concentrations known to adversely impact wildlife.

The Service has assisted the NJDEP in examining the impacts to peregrine falcon from concentrations of dichlorodiphenyltrichloroethane (DDT) and its metabolites, PCBs, and mercury. A species such as the peregrine falcon is vulnerable to contamination because its prey base is at a high trophic level (Lindberg, 1985). From this study, water quality criteria were derived that would be protective of peregrine falcons for these three groups of contaminants of 4 parts per quadrillion (ppq) for DDT, 72 ppq for PCBs, and 530 ppq for mercury. All of these values are regularly exceeded in the Harbor Estuary and further exceedences would be expected with any perturbation of the sediment from dredging.

Dioxins and furans are included in a family of 210 compounds of which the most toxic is 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (TCDD). These compounds are common in sediments of the Harbor Estuary. Common effects of TCDD and related compounds in avian species include wasting syndrome, immunotoxicity, reproductive impairment, porphyria, and liver damage. Dioxins and dioxin-like compounds accumulate in birds primarily through dietary exposure. Braune and Norstrom (1989) found TCDD concentrations in adult herring gulls were 32 times, and in their eggs 21 times, those found in their diet of fish. Portions of the substances accumulated in the tissues of females are translocated to eggs where they have the potential to cause embryotoxicity (Nosek *et al.*, 1992; 1993). Developing embryos and young are even more sensitive than adults to the toxic effects of dioxins (Hoffman *et al.*, 1996). Depending on the species, the most notable signs of toxicity in exposed avian embryos include enzyme induction, gross deformities, or mortality (Nosek *et al.*, 1993). Adverse effects in great blue heron occur from TCDD at 211 parts per trillion (ppt) in eggs (Henshel *et al.*, 1995) and from TCDD equivalents at 230 ppt (Elliott *et al.*, 1989). The TCDD equivalents are found by the sum of the concentrations of compounds in a sample exerting dioxin-like effects after each concentration has been multiplied by a factor (*i.e.*, a toxic equivalency factor) of its relative potency compared to TCDD. Tillitt *et al.* (1992) observed embryo mortality in double-crested cormorants at 85 ppt TCDD equivalents.

The history of industry in and around the Harbor Estuary and discharges from spills (see Gunster *et al.*, 1993) and from specific sites, such as the Diamond Alkali (Tierra Solutions) facility on the Passaic River, have resulted in high concentrations of TCDD in harbor sediments. The mean concentration of TCDD observed by National Oceanic and Atmospheric Administration (1995) in the top two centimeters of sediment from 53 sampling stations in Newark Bay was 100 ppt, with a range of 5 to 463 ppt. Bopp *et al.* (1991) observed TCDD concentrations between 230 to 310 ppt in surface sediments from three locations in Newark Bay. Furthermore, the Bopp *et al.* (1991) study suggested dioxin concentrations in subsurface sediments may be over 1,000 ppt. Composited sediment samples from the Elizabeth Channel had TCDD equivalents of 14 to 270 ppt (Port Authority, unpublished data, 2000).

Polychlorinated biphenyls are a group of 209 compounds (congeners), of which the most toxic are those that assume a coplanar conformation similar to that of TCDD. Because they are dioxin-like, coplanar PCBs add to the potential for adverse effects caused by exposure to TCDD. Dioxin-like PCBs have been shown to cause embryo mortality in wildlife species such as ring-necked pheasant (*Phasianus colchicus*), mallard, goldeneye, and black-headed gull (*Larus ridibundus*) (Brunstrom and Reutergardh, 1986; Brunstrom, 1988). Congeners 105, 114, 118, 123, 156, 157, and especially 77 and 126, are the most likely to produce TCDD-like effects in wildlife. These congeners may all occur in the sediments of the Harbor Estuary, although the testing methods usually employed are not congener-specific, making interpretation of data difficult. The method of PCB analysis preferred by the Service is USEPA Draft Method 1668a, which provides congener-specific data down to ecologically relevant concentrations. Most PCB congeners are non-coplanar compounds; however these compounds exert adverse effects, such as immunotoxicity, separate from that of the dioxin-like effects (Grasman and Fox, 2001). Toxicological effects observed with PCBs, which are generally present as complex mixtures associated with their original industrial mixtures (*i.e.*, Aroclors), depend on the mixture and the species of the receptor. Death, reproductive failure, immunosuppression, liver damage, and wasting syndrome have been attributed to PCB exposure in wildlife (Hoffman *et al.*, 1996). The potency of individual congeners is highly dependent on both the test species and the measured response (Hoffman *et al.*, 1996). For example, concentrations of PCB 126 as low as 0.4 parts per billion (ppb) in eggs have been shown to cause median lethality in chickens (Brunstrom and Andersson, 1988), whereas similar effects in American kestrels require 65 ppb (Hoffman *et al.*, 1998). Common tern experience 35 percent embryo mortality at egg concentrations of 45 ppb (Hoffmann *et al.*, 1995).

Total PCB concentrations found by NOAA (1995) were between 400 and 2,000 ppb in Newark Bay sediments and between 200 and 800 ppb in Arthur Kill sediments. Preliminary 2002/2003 data for the New Jersey Toxics Reduction Workplan suggest concentrations of total PCBs and dioxins are in the same order of magnitude as found in 1995 (Dimou *et al.*, 2003).

Methyl mercury is the most toxic form of mercury and has a high potential to biomagnify in the food chain. Methyl mercury is the predominant form of mercury to which piscivorous birds are exposed, since this is the dominant form (nearly 100 percent) of mercury in fish. The toxicity of mercury to wildlife has been well established in the laboratory. Black ducks fed diets containing 3.0 ppm methyl mercury for 28 weeks had elevated liver and kidney weights, as well as reproductive inhibition (Finley and Stendell, 1978). A dietary concentration of 1.1 ppm mercury for 8 weeks was associated with kidney lesions in juvenile European starlings (*Sturnus vulgaris*) (Nicholson and Osborn, 1984). A dietary level of 5.2 ppm fed over 12 weeks led to serious neurological effects and mortality in red-tailed hawks. Heinz (1974, 1975, 1976a, 1976b, 1979) studied the effects of methyl mercury over three generations of mallard ducks exposed to dietary concentrations of 0, 0.5, and 3.0 ppm. No effects were initially seen in the first generation at the 0.5 ppm dietary concentration (estimated to be equivalent to 0.1 ppm in a natural diet). However, abnormal laying behavior, impaired reproduction, and slowed growth of ducklings were observed in the second and third generations at the 0.5 ppm dietary concentration. Mallard hens exposed to 3.0 ppm exhibited reproductive impairment in the first generation. Bird embryos are especially sensitive to the effects of mercury. Heinz (1979) concluded the lowest observed adverse effect level for concentrations in the diet associated with effects on mallard reproduction was 0.064 mg mercury/kg body weight. Impaired or tunnel vision from chronic exposure to mercury has also been demonstrated in some vertebrates (Wolfe *et al.*, 1998), thus potentially impacting foraging success. Sundloff *et al.* (1994) found concentrations of mercury in the livers of great blue herons over 6 micrograms per gram (ug/g) correlated with mortality from chronic disease. Bouton *et al.* (1999) found adverse behavioral effects on juvenile egrets fed 500 ug/g mercury in their diet. Preliminary 2002/2003 data for the New Jersey Toxics

Reduction Workplan suggest concentrations of mercury in the Harbor sediments that range from 497 to 8,585 nanograms per gram (ng/g) (Dimou *et al.*, 2003). Gillis *et al.* (1993) found mercury concentrations as high as 9.8 mg/kg (dry weight) in the Newark Bay estuary.

The sediments of the Harbor Estuary are also contaminated by a variety of other compounds at concentrations known to adversely affect biota. These compounds include arsenic, cadmium, copper, nickel, lead, zinc (Bonnevie *et al.*, 1994), polycyclic aromatic hydrocarbons, petroleum hydrocarbons (Huntley, 1995), and various pesticides (Gillis *et al.*, 1995). The sediments of the Harbor Estuary may also contain unregulated contaminants whose effects are not well understood such as endocrine-disrupting compounds that are not routinely included in sediment characterizations.

Limited data exist on the concentrations of contaminants in the fish and wildlife of the Harbor Estuary, partly due to the lack of testing requirements on vertebrates for assessing risk of dredging contaminated sediments (see comments below). However, some studies have been completed that suggest high concentrations of contaminants in Harbor biota. Concentrations of TCDD of 153 ppt and 27 ppt have been observed in white perch and juvenile striped bass, respectively, from Newark Bay (U.S. Fish and Wildlife Service, unpublished data). Concentrations of 31 ppt were observed in striped bass (Belton *et al.*, 1985; Skinner *et al.*, 1997a), 3 to 30 ppt in blue crabs (Cai *et al.*, 1994; Skinner *et al.*, 1997a), and total PCB concentrations between 0.12 and 4.7 ppm in finfish fillets of 13 species in the Harbor Estuary (Skinner *et al.*, 1997b). Karwowski (1997) collected 10 cormorant eggs from Shooters Island and all had concentrations of TCDD in a range from 46.5 to 161 picograms per gram. The decreasing population of birds in the Arthur Kill and Kill Van Kull portion of the Harbor (Kerlinger, 2002) may be associated with contaminants associated with the sediment.

The Service recommends comprehensive testing of the Harbor Estuary's sediments. This includes performing adequate testing of all areas to be dredged to assure hotspots (*i.e.*, vertically and horizontally isolated and highly contaminated areas) are detected and appropriately remediated. Due to the history of pollution in the area, the Newark Bay complex is likely to have hotspots with especially high concentrations of certain contaminants. The extensive compositing of samples that often occurs in testing does not adequately reveal. Therefore, it is recommended to minimize composite sampling and maximize the number of samples to adequately characterize the area's sediment. Characterization should also include predicting where deposition of contaminated sediments is most likely to occur, where contaminant concentrations are highest, and the approximate suite of contaminants likely to be encountered. Comprehensive testing should also include analyses on aquatic vertebrate species, such as fish, and upper level predators, including piscivorous birds. With appropriate characterization of sediments, appropriate disposal options can then be determined.

The DMMP EIS should include a discussion of how dredged material management would be integrated into other contaminant-related initiatives to improve water and sediment quality in the Harbor Estuary. Other initiatives include the New Jersey Toxics Reduction Workplan for NY-NJ Harbor (a NJDEP initiative to determine the concentrations, mass, and spatial distribution of the major contaminants of concern throughout the harbor) and the Contaminant Assessment and Reduction Program (a similar initiative of the HEP).

Much of the cost associated with dredging the Harbor Estuary is due to a legacy of environmental pollution. The threat posed to wild living resources and the high cost to the public and Port Authority for dredged material management is largely a result of this legacy. Although much of this pollution has come from nonpoint sources, much is a result of known point sources such as industrial facilities on the Passaic River. Such pollutant sources should be noted in the DMMP and draft EIS to include accountability of the responsible parties involved, and how these parties may affect dredged material management.

B. HISTORIC AREA REMEDIATION SITE (HARS)

The Service is concerned that the Category I definition of "clean material" does not adequately address all potential contaminants, and thus may not be protective of wildlife. Testing often involves excessive compositing of samples, contains too few analytes, lacks adequate consideration of vertebrate endpoints and chronic effects, and lacks adequate detection limits. Determining the adequacy of a plan for disposal of dredged material at the HARS is difficult since characterization of the sediment being considered for disposal is questionable.

The USEPA HARS guidance in part defines Category I material as that which does not have bioaccumulation tests in exceedance of the regional matrix levels for cadmium, mercury, total PCBs, and total DDT, and does not exceed the regional Category I guidance for dioxin. Title 40 C.F.R. part 227.6c(2) states that materials shall be deemed acceptable for ocean dumping when "bioassay results on the solid phase of the wastes do not indicate occurrence of significant mortality...these bioassays shall be conducted with appropriate sensitive benthic marine organisms..." However, dredged material is often tested to satisfy Sections 40 C.F.R. 227.26 and 227.27 by using 10-day acute toxicity tests on organisms such as mysids (*Mysidopsis* spp.) or amphipods. These invertebrate organisms are relatively insensitive to the effects of coplanar halogenated aromatic hydrocarbons, such as coplanar PCB's, dioxins, and furans, because they lack the aryl hydrocarbon receptor, which is the principal mechanism for toxicity of these compounds in vertebrates. The delineation of the HARS Primary Remediation Area was based on survival tests on amphipods. However, tests were not performed on a vertebrate sensitive to organochlorine contaminants such as 2,3,7,8-TCDD, which is known to occur at concentrations as high as 41.7 nanograms per kilogram (dry weight) at the HARS. In accordance with 40 CFR 227.6, material going to the HARS should not cause significant undesirable effects, including those through bioaccumulation or unacceptable toxicity. The regulations at 40 CFR 227.6 are not limited to invertebrates. The Service recommends against reliance on invertebrate species for determining acute toxicity for management of the HARS. Rather, we recommend developing and implementing a more extensive analysis of the toxic and bioaccumulative potential of contaminated sediments using a demersal fish common to the Harbor Estuary such as winter flounder or scup. Some success has been obtained using fish as indicators of contaminant bioavailability (Seelye *et al.*, 1982).

The reliance on simplified tests to determine suitability for ocean disposal fails to take into account the number or complexity of the contaminants found in the Harbor Estuary. Contaminated sediments typically contain complex mixtures of chemicals that could act independently, additively, synergistically, or antagonistically (Ingersoll *et al.*, 1996). The bioavailability of a contaminant is determined by many environmental or chemical factors including: which chemical species is present and its concentration; solubility of the compound in water compared to its tendency to adsorb onto organic matter; presence of competing compounds; sediment or water pH; level of sediment oxygenation; the concentration of organic or inorganic carbon; the total suspended solids concentration of the water; and water temperature (Keller and Lydy, 1997). Memorandums for review of compliance with the testing requirements of 40 CFR 227.6 and 227.27 generated by USEPA for assessing acceptability of risk for ocean dumping do not provide sediment concentrations. Therefore, an adequate assessment of risk should include sediment concentrations and an analysis of whether bioaccumulated compounds in the benthic test organism exceed concentrations safe for upper trophic level predators, such as piscivorous birds.

C. CONTAMINANT REDUCTION AND SEDIMENT / DREDGING REDUCTION

The Service views programs targeted toward pollution prevention and contaminant reduction as integral to the viability of the DMMP. Absent such programs, contaminant bioavailability associated with the dredging and disposal of contaminated sediments will persist, and disposal options will continue to become more limited over time. Reducing the amount of contaminants entering the estuary is also critical to the health of resident and migratory fish and wildlife populations that inhabit and migrate through the Harbor Estuary, respectively.

Effective implementation and enforcement of existing State and federal laws regulating both point and non-point discharges into our nation's waters could substantially reduce the amount of sediment entering the Harbor, thereby reducing the long-term need for maintenance dredging. Strict enforcement of Section 404 of the Clean Water Act (33 U.S.C. 1344 *et seq.*) is recommended. In other cases, not under the Corps purview, we recommend that the Corps work cooperatively with the USEPA and other federal and state agencies to facilitate enforcement of other laws that would improve the water quality of the Harbor Estuary.

In the DMMP, the Corps considers the reduction of incoming sediment to the Harbor Estuary and the removal and treatment of sediment. Thus, the result of Harbor Estuary dredging over the course of the next 40 years, as outlined by the DMMP, could result in a decrease in the net mass of contaminants in and entering the harbor system and potential net improvements to fish and wildlife habitats. However, even when a large total volume of contaminated sediment has been removed from the system, remedial dredging can be unsuccessful due to net increases of contaminants in the surface layer (*i.e.*, bioavailable layer) of sediment (Weston *et al.*, 2002). Thus, the manner in which the existing sediment is handled could negatively affect fish and wildlife populations and further degrade some habitats. Dredged material management policies should specify dredging methods as well as disposal.

Dredging causes an increase in turbidity (Smith *et al.*, 1976). Suspended sediments affect fish and wildlife populations by causing adverse impacts such as mortality, disrupting the shedding of the outer cuticle or exoskeleton (*i.e.*, growth) (Peddicord and McFarland, 1976), abrasion of gills in invertebrates (Cardwell *et al.*, 1976) and fish, and impaired feeding. As documented above, suspended sediments are also carriers for adsorbed contaminants; therefore, Best Management Practices (BMPs) must be included in the DMMP. Best Management Practices are practices or combinations of practices intended to prevent or reduce the amount of non-point source pollutants (sediments, nutrients, acids and their salts, heavy metals, toxic chemicals and pathogens) that enter the aquatic environment. BMPs include, but are not limited to, constructed wetlands, restoration of riparian areas and estuarine marshes in the Harbor Estuary system, closed bucket clamshell dredges, silt curtains, no barge overflow, and in extreme cases, coffer dams. In contrast to mechanical and physical methods of reducing sedimentation in channels, the use of BMPs would have largely beneficial effects on water quality and fish and wildlife resources.

Structural control measures may alter circulation patterns and subsequently cause increased rates of beach erosion, thus adversely affecting federal trust species. The Service understands that the Corps would conduct detailed studies regarding the potential adverse affects of any proposed structural means of reducing sediment accumulation in channels. Such studies should include surveys of any benthic and finfish habitats in the impact area; and modeling to determine the impact that placement of structures would have on high-energy beaches.

Overall, the Service supports the use of BMPs in preference to the mechanical, physical, and pneumatic suspension approaches to sediment reduction proposed in the DMMP, to reduce the amount of sediment and other non-point source pollutants entering the Harbor Estuary. The Service also recommends avoidance of channel realignments and other alternatives in areas supporting high-quality benthic communities or areas receiving high use by finfish.

Constructed wetlands can be used to remove suspended solids, particulate organic matter, and sediment-attached nutrients and metals from waters entering the Harbor Estuary. These wetlands are not typically intended to replace all of the functions of a natural wetland, but rather to minimize point source and non-point source pollutants from entering receiving waters. The Service recommends that the Corps investigate appropriate locations and designs for constructed wetlands in the Harbor Estuary system to reduce non-point source pollutants from entering the Harbor Estuary.

The Service recommends restoring riparian areas with buffers of native vegetation to slow runoff and trap sediment before it enters the waterways. A landscape-level approach that considers the rivers and streams draining to the Harbor Estuary will be more beneficial in the long-term as an effective means to improve and maintain water quality and reduce the frequency of dredging, while benefiting fish and wildlife resources.

To further reduce pollution in the Harbor Estuary, the Service advocates acquisition and restoration of the remaining open spaces of the Harbor Estuary in accordance with the initiatives set forth in the HEP's CCMP. The CCMP includes long-term strategies and intermediate actions designed to protect, restore, and enhance habitat, and offers guidance for the development of management strategies to prevent and reduce pollutants entering the waters of the Harbor Estuary and New York Bight.

Advanced maintenance dredging would lead to less frequent dredging, thus reducing turbidity and disturbance to benthos and slow-moving biota. Advanced dredging also reduces the amount of disturbance to nesting birds from noise and temporary habitat losses. Less frequent dredging would also have positive economic effects. However, the DMMP does not include the extent to which advanced dredging would occur or the resulting benefit. Generally, advanced dredging is acceptable to reduce maintenance dredging requirements in areas that would not be further degraded by the advanced action. These areas include most of the channels throughout the harbor. Potentially unacceptable impacts from advanced dredging may occur if channel width is also increased to accommodate the deeper channels, thus impacting shallow water areas. In addition, excess dredging can result in the creation of holes or sloughs with poor water quality (*i.e.*, anoxia caused by poor circulation). The Service recommends avoiding channel widening in shallow water areas serving as habitat for finfish and invertebrates and setting limits on the quantity of sediments removed to prevent excess dredging.

D. DECONTAMINATION AND TREATMENT

The Service views sediment decontamination and treatment as a positive component of the DMMP. Decontamination facilities must be located in the vicinity of dredging activities and their construction can have substantial adverse impacts to the fish and wildlife resources near the dredge site. The Service recommends locating decontamination facilities in areas other than wetlands or upland cover types that are rare within the New York / New Jersey metropolitan area. Rather, we recommend siting these facilities in brownfields. Furthermore, the DMMP does not include the endpoints (*e.g.*, New Jersey Residential Soil Clean-up Criteria) targeted for the decontaminated material. These endpoints should be included in the DMMP.

E. BENEFICAL USES

The Service supports beneficial use of dredged material, especially to benefit fish and wildlife resources. However, the benefits associated with using dredged material must be weighed against any potential adverse effects on a case-specific basis.

1. Habitat Creation, Enhancement, and Restoration

The Service is concerned about the potential adverse impacts to fish and wildlife resources associated with the use of contaminated dredged material. As previously noted, contaminants that bioaccumulate have the potential to increase in concentration through tropic transfer to harmful levels in resident biota. Therefore, given adequate testing protocols, the Service recommends that the Corps use only Category I or cleaner dredged material for projects intended to benefit fish and wildlife resources. Additionally, any beneficial uses involving habitat creation or restoration must be carefully planned and coordinated with federal and State resource agencies to consider impacts to existing resources from conversion of cover types. We further recommend development of monitoring plans and post-construction coordination with the resource agencies.

The use of dredged material for beach nourishment could adversely impact federally listed species that rely on high-energy beaches to fulfill all or part of their life requirements. Although beach nourishment may have benefits relative to habitat restoration, timing can be critical. Federally listed species that could be adversely affected by beach nourishment activities include: piping plover, roseate tern, northeastern beach tiger beetle, and seabeach amaranth. Several State-listed and species of special concern could also be impacted. As recommended above, close coordination with the appropriate resource agencies would be necessary for beneficial use projects.

2. Land Remediation

The Service concurs that dredged material can be successfully used for land remediation. However, feeding and burrowing wildlife may move and degrade remediated soils (caps) over time and lead to erosion, water infiltration, mixing of remediation material and clean soils, ultimately increasing bioavailability of contaminants to other fish and wildlife. For example, woodchucks (*Marmota monax*) dig burrow systems that may extend 8 to 16 feet below the surface, moving as much as 716 pounds of soil for a single burrow (Baker, 1983). Small mammals (*e.g.*, mice, moles, shrews and rabbits) may burrow to a lesser depth, but may be common and abundant in remediation areas. Plant roots can also compromise dredged material used for remediation. Deciduous tree roots have a mean depth penetration to 3.3 meters and a maximum penetration to 30 meters and annual grasses have a mean penetration to 0.5 m and a maximum penetration to 1.1 m (Smith *et al.*, 1997). Mowing the cap may discourage use of remediated areas by some animals, but may encourage use by others, such as Canada geese. Canada geese actively feed on shallow rooted grasses, which may denude the material of its protective vegetative cover and lead to erosion and redistribution of contaminants. In addition to the vertebrate animals that burrow, earthworms are vertical migrators that may be found up to 8 feet underground, although most earthworm species remain within 16 inches of the surface (Edwards and Lofty, 1977). The use of contaminated material for remediation should include consideration of the degree of contamination and whether fish and wildlife may be adversely impacted as a result of bioturbation.

F. CONTAINED AQUATIC DISPOSAL (CAD) FACILITIES (SUBAQUEOUS PITS)

The use of CAD pits to dispose of contaminated dredged material would result in adverse short-term and potential long-term adverse impacts to fish and wildlife resources. Short-term impacts would include elimination of benthic communities at the CAD pit and degradation of water quality via suspension of solids. Long-term adverse impacts could result from the release and bioaccumulation of environmental contaminants via the resuspension of contaminated sediments. The resuspension of contaminated sediments could result from two activities: construction of

CAD pits in areas with contaminated sediments, and disposal of contaminated dredged material in the pits. Resources that could be adversely affected by the CAD pit disposal option include finfish and shellfish, as well as higher trophic-level organisms, should environmental contaminants be released. Due to the potential for adverse short-term and long-term environmental impacts, the Service recommends abandoning the CAD facility option.

G. CONFINED DISPOSAL FACILITIES (CDF)

1. Upland CDFs

Upland CDFs can provide an acceptable disposal alternative. However, upland sites must be actively maintained to prevent them from becoming an attractive nuisance to wildlife. For example, pooled water in the CDF could provide attractive foraging habitat to birds, thereby exposing them to contaminants. Dredged material placed in CDFs may include the remains of organisms entrained during dredging. Wildlife may scavenge in this material and be exposed to contaminants through dermal contact with the sediment or through ingestion of the sediment and remains. The Service recommends to avoid constructing CDF's in sensitive habitats or areas where the CDF can be breached by storms.

2. Nearshore CDFs

Use of the nearshore CDF option will result in the permanent loss of benthic habitats, as well as a portion of the water column above and within the footprint of the CDF. The Service would support this disposal option only if the facilities were sited within highly degraded sites (as established by on-site biological sampling) that have little opportunity for enhancement, and if decant and runoff water met applicable surface water quality standards.

3. Island CDFs

Island CDFs may result in the loss of primary productivity within aquatic and benthic habitats and thus have subsequent impacts to icthyoplankton, shellfish, and finfish. Degraded water quality would be an additional immediate, and potentially long-term, impact associated with construction and operation of a CDF island. Significant amounts of sediments would be released into the water column as a result of island construction, filling, and potential leakage from the island over time. If an island were to experience structural failure, significant adverse impacts to fish and wildlife resources, including federal trust species such as roseate tern, migratory birds, and migratory fishes, could result from loss of benthic habitats and release of environmental contaminants (*i.e.*, bioaccumulation and direct toxic effects).

Islands could also influence water circulation patterns within the study area, which could alter water temperatures, distribution of sediments, salinity, and wave action, and reduce oxygen content. Should altered circulation patterns affect high-energy beaches, sensitive beach-dependent species including federally and State-listed species, could be adversely affected.

The Service does not support the construction of an island CDF in the Harbor Estuary due to the high potential for adverse environmental effects. The Service recommends that the Corps continue to consider the construction of island CDFs as an option of last resort to be implemented only after all other management options have been exhausted and additional, detailed environmental studies have been conducted to assess impacts and identify a least environmentally damaging site. In addition, we recommend that the Service's designated Habitat Complexes (Figure 2) be considered as exclusionary criteria for siting any island CDFs.

V. SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

The Service concludes that the Harbor Estuary and the adjacent New York Bight Apex support valuable fish and wildlife resources, which have been cumulatively reduced in quality and quantity over time by anthropogenic activities. Given the magnitude of the DMMP, these resources may be subject to significant adverse impacts, further reducing the remaining valuable habitats. However, at this time in the Corps planning process and due to the programmatic nature of the DMMP, it is not possible for the Service to provide a detailed assessment regarding impacts to fish and wildlife resources at specific site locations. Therefore, general recommendations regarding the DMMP are presented below. The Corps has reviewed these recommendations in the draft FWCA Section 2(b) report and provided comments in a letter dated October 27, 2003 (Appendix D). Corps concurrence or non-concurrence is noted in brackets below each recommendation. With the exception of Recommendation #10, Corps non-concurrence was based on the perception that these Service comments are more appropriate toward a specific project since the DMMP represents a plan rather than a specific federal action. Additional Service comments follow as appropriate. Please note that Recommendation #3 and #8 have been modified to reflect consultation with the NYDEC and NJDFW, respectively, and Recommendation #12 has been changed to reflect Service reconsideration and consultation with the NJDFW. Therefore, Corps concurrence or nonconcurrence, given previously, do not follow recommendations #3, 8, and 12.

1. Continue studies to obtain information on the distribution patterns of the early life history stages of demersal fishes in the Harbor Estuary. Especially important is the use of appropriate statistical analyses to interpret data and determine correlations between the abundance of the various stages and substrate type, habitat type (*e.g.*, shoals and navigation channels), locations within the Harbor Estuary, and other environmental parameters. The use of multivariate statistical tests such as multiple analysis of variance or stepwise multiple regression (Sokal and Rohlfe, 1981), will provide more meaningful information for evaluating the effects of dredging on winter flounder and other important demersal fishes in the study area, and aid in the management of these species.
   [The Corps concurs]

2. Continue to consult with the Service and NMFS throughout the planning and implementation of the DMMP to avoid impacts to federally listed species and request annual updates from the Service and NMFS on the presence of listed and candidate species within the study area. The Service also recommends that the Corps consult with

appropriate state agencies in both New York and New Jersey regarding potential adverse impacts of the proposed project on State-listed species.

[The Corps concurs]

3. Test Harbor Estuary sediments to identify contaminant hotspots and consider using higher trophic level organisms as test species. The Service recommends minimizing composite sampling and maximizing the number of samples and analytes to adequately characterize an area's sediments. Mixtures of chemicals that can act independently, additively, synergistically, or antagonistically should be taken into consideration. Comprehensive testing should include analyses in vertebrates such as fish and upper-level predators such as piscivorous birds. These analyses should include the development and implementation of a chronic effects test. The Service recommends against relying on invertebrate analyses. These recommendations are discussed in Section IV, A and B.

   [The Corps does not concur]

   Corps non-concurrence is based on the perception that the Service recommendation is more appropriately directed toward a specific project rather than the DMMP. The Service's intent of this recommendation is to provide general guidance for future projects, which would be considered in more detail for site-specific actions.

4. Address how the DMMP will be integrated into other contaminant-related initiatives to improve water and sediment quality in the Harbor Estuary.

   [The Corps does not concur]

   Corps non-concurrence is based on the reasoning provided under Recommendation #3. The Service provided this general recommendation with the intent of ensuring consistency of the DMMP with other Harbor Estuary plans such as the New Jersey Toxics Reduction Workplan for NY-NJ harbor (a NJDEP initiative to determine the concentrations, mass, and spatial distribution of the major contaminants of concern throughout the harbor) and the Contaminant Assessment and Reduction Program (a similar initiative of the HEP). The Service has concluded that addressing the integration of the DMMP with other contaminant-related initiatives to improve the Harbor Estuary is appropriate for inclusion in the DMMP.

5. Note point sources of pollution in the DMMP and EIS to include accountability of the responsible parties and how these parties may affect dredged material management.

   [The Corps does not concur]

   Corps non-concurrence is based on the reasoning provided under Recommendation #3. The Service's intent of this recommendation is to provide guidance for future projects, which would be considered in more detail for actions at specific sites that may be affected by non-point source pollutants.

6. Coordinate with the USEPA and State regulatory agencies to ensure effective implementation of existing federal and State laws aimed at controlling point and non-point sources of pollution to the aquatic environment. Reduction of sediment and

contaminant input is the key component of the DMMP. Strict enforcement of Section 404 of the Clean Water Act is necessary.

[The Corps concurs]

7. Include handling techniques in the DMMP that minimize contaminant resuspension and re-entry into the estuary. The Service recommends and emphasizes a watershed approach to improving water quality and enhancing fish and wildlife habitats. The use of BMPs such as the construction of wetlands specifically for removing pollutants, and restoring riparian areas and estuarine marshes to maintain and enhance water quality are strongly recommended in place of structural and mechanical means of reducing sediment accumulation in channels. Channel realignments and other structural methods should be avoided in areas supporting high quality benthic and finfish resources. The Service also recommends following the initiatives set forth in the HEP's CCMP. These recommendations are discussed in Section IV, C, including acquisition of available remaining open space.

   [The Corps does not concur]

   Corps non-concurrence is based on the reasoning provided under Recommendation #3. The Service has concluded that the general recommendation of using a watershed approach to improving water quality and enhancing fish and wildlife habitat; the use of BMPs; and avoiding structural methods for reducing sediment accumulation is appropriate for consideration as objectives in the DMMP to be applied to future sites.

8. Continue to consider advanced maintenance dredging, which would lead to less frequent dredging, thus reducing turbidity and disturbance to slow-moving biota and beach-nesting birds. However, the Service recommends the avoidance of channel widening in areas that may be serving as critical habitat for finfish and invertebrates and setting limits on the quantity of material removed to prevent excess dredging that may result in poor water quality (*i.e.*, anoxia caused by poor circulation).

9a. Avoid locating decontamination facilities within wetlands or rare upland cover types. Rather, the Service recommends siting these facilities in brownfields.

   [The Corps concurs]

9b. The DMMP should include the endpoints (*e.g.*, New Jersey Residential Soil Clean-up Criteria) targeted for the decontaminated material. Service comments and recommendations on decontamination and treatment are included in Section IV, D.

   [The Corps does not concur]

   Corps non-concurrence is based on the reasoning provided under Recommendation #3. The Service intent of this recommendation is to provide general guidance for future site-specific projects.

10. Use only Category I or cleaner dredged material for projects intended to benefit fish and wildlife resources.

   [The Corps does not concur]

In some rare instances, contaminated material below Category I standards could be used in part of a project with an intention of benefiting fish and wildlife resources. However, the Service generally opposes the use of even marginally contaminated material in the aquatic environment, including placement in anoxic holes. Furthermore, the Service has not thoroughly examined the protectiveness of Category I standards. Therefore the Service recommends using Category I or cleaner material for beneficial use projects in the aquatic environment when fish and wildlife resources are likely to be exposed to the material.

11. Continue to consider the use of dredged material for land use remediation. However, any use of contaminated material for remediation should include consideration of the degree of contamination and whether fish and wildlife may be adversely impacted as a result of bioturbation. Service comments and recommendations on beneficial uses are discussed in Section IV, E.
    [The Corps concurs]

12. Discontinue further consideration of the CAD facility option due to the high potential for short-term and long-term adverse environmental impacts.

13. Actively maintain upland CDFs to prevent them from becoming an attractive nuisance to wildlife. These facilities should not be placed in sensitive habitats or where the CDF can be breached by storms.
    [The Corps concurs]

14. Consider the nearshore CDF disposal options only if the facilities are located within highly degraded habitats.
    [The Corps concurs]

15. Discontinue further consideration of constructing an island CDF in the Harbor Estuary due to the high potential for adverse environmental effects. Service comments and recommendations on CDFs are discussed in Section IV, G.
    [The Corps concurs]

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B. PERSONAL COMMUNICATIONS

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Appendix A

Federal and State-listed Endangered and Threatened Species in New Jersey and New York and other Species of Management Concern

FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES IN NEW JERSEY

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

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

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

	Sperm whale*	*Physeter macrocephalus*	E

	COMMON NAME	SCIENTIFIC NAME	STATUS
INVERTEBRATES	Dwarf wedgemussel	*Alasmidonta heterodon*	E
	Northeastern beach tiger beetle	*Cicindela dorsalis dorsalis*	T
	Mitchell saytr butterfly	*Neonympha m. mitchellii*	E+
	American burying beetle	*Nicrophorus americanus*	E+
PLANTS	Small whorled pogonia	*Isotria medeoloides*	T
	Swamp pink	*Helonias bullata*	T
	Knieskern's beaked-rush	*Rhynchospora knieskernii*	T
	American chaffseed	*Schwalbea americana*	E
	Sensitive joint-vetch	*Aeschynomene virginica*	T
	Seabeach amaranth	*Amaranthus pumilus*	T

STATUS:			
E	endangered species	PE	proposed endangered
T	threatened species	PT	proposed threatened
+	presumed extirpated**		

* **Except for sea turtle nesting habitat, principal responsibility for these species is vested with the National Marine Fisheries Service.**

** Current records indicate the species does not presently occur in New Jersey, although the species did occur in the State historically.

Note: for a complete listing of Endangered and Threatened Wildlife and Plants, refer to 50 CFR 17.11 and 17.12.

For further information, please contact:

U.S. Fish and Wildlife Service
New Jersey Field Office
927 N. Main Street, Building D
Pleasantville, New Jersey 08232
Phone: (609) 646-9310
Fax: (609) 646-0352

Conserve Wildlife
N.J. Division of Fish & Wildlife
Endangered & Nongame Species Program

Endangered and Threatened Wildlife of New Jersey

Endangered Species are those whose prospects for survival in New Jersey are in immediate danger because of a loss or change in habitat, over-exploitation, predation, competition, disease, disturbance or contamination. Assistance is needed to prevent future extinction in New Jersey.

Threatened Species are those who may become endangered if conditions surrounding them begin to or continue to deteriorate.

Species names link to PDF documents containing identification, habitat, and status and conservation information. Use the Adobe Acrobat Reader to view and print these documents. The Reader is available free from Adobe's Web site.

BIRDS			
Endangered		**Threatened**	
Bittern, American	*Botaurus lentiginosos* BR	Bobolink	*Dolichonyx oryzivorus* BR
Eagle, bald	*Haliaeetus leucocephalus* BR **	Eagle, bald	*Haliaeetus leucocephalus* NB **
Falcon, peregrine	*Falco peregrinus*	Hawk, Cooper's	*Accipiter cooperii*
Goshawk, northern	*Accipiter gentilis* BR	Hawk, red-shouldered	*Buteo lineatus* NB
Grebe, pied-billed	*Podilymbus podiceps**	Night-heron, black-crowned	*Nycticorax nycticorax* BR
Harrier, northern	*Circus cyaneus* BR	Night-heron, yellow-crowned	*Nyctanassa violaceus*
Hawk, red-shouldered	*Buteo lineatus* BR	Knot, red	*Calidris canutus* BR
Owl, short-eared	*Asio flammeus* BR	Osprey	*Pandion haliaetus* BR
Plover, piping	*Charadrius melodus***	Owl, barred	*Strix varia*
Sandpiper, upland	*Batramia longicauda*	Owl, long-eared	*Asio otus*
Shrike, loggerhead	*Lanius ludovicianus*	Rail, black	*Laterallus jamaicensis*
Skimmer, black	*Rynchops niger* BR	Skimmer, black	*Rynchops niger* NB
Sparrow, Henslow's	*Ammodramus henslowii*	Sparrow, grasshopper	*Ammodramus savannarum* BR
Sparrow, vesper	*Pooecetes gramineus* BR	Sparrow, Savannah	*Passerculus sandwichensis* BR
Tern, least	*Sterna antillarum*	Sparrow, vesper	*Pooecetes gramineus* NB
Tern, roseate	*Sterna dougallii***	Woodpecker, red-headed	*Melanerpes erythrocephalus*
Wren, sedge	*Cistothorus platensis*		
**Federally endangered or threatened			

BR - Breeding population only; NB - non-breeding population only

REPTILES			
Endangered		**Threatened**	
Rattlesnake, timber	*Crotalus h. horridus*	Snake, northern pine	*Pituophis m. melanoleucus*
Snake, corn	*Elaphe g. guttata*	Turtle, Atlantic green	*Chelonia mydas***
Turtle, bog	*Clemmys muhlenbergii***	Turtle, wood	*Clemmys insculpta*
Atlantic hawksbill	*Eretmochelys imbricata***		
Atlantic leatherback	*Dermochelys coriacea***		
Atlantic loggerhead	*Caretta caretta***		
Atlantic Ridley	*Lepidochelys kempi***		
**Federally endangered or threatened			

AMPHIBIANS			
Endangered		**Threatened**	
Salamander, blue-spotted	*Ambystoma laterale*	Salamander, eastern mud	*Pseudotriton montanus*
Salamander, eastern tiger	*Ambystoma tigrinum*	Salamander, long-tailed	*Eurycea longicauda*
Salamander, Tremblay's	*Ambystoma tremblayi*		
Treefrog, pine barrens	*Hyla andersonii*		
Treefrog, southern gray	*Hyla chrysocelis*		

INVERTEBRATES			
Endangered		**Threatened**	
Beetle, American burying	*Nicrophorus mericanus***	Elfin, frosted (butterfly)	*Callophrys irus*
Beetle, northeastern beach tiger	*Cincindela d. dorsalis***	Floater, triangle (mussel)	*Alasmidonta undulata*
Copper, bronze	*Lycaena hyllus*	Fritillary, silver-bordered (butterfly)	*Bolaria selene myrina*
Floater, brook (mussel)	*Alasmidonta varicosa*	Lampmussel, eastern (mussel)	*Lampsilis radia*
Floater, green (mussel)	*Lasmigona subviridis*	Lampmussel, yellow (mussel)	*Lampsilis cario*
Satyr, Mitchell's (butterfly)	*Neonympha m. mitchellii***	Mucket, tidewater (mussel)	*Leptodea ochra*
Skipper, arogos (butterfly)	*Atrytone arogos arogos*	Pondmussel, eastern (mussel)	*Ligumia nasuta*
Skipper, Appalachian grizzled			

(butterfly)	*Pyrgus wyandot*	White, checkered (butterfly)	*Pontia protodic*
Wedgemussel, dwarf	*Alasmidonta heterodon***		
**Federally endangered or threatened			

MAMMALS	
Endangered	
Bat, Indiana	*Myotis sodalis***
Bobcat	*Lynx rufus*
Whale, black right	*Balaena glacialis***
Whale, blue	*Balaenoptera musculus***
Whale, fin	*Balaenoptera physalus***
Whale, humpback	*Megaptera novaeangliae***
Whale, sei	*Balaenoptera borealis***
Whale,sperm	*Physeter macrocephalus***
Woodrat, Allegheny	*Neotoma floridana magister*
**Federally Endangered	

FISH	
Endangered	
Sturgeon, shortnose	*Acipenser brevirostrum***
**Federally Endangered	

List updated 9/12/02

The lists of New Jersey's endangered and nongame wildlife species are maintained by the DEP's Division of Fish and Wildlife's Endangered and Nongame Species Program. These lists are used to determine protection and management actions necessary to ensure the survival of the state's endangered and nongame wildlife. This work is made possible through voluntary contributions received through Check-off donations to the Endangered Wildlife Conservation Fund on the New Jersey State Income Tax Form, the sale of Conserve Wildlife License Plates, and donations. For more information about the Endangered and Nongame Species Program or to report a sighting of endangered or threatened wildlife, contact the Endangered and Nongame Species, NJ Division of Fish and Wildlife, P.O. Box 400, Trenton, NJ 08625-0400, or call 609-292-9400.

4/01/02

NJ Endangered and Nongame Species Program

Special Concern – Species Status Listing

Status Definitions:

Endangered: Applies to a species whose prospects for survival within the state are in immediate danger due to one or several factors, such as loss or degradation of habitat, over-exploitation, predation, competition, disease or environmental pollution, etc. An endangered species likely requires immediate action to avoid extinction within NJ.

Threatened: Applies to species that may become Endangered if conditions surrounding it begin to or continue to deteriorate. Thus, a Threatened species is one that is already vulnerable as a result of, for example, small population size, restricted range, narrow habitat affinities, significant population decline, etc.

Special Concern: Applies to species that warrant special attention because of some evidence of decline, inherent vulnerability to environmental deterioration, or habitat modification that would result in their becoming Threatened. This category would also be applied to species that meet the foregoing criteria and for which there is little understanding of their current population status in the state.

Stable (or increasing): Applies to species that appear to be secure in NJ and not in danger of falling into any of the preceding the categories in the near future.

Undertermined: A species about which there is not enough information available to determine the status.

* **Recommended status listing, pending official adoption.**

Special Concern species listing

Birds

Species	Breeding Status	Non-breeding Status
Pied-billed Grebe (*Podilymbus podiceps*)	Endangered	Special Concern
Least Bittern (*Ixobrychus exilis*)	Special Concern	Stable
American Bittern (*Botaurus lentiginosos*)	Endangered	Special Concern
Tricolor Heron (*Egretta tricolor*)	Special Concern	Stable
Little Blue Heron (*Egretta caerulea*)	Special Concern	Special Concern
Great Blue Heron (*Ardea herodias*)	Special Concern	Stable
King Rail (*Rallus elegans*)	Special Concern	Undetermined
Whimbrel (*Numenius phaeopus*)	None	Special Concern
Spotted Sandpiper (*Actitis macularia*)	Special Concern	Stable
Sanderling (*Calidris alba*)	None	Special Concern
Common Tern (*Sterna hirundo*)	Special Concern	Stable
Black Tern (*Chlidonias niger*)	None	Special Concern
Caspian Tern (*Sterna caspia*)	Special Concern	Stable
Northern Harrier (*Circus cyaneus*)	Endangered	Special Concern
Sharp-shinned Hawk (*Accipiter striatus*)	Special Concern	Special Concern
Broad-winged Hawk (*Buteo platypterus*)	Special Concern	Stable
American Kestrel (*Falco sparverius*)	Special Concern	Undetermined
Common Barn Owl (*Tyto alba*)	Special Concern	Special Concern
Short-eared Owl (*Asio flammeus*)	Endangered	Special Concern
Common Nighthawk (*Chordeiles minor*)	Special Concern	Stable
Least Flycatcher (*Empidonax minimus*)	Special Concern	Stable
Horned Lark (*Eremophila alpestris*)	Special Concern	Stable
Cliff Swallow (*Petrochelidon pyrrhonota*)	Special Concern	Stable
Winter Wren (*Troglodytes troglodytes*)	Special Concern	Stable
Veery (*Catharus fuscescens*)	Special Concern	Stable
Gray-cheeked Thrush (*Catharus minimus*)	None	Special Concern
Solitary Vireo (*Vireo solitarius*)	Special Concern	Stable
Golden-winged Warbler (*Vermivora chrysoptera*)	Special Concern	Special Concern
Nothern Parula (*Parula americana*)	Special Concern	Stable
Cerulean Warbler (*Dendroica cerulea*)	Special Concern	Special Concern
Black-throated Green Warbler (*Dendroica virens*)	Special Concern	Stable
Kentucky Warbler (*Oporornis formosus*)	Special Concern	Special Concern
Canada Warbler (*Wilsonia canadensis*)	Special Concern	Stable
Yellow-breasted Chat (*Icteria virens*)	Special Concern	Special Concern
Grasshopper Sparrow (*Ammodramus savannarum*)	Threatened	Special Concern
Eastern Meadowlark (*Sturnella magna*)	Special Concern	Stable

Special Concern species listing – continued

Invertebrates

Dotted Skipper (butterfly), *Hesperia attalus slossonae*
Georgia [Lakehurst] Satyr (butterfly), *Neonympha areolatus septentrionalis*
Harris Checkerspot (butterfly), *Chlosyne harrisii*
Hessel's Hairstreak (butterfly), *Callophrys hesseli*
Hoary Elfin (butterfly), *Callophrys polios*
Northern Metalmark (butterfly), *Calephelis borealis*
Two-spotted Skipper (butterfly), *Euphyes bimacula*
Creeper (mussel), *Strophitus undulatus*

Herps

Marbled Salamander (*Ambystoma opacum)*
Jefferson Salamander (*Ambystoma jeffersonianum*)
Northern Spring Salamander (*Gyrinophilus p. porphyriticus)*
Carpenter Frog (*Rana virgatipes)*
Spotted Turtle (*Clemmys guttata)*
Eastern Box Turtle (*Terrapene c. carolina)*
Northern Diamondback Terrapin (*Malaclemys t. terrapin)*
Eastern Kingsnake (*Lampropeltis g. getulus)*
Northern Copperhead (*Agkistrodon contortrix mokasen)*
Coastal Plains Milk Snake integrade (*Lampropeltris triangulum triangulum* x *L. t. elapsoides)*
Fowlers Toad (Bufo woodhousii fowleri)

New York State Department of
Environmental Conservation

List of Endangered, Threatened and Special Concern Fish & Wildlife Species of New York State

More information from this division:

Fish, Wildlife and Marine Resources
Endangered Species Program

Endangered	
Molluscs:	
[1]Dwarf Wedgemussel	*Alasmidonta heterodon*
[1]Pink mucket	*Lampsilis abrupta*
[1]Clubshell	*Pleurobema clava*
[1]Fat pocketbook	*Potamilus capax*
Rayed Bean	*Villosa fabalis*
[2]Chittenango Ovate Amber Snail	*Novisuccinea chittenangoensis*
Insects:	
Tomah Mayfly	*Siphlonisca aerodromia*
[1,3]American Burying Beetle	*Nicrophorus americanus*
Hessel's Hairstreak	*Callophrys hesseli*
[1]Karner Blue	*Lycaeides melissa samuelis*
Regal Fritillary	*Speyeria idalia*
Persius Duskywing	*Erynnis persius*
Grizzled Skipper	*Pyrgus centaureae wyandot*
Arogos Skipper	*Atrytone arogos arogos*
Bog Buckmoth	*Hemileuca species 1*
Pine Pinion Moth	*Lithophane lepida lepida*
Fishes:	
[1]Shortnose Sturgeon	*Acipenser brevirostrum*

[3]Silver Chub	*Macrhybopsis storeriana*
Pugnose Shiner	*Notropis anogenus*
Round Whitefish	*Prosopium cylindraceum*
Bluebreast Darter	*Etheostoma camurum*
[3]Gilt Darter	*Percina evides*
[3]Spoonhead Sculpin	*Cottus ricei*
Deepwater Sculpin	*Myoxocephalus thompsoni*
Amphibians:	
Tiger Salamander	*Ambystoma tigrinum*
Northern Cricket Frog	*Acris crepitans*
Reptiles:	
Mud Turtle	*Kinosternon subrubrum*
[2]Bog Turtle	*Clemmys muhlenbergii*
[1]Atlantic Hawksbill Sea Turtle	*Eretmochelys imbricata*
[1]Atlantic Ridley Sea Turtle	*Lepidochelys kempii*
[1]Leatherback Sea Turtle	*Dermochelys coriacea*
Queen Snake	*Regina septemvittata*
Massasauga	*Sistrurus catenatus*
Birds:	
Spruce Grouse	*Falcipennis canadensis*
[3]Golden Eagle	*Aquila chrysaetos*
Peregrine Falcon	*Falco peregrinus*
Black Rail	*Laterallus jamaicensis*
[1,2,4]Piping Plover	*Charadrius melodus*
[1,3]Eskimo Curlew	*Numenius borealis*
[1]Roseate Tern	*Sterna dougallii dougallii*
Black Tern	*Chlidonias niger*
Short-eared Owl	*Asio flammeus*
Loggerhead Shrike	*Lanius ludovicianus*
Mammals:	
[1]Indiana Bat	*Myotis sodalis*
[3]Allegheny Woodrat	*Neotoma magister*
[1]Sperm Whale	*Physeter catodon*

[1]Sei Whale	*Balaenoptera borealis*
[1]Blue Whale	*Balaenoptera musculus*
[1]Finback Whale	*Balaenoptera physalus*
[1]Humpback Whale	*Megaptera novaeangliae*
[1]Right Whale	*Eubalaena glacialis*
[2,3]Gray Wolf	*Canis lupus*
[1,3]Cougar	*Felis concolor*
Threatened	
Molluscs:	
Brook Floater	*Alasmidonta varicosa*
Wavy-rayed Lampmussel	*Lampsilis fasciola*
Green Floater	*Lasmigona subviridis*
Insects:	
Pine Barrens Bluet	*Enallagma recurvatum*
Scarlet Bluet	*Enallagma pictum*
Little Bluet	*Enallagma minisculum*
[2,3]Northeastern Beach Tiger Beetle	*Cicindela dorsalis dorsalis*
Frosted Elfin	*Callophrys irus*
Fishes:	
Lake Sturgeon	*Acipenser fulvescens*
Mooneye	*Hiodon tergisus*
[3]Lake Chubsucker	*Erimyzon sucetta*
Gravel Chub	*Erimystax x-punctata*
[3]Mud Sunfish	*Acantharchus pomotis*
Banded Sunfish	*Enneacanthus obesus*
Longear Sunfish	*Lepomis megalotis*
Longhead Darter	*Percina macrocephala*
Eastern Sand Darter	*Ammocrypta pellucida*
Swamp Darter	*Etheostoma fusiforme*
Spotted Darter	*Etheostoma maculatum*
Amphibians:	
None Listed	
Reptiles:	

Blanding's Turtle	*Emydoidea blandingii*
[2]Green Sea Turtle	*Chelonia mydas*
[2]Loggerhead Sea Turtle	*Caretta caretta*
Fence Lizard	*Sceloporus undulatus*
Timber Rattlesnake	*Crotalus horridus*
Birds:	
Pied-billed Grebe	*Podilymbus podiceps*
Least Bittern	*Ixobrychus exilis*
[2]Bald Eagle	*Haliaeetus leucocephalus*
Northern Harrier	*Circus cyaneus*
King Rail	*Rallus elegans*
Upland Sandpiper	*Bartramia longicauda*
Common Tern	*Sterna hirundo*
Least Tern	*Sterna antillarum*
Sedge Wren	*Cistothorus platensis*
Henslow's Sparrow	*Ammodramus henslowii*
Mammals:	
[2,3]Canada Lynx	*Lynx canadensis*
Special Concern	
Molluscs:	
Buffalo Pebble Snail	*Gillia altilis*
Fringed Valvata	*Valvata lewisi*
Mossy Valvata	*Valvata sincera*
Insects:	
Unnamed Dragonfly Species	*Gomphus spec. nov.*
Southern Sprite	*Nehalennia integricollis*
Extra Striped Snaketail	*Ophiogomphus anomalus*
Pygmy Snaketail	*Ophiogomphus howei*
Common Sanddragon	*Progomphus obscurus*
Gray Petaltail	*Tachopteryx thoreyi*
Checkered White	*Pontia protodice*
Olympia Marble	*Euchloe olympia*
Henry's Elfin	*Callophrys henrici*
Tawny Crescent	*Phyciodes batesii*
Mottled Duskywing	*Erynnis martialis*

Barrens Buckmoth	*Hemileuca maia*
Herodias Underwing	*Catocala herodias gerhardi*
Jair Underwing	*Catocala jair*
A Noctuid Moth	*Heterocampa varia*
Fishes:	
Mountain Brook Lamprey	*Ichthyomyzon greeleyi*
Black Redhorse	*Moxostoma duquesnei*
Streamline Chub	*Erymystax dissimilis*
Redfin Shiner	*Lythrurus umbratilis*
Ironcolor Shiner	*Notropis chalybaeus*
Amphibians:	
Hellbender	*Cryptobranchus alleganiensis*
Marbled Salamander	*Ambystoma opacum*
Jefferson Salamander	*Ambystoma jeffersonianum*
Blue-spotted Salamander	*Ambystoma laterale*
Longtail Salamander	*Eurycea longicauda*
Eastern Spadefoot Toad	*Scaphiopus holbrookii*
Southern Leopard Frog	*Rana sphenocephala utricularius*
Reptiles:	
Spotted Turtle	*Clemmys guttata*
Wood Turtle	*Clemmys insculpta*
Eastern Box Turtle	*Terrapene carolina*
Eastern Spiny Softshell	*Apalone spinifera*
Eastern Hognose Snake	*Heterodon platyrhinos*
Worm Snake	*Carphophis amoenus*
Birds:	
Common Loon	*Gavia immer*
American Bittern	*Botaurus lentiginosus*
Osprey	*Pandion haliaetus*
Sharp-shinned Hawk	*Accipiter striatus*
Cooper's Hawk	*Accipiter cooperii*
Northern Goshawk	*Accipiter gentilis*
Red-shouldered Hawk	*Buteo lineatus*
Black Skimmer	*Rynchops niger*
Common Nighthawk	*Chordeiles minor*

Whip-poor-will	*Caprimulgus vociferus*
Red-headed Woodpecker	*Melanerpes erythrocephalus*
Horned Lark	*Eremophila alpestris*
Bicknell's Thrush	*Catharus bicknelli*
Golden-winged Warbler	*Vermivora chrysoptera*
Cerulean Warbler	*Dendroica cerulea*
Yellow-breasted Chat	*Icteria virens*
Vesper Sparrow	*Pooecetes gramineus*
Grasshopper Sparrow	*Ammodramus savannarum*
Seaside Sparrow	*Ammodramus maritimus*
Mammals:	
Small-footed Bat	*Myotis leibii*
New England Cottontail	*Sylvilagus transitionalis*
Harbor Porpoise	*Phocoena phocoena*

[1]Currently listed as "endangered" by the U. S. Department of the Interior.

[2]Currently listed as "threatened" by the U. S. Department of the Interior.

[3]Species is extirpated from New York State.

[4]Piping Plover is listed as federally endangered in the Great Lakes Region, and as federally threatened in the Atlantic Coastal Region.

Definitions

Extinct - Species is no longer living or existing.

Extirpated - Species is not extinct, but no longer occurring in a wild state within New York, or no longer exhibiting patterns of use traditional for that species in New York (e.g. historical breeders no longer breeding here).

Endangered - Any native species in imminent danger of extirpation or extinction in New York State.

Threatened - Any native species likely to become an endangered species within the foreseeable future in New York State.

Special Concern - Any native species for which a welfare concern or risk of endangerment has been documented in New York State.

Authority

Environmental Conservation Law of New York, Section 11-0535 and 6 NYCRR (New York Code of Rules and Regulations) Part 182 - effective (last promulgated in state regulation) December 4, 1999.

Revision History

Effective April 24, 2000 - Canada Lynx (*Lynx canadensis*) was added to the Threatened list.

This page was last modified on October 10, 2003

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Appendix B

Summary of Essential Fish Habitat Designation for the New York - New Jersey Harbor Estuary

Species	Eggs	Larvae	Juveniles	Adults	Spawning adults
Whiting (*Merluccius bilinearis*)	X	X	X		
Red Hake (*Urophycis chuss*)	X	X	X		
Redfish (*Sebastes fasciatus*)	n/a				
Winter flounder (*Pleuronectes americanus*)	X	X	X	X	X
Windowpane flounder (*Scophthalmus aquosus*)	X	X	X	X	X
Atlantic sea herring (*Clupea harengus*)		X	X	X	
Monkfish (*Lophius americanus*)	X	X			
Bluefish (*Pomatomus saltatrix*)			X	X	
Long finned squid (*Loligo pealei*)	n/a	n/a			
Short finned squid (*Illex illecebrosus*)	n/a	n/a			
Atlantic butterfish (*Peprilus triacanthus*)		X	X	X	
Atlantic mackerel (*Scomber scombrus*)			X	X	
Summer flounder (*Paralichthys dentatus*)		X	X	X	
Scup (*Stenotomus chrysops*)	X	X	X	X	
Black sea bass (*Centropristis striata*)	n/a		X	X	
Surf clam (*Spisula solidissima*)	n/a	n/a			
Ocean quahog (*Arctica islandica*)	n/a	n/a			
Spiny dogfish (*Squalus acanthias*)	n/a	n/a			
King mackerel (*Scomberomorus cavalla*)	X	X	X	X	
Spanish mackerel (*Scomberomorus maculatus*)	X	X	X	X	
Cobia (*Rachycentron canadum*)	X	X	X	X	
Sandbar shark (*Carcharhinus plumbeus*)		X		X	
Sand tiger shark (*Odontaspis taurus*)		X			
Dusky shark (*Carcharhinus plumbeus*)		X	X		

* indicates species within Raritan Bay-Sandy Hook Bay. Source: National Oceanic and Atmospheric Administration, National Marine Fisheries Service. Guide to Essential Fish Habitat Designations in the Northeastern U.S., http://www.nero.noaa.gov/ro/doc/index2a.htm.

Appendix C

Fish Species in Jamaica Bay, New York

Fish Species in Jamaica Bay, New York

May 2000, April 2001

Alewife (*Alosa pseudoharengus*)	Oyster toadfish (*Gadus morhua*)
American shad (*Alosa sapidissima*)	Permit (*Trachinotus falcatus*)
Atlantic croaker (*Micropogonias undulatus*)	Plee's striped Squid (*Loligo pleii*)
Atlantic herring (*Clupea harengus*)	Red hake (*Urophycis chuss*)
Atlantic menhaden (*Brevoortia tyrannus*)	Scup (*Stenotomus chrysops*)
Atlantic needlefish (*Strongylura marina*)	Sheepshead (*Archosargus probatocephalus*)
Atlantic silversides (*Menidia menidia*)	Shorthorn sculpin (*Myoxocephalus scorpius*)
Bay anchovy (*Anchoa mitchilli*)	Smallmouth flounder (*Etropus microstomus*)
Black sea bass (*Centropristis striata*)	Smooth dogfish (*Mustelus canis*)
Blueback herring (*Alosa aestivalis*)	Spot (*Leiostomus xanthurus*)
Bluefish (*Pomatomus saltatrix*)	Spotfin killifish (*Fundulus majalis*)
Butterfish (*Peprilus triacanthus*)	Spotted hake (*Urophycis regia*)
Conger eel (*Conger oceanicus*)	Striped bass (*Morone saxatilis*)
Crevalle jack (*Caranx hippos*)	Striped killifish (*Fundulus majalis*)
Cunner (*Tautogolabrus adspersus*)	Striped mullet (*Mugil cephalus*)
Inshore lizardfish (*Synodus foetens*)	Striped searobin (*Prionotus evolans*)
Lined seahorse (*Hippocampus erectus*)	Summer flounder (*Paralichthys dentatus*)
Little skate (*Raja erinacea*)	Tautog (*Tautoga onitis*)
Lookdown (*Selene vomer*)	Threespine stickleback (*Gasterosteus aculeatus*)
Marsh killifish (*Fundulus pulvereus*)	Weakfish (*Cynoscion regalis*)
Mummichog (*Fundulus heteroclitus*)	White hake (*Urophycis tenuis*)
Naked goby (*Gobiosoma bosci*)	White perch (*Morone americana*)
Northern kingfish (*Menticirrhus saxatilis*)	Windowpane flounder (*Scophthalmus aquosus*)
Northern pipefish (*Syngnathus fuscus*)	Winter flounder (*Pleuronectes americanus*)
Northern pufferfish (*Sphoeroides maculatus*)	

Appendix D

Coordination with the New Jersey Division of Fish and Wildlife, the New York State Department of Environmental Conservation, and the U.S. Army Corps of Engineers, New York District

State of New Jersey
James E. McGreevey
Governor
Department of Environmental Protection
Division of Fish and Wildlife
P.O. Box 400
Trenton, NJ 08625-0400
Martin J. McHugh, Director
Bradley M. Campbell
Commissioner

September 9, 2003

U.S. Fish and Wildlife Service
New Jersey Field Office
927 North Main Street, Bldg. D
Pleasantville, NJ 08232
Attn.: Clifford G. Day, Supervisor

Dear Mr. Day:

I am writing to inform you of the NJ Division of Fish and Wildlife's [DFW] general concurrence with the US Fish and Wildlife Service's Draft Fish and Wildlife 2(b) Coordination Act Report entitled: *Assessment of the Dredged Material Management Plan for the Port of New York and New Jersey, August 2003*. This assessment details the potential impacts to fish and wildlife that can be expected to result from the Army Corps of Engineers [ACOE] proposed management of dredged materials from within the ports of New York and New Jersey. However, while the DFW generally concurs with the draft document, we note the following corrections and additions.

Bureau of Shellfisheries (BSF)

- A correction is needed in paragraph 3 on page 12 under **III. 4. Shellfish and Finfish**. The first sentence indicates that "commercial quantities of hard clam and surf clam are harvested for depuration and relay". Only hard clams are harvested for depuration and relay; surf clams are not.
- For your information, our BSF notes that soft clams were harvested for depuration, but only for one or two years in the mid-1990's. Further, surf clams can be harvested in Prohibited [ocean] Waters for bait; they are harvested by dredge, which is not allowed in estuarine waters. There are several vessels that currently harvest bait clams in the ocean waters off Sandy Hook.

Endangered and Nongame Species Program (ENSP)

- As indicated in our review of a prior Draft 2 (b) Coordination Act Report for this same project in September 1998, our ENSP continues to remain concerned about one potential beneficial use of suitable dredged material that has not been given adequate consideration. That is, the use of suitable dredged material for creating / enhancing nesting habitat for colonial nesting waterbirds, including long-legged wading birds, common terns and least terns. Provided concerns about contamination can be adequately addressed (i.e. use of Category 1 or cleaner dredged material), such creation / enhancement is recommended on existing islands that have degraded aquatic environments and in association with the creation of any shallow water / intertidal beneficial use areas that are currently degraded [e.g. dead end basins].

Bureau of Marine Fisheries (BMF)

- Our BMF notes that section **IV. F. Contained Aquatic Disposal (CAD) Facilities (Subaqueous Pits)** highlights numerous reasons why CAD's would result in negative short-term and long-term impacts. We concur and agree with that reasoning, however, the last sentence of the section and **Recommendation 12** then states where CAD's may be sited. This is somewhat contradictory. We recommend that the idea of CAD pits be abandoned since their creation and use would only aggravate environmental impacts.
- On page 36 under **IV. B. Historic Area Remediation Site [HARS]**, the Service recommends against reliance on just invertebrate species for determining acute toxicity for management of the HARS and suggests using a vertebrate species such as Atlantic croaker. While we support the use of a vertebrate species, the choice of Atlantic croaker seems unwise. It is not common in NY / NJ Port waters and is a warm season migrant, present mainly during late summer and fall, if at all. The BMF suggests that Winter flounder (*Pleuronectes americanus*) be recommended instead. It is abundant in the area, present year-round, and closely associated with Port sediments through habitat, diet and reproduction.
- Relative to Advanced Maintenance Dredging [i.e. over-dredging to reduce the frequency of dredging], the BMF notes that some quantification needs to be given to prevent excess dredging that can result in the creation of holes or sloughs with poor water quality [i.e. anoxia caused by poor circulation and too much depth]. We suggest that this precaution be added to **Recommendation 8** and section **IV. C. Contaminant Reduction and Sediment / Dredging Reduction.**
- Minor technical corrections include the following:
  - Page 13, paragraph 1: *Rhithropanopeus harrisii* is listed as a nonnative crab; the BMF's understanding is that *R. harrisii*, a mud crab, is a native species. Perhaps the author means the green crab, *Carcinus maenas*, which is a common nonnative intertidal shore crab in the area.
  - Page 14, paragraph 3; page16, paragraph 1: the BMF notes that members of the Family Moronidae [striped bass and white perch] are referred to as just "temperate bass" and not "temperate river bass".
  - Page 22, next to the last paragraph: "marsh killifish (*F. pulvereus*)" is a Gulf Coast species not an Atlantic Coast species.
  - Page 31, next to the last paragraph: *Polinices duplicatus* is simply known as the lobed moon snail and not the 12-lobed moon shell. The BMF also notes that the northern moon snail, *Lunatia heros*, is more common in the area but is not listed.

We hope these comments are of service to you.

Sincerely,

Martin J. McHugh, Director

c. J. Fernandez, Asst. Dir.
A. Didun, OER
D. Jenkins, ENSP
J. Normant, BSF
D. Byrne, BMF
D. Raichel, USFWS

New York State Department of Environmental Conservation
Division of Environmental Permits, Region 2
47-40 21ST Street, Long Island City, NY 11101-5407
Phone: (718) 482-4997 • **FAX:** (718) 482-4975
Website: www.dec.state.ny.us

Erin M. Crotty
Commissioner

September 11, 2003
Via Fax (609-646-0352) and US MAIL

Re: NYSDEC Letter of Comment on the U.S. FWS report entitled; "Assessment of the Dredged Material Management Plan for the Port of New York and New Jersey"

Clifford G. Day, Supervisor
Ecological Services
New Jersey Field Office
United States Department of the Interior, Fish And Wildlife Services
927 North Main Street, Building D
Pleasantville, NJ 08232

Dear Mr. Day:

Thank you for the opportunity to comment on the USFWS report entitled; "Assessment of the Dredged Material Management Plan for the Port of New York and New Jersey". Department staff have reviewed the Report and generally concur with your findings.

A few comments are noted below:

1. Section IV.A - Environmental Contaminants: For the purposes of adequately characterizing sediments, USFWS recommends minimizing compositing and maximizing the number of samples. The Department emphatically agrees with this recommendation and recently has had discussions with the Corps of Engineers on this matter.

2. Section IV.B - Historic Area Remediation Site: It should be noted that federal testing does includes a fish (Menidia sp. juveniles, as well as bivalve larvae) in suspended phase tests with dredged material. As these are only 3 and 4 day tests, U.S. FWS might consider recommending the inclusion of a chronic effects test and completing development and implementation of one.

3. Section IV.C - Contaminant Reduction and Sediment / Dredging Reduction: The list of Best Management Practices includes "clam shell dredges". This may have been intentional as they are better than dragline or excavators, however, "closed bucket clamshells" is a better BMP for the dredging of contaminated sediments.

Thank you again for the opportunity to provide comment on this report.

Sincerely,

Kathryn D. McGuckin

Kathryn D. McGuckin
Environmental Analyst II

c: John Ferguson, Dredge Team Coordinator, NYSDEC Division of Environmental Permits
Alex Lechich, Marine Biologist, NYSDEC Bureau of Marine Resources
File/CHRON

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

REPLY TO
ATTENTION OF

October 27, 2003

Planning Division

Clifford G. Day, Supervisor
U.S. Fish and Wildlife Service
927 N. Main St.
Bldg D
Pleasantville, NJ 08232

Dear Mr. Day:

This letter is in response to the draft of the final Fish and Wildlife Coordination Act Report (FWCAR) on the Dredged Material Management Plan (DMMP) for the Port of New York/New Jersey that was furnished to the U.S. Army Corps of Engineers-New York District (Corps). Several minor editing comments were provided to Diana Raichel of your staff via e-mail. This letter focuses on the recommendations by the U.S. Fish and Wildlife Service (Service) provided in the report. The Corps responses to the Service recommendations are enclosed.

In general, the Service provided valuable recommendations, but many of them are more appropriately directed toward a specific project (action). The DMMP is a plan, not a Federal action. The purpose of the DMMP is to balance dredged material volumes with placement options. Specific projects that utilize dredged material will undergo their own NEPA process, including consideration of listed species and obtaining all necessary permits for each site.

Balancing the production of dredged material with its disposal has several planning tiers. The near-term (5 years) is the most predictable. With increasing distance into the future, there is increasing uncertainty in the estimates of both dredged material volume and viable placement options. For this reason the DMMP is a 'living document' that is updated periodically.

Thank you for the opportunity to comment on this draft of the final FWCAR. We look forward with you to continued cooperation on future endeavors regarding DMMP and the Port of New York and New Jersey. Should you have questions please contact Mr. Robert J. Kurtz of my staff at 212-264-2230. For specific technical details regarding placement of and volumes of material please contact Ms. Josephine Axt at 212-264-5119.

Sincerely,

Leonard Houston
Chief, Environmental Analysis Branch

Enclosure

Comments on the Summary of Conclusions and Recommendations (Part V of the Report) of the U.S. Fish and Wildlife Service contained in the draft of the final Fish and Wildlife Coordination Act 2(b) Report for the Implementation Plan of the Dredged Material Management Plan for the Port of New York/New Jersey

1. Concur. The statistical analysis of the data for early life stages of fishes is scheduled. The data for the report is currently being analyzed. The Corps anticipates being able to furnish the report to the Service during the second quarter of FY04.

2. Concur. The Corps continues to coordinate with Federal and State agencies on listed species, however, it is the individual action rather than the Dredged Material Management Plan (DMMP) that are the focus of consultation since the projects are the actual action rather than the DMMP itself. Any consultation would be the responsibility of those entities undertaking the action (e.g., a private land remediation site).

3. Do Not Concur. The non-concurrence on this recommendation stems from the purpose and basic premise of the DMMP. Because the DMMP is a plan and not an action, it does not have physical actions (e.g., sediment testing) associated with it. This falls to the individual project's actions for implementation and consideration in the production of reports and accompanying required NEPA and permit documents.

4. Do Not Concur. As stated above the DMMP is a plan, not an action. In essence there is nothing to integrate. The DMMP assesses dredge volumes and where to place them, with more certainty associated with the near-term designated sites. This is why the DMMP is a 'living document' that is revisited periodically.

5. Do Not Concur. The DMMP document is not designed to be specific in that regard, its propose is to balance volumes of dredged materials with potential placement sites in the short-term (5 years) and more uncertain in the long-term (several decades).

6. Concur. The Corps is actively in coordination with all Port partners include USEPA and the States of New York and New Jersey. Sediment contamination includes pollutants that come from many sources. The two states and the Federal government provide enforcement and are committed to strict enforcement of existing laws.

Strict administration of laws to abate pollution is important, but the entrance of contaminants into water-bodies is a complex process and, as such, will require cooperation on the part of the public to achieve the goals set forth.

7. Do not-Concur. The DMMP as a plan does not address the details of individual actions, this is the purview of the specific actions and is addressed as such in the NEPA and permit documents that are promulgated for the projects in question.

8. Concur. The Corps is actively considering this alternative. As for widening navigation channels, such projects are covered under the New York/New Jersey Harbor Navigation Study. There are instances where navigation needs exist near important fish habitat. In these instances mitigation is provided to help offset impacts.

9a. Concur. The siting process includes the consideration for avoiding sensitive areas. Sites would be subject to their own individual NEPA documents and review as well as permit review. The State of New York and New Jersey have stringent requirements in that regard.

9b. Do Not Concur- regarding the Service's recommendations on end points; this is the responsibility of those who propose individual sites, which then go through the NEPA and permitting processing. The DMMP is a plan and as such addresses issues on a more generic basis, although it does match sites that are now permitted with projected volumes of dredged material in the near-term (e.g., 5 years). Long-term placement is less certain, so the DMMP is periodically updated.

10. Do Not Concur. The use of dredged material for Beneficial Uses includes an array of material types. Some such as rock and sand will not be contaminated and their use should not present a concern for the environment regarding contaminants. Finer material can, of course, have increased risk of carrying contaminant. The material would be analyzed to determine the concentration and type of contaminants to determine best use. At some potential restoration sites current conditions prevent the expected biota associated with a properly functioning ecosystem from existing (e.g., dead end basins). Use of dredged material that has some contaminants could actually be used to improve a dead end basin by increasing water flow (e.g., filling of deep spots in the basin). Of course, sand would be placed on top as a cap.

11. Concur. Use of dredged material for land use remediation continues to be under active consideration. All sites would undergo an individual NEPA and permitting process. Dredged material used at these sites would be amended or decontaminated before placement, as necessary.

12. Concur. However, CAD pits, except those currently in use at Newark Bay pit, have now been relegated to Category 4, thus it is unlikely that they will be implemented. However, where appropriate, sites in the vicinity of contaminated surface sediment would be actively considered.

13. Concur. Upland CDF's would require state approval and permit review. The State of New York and New Jersey have stringent requirements in that regard.

14. Concur. Nearshore CDF's are currently classified as preference option 2 (fallback option) or 5, non-preferred. The two sites that are fallback options are Belford Harbor and a permitted disposal areas outside of the region. Individual actions, if implemented, would include consideration of the habitat quality of the site including the benthos. All of this would be addressed in the NEPA document and permits associated with each site, should one be determined as needed.

15. Concur. Island CDF's are currently classified as 5. This means that they are categorized as no longer under consideration for implementation.

APPENDIX B

Coastal Zone Management Report[1]

[1] These reports (CZM-NY, CZM-NJ) are not a consistency determination. They were prepared to show that the need for a consistency determination under the provisions of the Coastal Zone Management Act was recognized in the preparation of the DMMP. Consistency determinations can be developed only as part of a permitting process for a specific project derived from the DMMP planning process.

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Appendix B.1 NEW YORK COASTAL MANAGEMENT PROGRAM

1. **Project:** Dredged Material Management Plan (DMMP) for the Port of New York and New Jersey

2. **Applicant:** U.S. Army Corps of Engineers, New York District

3. **Applicable Policies:** Based on a review of the latest (August, 1982) Coastal Management Program policies for New York (including New York City), each option of the DMMP has been reviewed to identify all potentially applicable policies. Section 4 summarizes each of the 17 policies which apply to the DMMP. Section 5 consists of a table of policies applicable to each DMMP option under consideration.

4. Policies which apply to the DMMP:

a. Applicable New York State Policies:

(1) Policy 3

Further develop the State's major ports of Albany, Buffalo, New York, Ogdensburg, and Oswego as centers of commerce and industry, and encourage the siting, in these port areas, including those under the jurisdiction of State public authorities, of land use and development which is essential to, or in support of, the waterborne transportation of cargo and people.

(2) Policy 7

Significant coastal fish and wildlife habitats will be protected, preserved, and, where practical, restored so as to maintain their viability as habitats.

(3) Policy 8

Protect fish and wildlife resources in the coastal area from the introduction of hazardous wastes and other pollutants which bioaccumulate in the food chain or which cause significant sublethal or lethal effect on those resources.

(4) Policy 12

Activities or development in the coastal area will be undertaken so as to minimize damage to natural resources and property from flooding and erosion by protecting natural protective features including beaches, dunes, barrier islands and bluffs.

(5) Policy 15

Mining, excavation or dredging in coastal waters shall not significantly interfere with the natural coastal processes which supply beach materials to land adjacent to such waters and shall be undertaken in a manner which will not cause an increase in erosion of such land.

(6) <u>Policy 16</u>

Municipal, industrial, and commercial discharge of pollutants, including but not limited to, toxic and hazardous substances, into coastal waters will conform to State and National water quality standards.

(7) <u>Policy 18</u>

To safeguard the vital economic, social and environmental interests of the State and of its citizens, proposed major actions in the coastal area must give full consideration to those interests, and to the safeguards which the State has established to protect valuable coastal resource areas.

(8) <u>Policy 21</u>

Water dependent and water enhanced recreation will be encouraged and facilitated, and will be given priority over non-water related uses along the coast.

(9) <u>Policy 23</u>

Protect, enhance and restore structures, districts, areas or sites that are of significance in the history, architecture, archeology or culture of the State, its communities, or the Nation.

(9) <u>Policy 25</u>

Protect, restore or enhance natural and man-made resources which are not identified as being of statewide significance, but which contribute to the overall scenic quality of the coastal area.

(10) <u>Policy 35</u>

Dredging and dredge spoil disposal in coastal waters will be undertaken in a manner that meets existing State dredging permit requirements, and protects significant fish and wildlife habitats, scenic resources, natural protective features, important agricultural lands, and wetlands.

(11) <u>Policy 37</u>

Best management practices will be utilized to minimize the non-point discharge of excess nutrients, organics and eroded soils into coastal waters.

(12) **Policy 38**

The quality and quantity of surface water and groundwater supplies, will be conserved and protected, particularly where such waters constitute the primary or sole source of water supply.

(13) **Policy 41**

Land use or development in the coastal area will not cause National or State air quality standards to be violated.

(14) **Policy 44**

Preserve and protect tidal and freshwater wetlands and preserve the benefits derived from these areas.

b. New York City Management Plan

(1) **Policy B**

Improve channels as necessary to maintain and stimulate economic growth.

(2) **Policy G**

Maintain and protect New York City beaches to the fullest extent possible.

5. Summary table of New York policies and applicability to DMMP options

The table below identifies all New York state policies discussed in Section 4 and the DMMP options under consideration. The DMMP options include the "no action" option, contaminant reduction, sediment reduction methods, beneficial uses such as the Historic Area Remediation Site (HARS), habitat creation, and land remediation, decontamination/ treatment technologies, contained aquatic disposal pits, and confined disposal facilities (CDFs) such as upland CDFs, nearshore, CDFs, and island CDFs. An 'X' indicates that the New York policy listed is potentially applicable to the DMMP option under consideration and will be investigated in further detail if the need arises.

NY STATE POLICIES	No Action	Contam Redux	Sed Redux	HARS	Habitat Creation	Land Remediatn	Decon	CAD Pits	Upland CDFs	Nearshore CDFs	Island CDFs
Policy 3							X		X		
Policy 7			X	X	X			X		X	X
Policy 8			X	X	X	X	X	X	X	X	X
Policy 12			X		X	X	X		X	X	
Policy 15			X	X	X			X		X	X
Policy 16						X	X		X		
Policy 18			X	X	X	X	X	X	X	X	X
Policy 21			X	X	X			X		X	X
Policy 23			X	X	X	X	X	X	X	X	X
Policy 25			X	X	X	X	X	X	X	X	X
Policy 35			X	X	X	X	X	X	X	X	X
Policy 37		X	X	X	X			X	X	X	X
Policy 38					X	X	X		X	X	
Policy 41					X	X	X		X		
Policy 44					X	X	X		X		
Policy B			X		X			X		X	X
Policy G			X		X					X	

Appendix B.2 NEW JERSEY COASTAL RESOURCE AND MANAGEMENT POLICIES

1. **Project:** Dredged Material Management Plan (DMMP) for the Port of New York and New Jersey

2. **Applicant:** U.S. Army Corps of Engineers, New York District

3. **Applicable Policies:** Based on a review of the latest (December 7, 1998) amended Coastal Resource and Management Policies for New Jersey, each option of the DMMP has been reviewed to identify all potentially applicable policies. Section 4 summarizes each of the 31 policies, which apply to the DMMP. Section 5 consists of a table of policies applicable to each DMMP option under consideration.

4. **Policies which apply to the DMMP:**

7:7E-3.2 Shellfish habitat

Policy:

1. Development which would result in the destruction, condemnation (downgrading of the shellfish growing water classification) or contamination of shellfish habitat is prohibited.

    a. The term "destruction" includes actions of filling to create fast land, overboard dumping or disposal of solids or spoils which would smother shellfish populations, or create unsuitable conditions for shellfish colonization or the creation of bottom depressions with anoxic conditions.

2. Maintenance dredging (defined at N.J.A.C. 7:7E-4.11(f)) within shellfish habitat is conditionally acceptable, provided the disturbance to shellfish habitat is minimized to the greatest extent possible.

3. New dredging adjacent to shellfish habitat is discouraged in general, but may be conditionally acceptable if it can be demonstrated that the proposed dredging activities will not adversely affect shellfish habitat, population or harvest. If the Department determines dredging to be acceptable, dredging shall be managed pursuant to N.J.A.C. 7:7E-4.11(g) so as not to cause significant mortality of the shellfish due to increased turbidity and sedimentation, resuspension of toxic chemicals, or any other occurrence which will interfere with the natural functioning of the shellfish habitat.

4. Development required for national security for which there exists no other prudent and feasible alternative site is acceptable under this rule, provided that the shellfish resource is salvaged and mitigated pursuant to a plan approved in writing by the Department. The applicant is responsible for all the expenses of resource salvaging and mitigation. All such programs shall be coordinated with the appropriate shellfish management agency.

7:7E-3.3 Surf clam areas

Policy:

1. Development which would result in the destruction, condemnation, or contamination of surf clam areas is prohibited.

2. Development within surf clam areas is conditionally acceptable only if the development is of national interest and no prudent or feasible alternative sites exist.

7:7E-3.4 Prime Fishing Areas

Policy:

1. Permissible uses of prime fishing areas include recreational and commercial finfishing and shellfishing, as presently regulated by NJDEP Division of Fish, Game, and Wildlife, scuba diving and other water related recreational activities.

2. Prohibited uses include sand or gravel submarine mining which would alter existing bathymetry to a significant degree so as to reduce the high fishery productivity of these areas. Disposal of domestic or industrial waste must meet applicable State and Federal effluent limitations and water quality standards.

7:7E-3.5 Finfish migratory pathways

Policy:

1. Development, such as dams, dikes, spillways, channelization, tide gates and intake pipes, which creates a physical barrier to the movement of fish along finfish migratory pathways is prohibited, unless acceptable mitigating measures such as fish ladders, erosion control, or oxygenation are used.

2. Development which lowers water quality to such an extent as to interfere with the movement of fish along finfish migratory pathways or to violate State and Delaware River Basin Commission water quality standards is prohibited.

   a. Mitigating measures are required for any development which would result in: lowering dissolved oxygen levels, releasing toxic chemicals, raising ambient water temperature, impinging or suffocating fish, entrainment of fish eggs, larvae or juveniles, causing siltation, or raising turbidity levels during migration periods.

3. Water's edge development which incorporates migration access structures, such as functioning fish ladders, will be conditionally acceptable, provided that the NJDEP, Division of Fish, Game and Wildlife approves the design of the access structure. As of January, 1994, the NJDEP Division of Fish, Game and Wildlife is currently evaluating anadromous fish spawning areas for potential enhancement work. This may include building of fish ladders, removal of obstructions, stocking, and other means. A development proposal shall be consistent with these Department efforts.

7:7E-3.6 Submerged vegetation habitat

Policy:

1. Regulated activities in submerged vegetation habitat are prohibited except for the following:

   a. Trenching for utility pipelines and submarine cables in the public interest, provided there is no practicable or feasible alternative alignment, the impact area is minimized and that, following pipeline or cable installation, the disturbed area is restored to its preconstruction contours and conditions. This may include subsequent monitoring and replanting of the disturbed area if these species have not recolonized the disturbed area within three years. The use of directional drilling techniques for utility installations is strongly encouraged, rather than the use of trenching;

b. New dredging of State and Federal navigation channels provided that there is no practicable or feasible alternative to avoid the vegetation; and that impacts to the habitat area (for example dredging width, length and depth) are minimized to the maximum extent practicable. Mitigation will be required for destruction of one acre or more which possess submerged aquatic vegetation;

c. Maintenance dredging as defined at N.J.A.C. 7:7E-4.2(f) of previously authorized, existing State and Federal navigation channels and associated disposal areas provided that there is no practicable or feasible alternative to avoid the vegetation and that impacts to the habitat area are minimized to the maximum extent practicable;

d. New and maintenance dredging as defined at N.J.A.C. 7:7E-4.2(f), of previously authorized operating marinas and any necessary access channels to the expanded portion of such marinas (this exception does not include the boat basin of the expanded portion of the marina) and existing launching facilities with 25 or more dockage, storage or trailer parking units and their associated access channels, provided the proposed areas to be dredged (such as channel length, depths and widths) are minimized to the maximum extent practicable;

e. Maintenance dredging as defined at N.J.A.C. 7:7E-4.2(f) to regain access to existing private docks, piers, boat ramps and mooring piles not associated with marinas that were previously dredged to an authorized channel and/or mooring depth, width and length, provided there is no practicable or feasible alternative on site that would avoid dredging in submerged vegetation habitat;

2. Regulated activities in upland or water areas adjacent to submerged vegetation habitat or in submerged vegetation habitat which result in erosion or turbidity increases in the waters supporting submerged vegetation are prohibited unless mitigating measures are provided.

3. Compensation for unavoidable, permanent significant impacts to submerged vegetation habitats, when required, shall consist of the establishment of self-sustaining habitat for the appropriate species in accordance with scientifically-documented transplanting methods. Monitoring and replanting shall be carried out biannually to demonstrate persistence of the compensatory habitat for a minimum of three years. The following must be documented for any area proposed for seagrass habitat restoration: that the area previously supported seagrass but no longer does; the specific cause(s) of seagrass elimination; and that the specific condition(s) or action(s) responsible for elimination of seagrass has since ceased. Priority will be given to in-kind restoration of seagrass habitat in as close proximity as possible to the impacted site. No compensation credit will be given for attempts to plant seagrass within unvegetated interpatch areas of

existing seagrass habitat or for attempts to increase bottom coverage within existing seagrass beds (defined as an area where seagrass rhizomes overlap, or where seagrass shoots intermingle within less than one square meter).

7:7E-3.7 Navigation channels

Policy:

1. New or maintenance dredging of existing navigation channels is conditionally acceptable providing that the condition under the new or maintenance dredging rule is met (see N.J.A.C. 7:7E-4.2(f) and (g)).

2. Development which would cause terrestrial soil and shoreline erosion and siltation in navigation channels shall utilize appropriate mitigation measures.

3. Development which would result in loss of navigability is prohibited.

4. Any construction which would extend into a navigation channel is prohibited.

5. The placement of structures within 50 feet of any authorized navigation channel is discouraged, unless it can be demonstrated that the proposed structure will not hinder navigation.

7:7E-3.11 Ports

Policy:

1. Any use which would preempt or interfere with port uses of this water area is prohibited.
2. Aquaculture and dumping of solid waste or semi-solid waste is prohibited.

3. Docks and piers for cargo movements are encouraged.

7:7E-3.12 Submerged infrastructure routes

Policy:

1. Any activity which would increase the likelihood of infrastructure damage or breakage, or interfere with maintenance operations is prohibited.

7:7E-3.13 Shipwrecks and artificial reefs

Policy:

1. Acceptable uses of these submerged habitats include recreational and commercial finfishing and shellfishing, and scuba diving. In addition, construction of new or expanded artificial reefs by the deposition of weighed non-toxic material is conditionally acceptable provided that:

   a. It can be demonstrated that the material will not wash ashore and interfere with either navigation as regulated by U.S. Coast Guard or commercial fishing operations; and
   b. Placement of the material and ultimate management of the habitat is coordinated with the DEP Division of Fish, Game and Wildlife.

2. Any use, except archeological research, which would significantly adversely affect the usefulness of this special area as a fisheries resource is prohibited. Persons conducting archeological research which significantly affects the usefulness of a shipwreck for fisheries purpose shall compensate for this loss by creation of an artificial reef or equal habitat value.

7:7E-3.15 Intertidal and Subtidal Shallows

Policy:

1. Development, filling, new dredging or other disturbance is discouraged but may be permitted in accordance with the acceptability conditions found at N.J.A.C. 7:7E-4.2. Dredging is acceptable only if the following criteria are satisfied in addition to the acceptability conditions found at N.J.A.C. 7:7E-4.2:

   a. The dredging of intertidal and subtidal shallows may be acceptable to maintain adequate water depths for any existing or new marinas with 25 or more slips or public launching facilities and existing ports.

2. Submerged infrastructure is conditionally acceptable, provided that:

   a. There is no feasible alternative route that would not disturb intertidal and subtidal shallows;

   b. The infrastructure is buried deeply enough to avoid exposure or hazard;

   c. Directional drilling for the purpose of installation of submerged infrastructure is preferred to trenching where feasible; and

   d. All trenches are backfilled to the preconstruction depth with naturally occurring sediment.

3. The filling of intertidal and subtidal shallows for beach nourishment is conditionally acceptable provided it meets the requirements found under the Filling rule (N.J.A.C. 7:7E-4.2(j)) and the Coastal Engineering rule (N.J.A.C. 7:7E-7.11(d)).

4. If the destruction of intertidal and subtidal shallows takes place, mitigation shall be carried out at a ratio of one acre created to one acre lost. Mitigation sites shall be located within the same estuary whenever feasible. Specific filling activities acceptable under N.J.A.C. 7:7E-4.2(j)2iii(1) and 7.11(d) are exempt from this mitigation requirement.

7:7E-3.16 Dunes

Policy:

1. Development is prohibited on dunes, except for development that has no practicable or feasible alternative in an area other than a dune, and that will not cause significant adverse long-term impacts on the natural functioning of the beach and dune system, either individually or in combination with other existing or proposed structures, land disturbances or activities. In addition, the removal of vegetation from any dune, and the excavation, bulldozing or alteration of dunes is prohibited, unless these activities are a component of a Department approved beach and dune management plan. Examples of acceptable activities are:

2. Limited stairs, walkways, pathways and boardwalks to permit access across dunes to beaches, in accordance with N.J.A.C. 7:7E-3A , provided they cause minimum feasible interference with the beach and dune system;

3. The planting of native vegetation to stabilize dunes in accordance with N.J.A.C. 7:7E-3A;

4. Sand fencing, either a brush type barricade or picket type, to accumulate sand and aid in dune formation in accordance with N.J.A.C. 7:7E-3A;

5. Shore protection structures which meet the use conditions of N.J.A.C. 7:7E-7.11(e); and,

6. Linear development which meets the Rule on Location of Linear Development (N.J.A.C. 7:7E-6.1).

7. The creation of dunes for the purpose of shore protection is strongly encouraged. According to the National Flood Insurance Program (NFIP) Regulations established by the Federal Emergency Management Agency (FEMA), primary frontal dunes will not be considered as effective barriers to base flood storm surges and associated wave action where the cross-sectional area of the primary frontal dune, as measured perpendicular to the shoreline and above the 100-year stillwater flood elevation and seaward of the dune crest, is equal to or less than 540 square feet. This standard represents the minimal dune volume to be considered effective in providing protection from the 100-year storm surge and associated wave action, and should represent a "design dune" goal.

7:7E-3.17 Overwash Areas

Policy:

1. Development is prohibited on overwash areas, except for development that has no prudent or feasible alternative in an area other than an overwash area, and that will not cause significant adverse long-term impacts on the natural functioning of the beach and dune system, either individually or in combination with other existing or proposed structures, land disturbances or activities. Examples of acceptable activities are:

a. Creation of dunes or expansion of existing dunes in accordance with N.J.A.C. 7:7E-3A;

b. Demolition and removal of paving and structures;

c. Limited, designated access ways for pedestrians and authorized motor vehicles between public streets and the beach that provide for the minimum feasible interference with the beach and dune system and are so oriented as to provide the minimum feasible threat of breaching or over-topping as a result of storm surge or wave runup;

d. Shore protection structures which meet the use conditions of N.J.A.C. 7:7E-7.11(e);

e. Linear development which meets the Rule on Location of Linear Development (N.J.A.C. 7:7E-6.1);

f. Removal of newly deposited overwash fans from public roads and or developed lots; and

7:7E-3.19 Erosion Hazard Areas

Policy:

1. Development is prohibited in erosion hazard areas, except for:

   a. Linear development which meets the Rule on Location of Linear Development (N.J.A.C. 7:7E-6.1);

   b. Shore protection activities which meet the appropriate Coastal Engineering Use Rule (N.J.A.C. 7:7E-7.11);

7:7E-3.22 Beaches

Policy:

1. Development is prohibited on beaches, except for development that has no prudent or feasible alternative in an area other than a beach, and that will not cause significant adverse long-term impacts to the natural functioning of the beach and dune system, either individually or in combination with other existing or proposed structures, land disturbances or activities. Examples of acceptable activities are:

   a. Dune creation and related sand fencing and planting of vegetation for dune stabilization, in accordance with N.J.A.C. 7:7E-3A;

   b. The reconstruction of existing amusement and fishing piers and boardwalks;

c. Shore protection structures which meet the use conditions of N.J.A.C. 7:7E-7.11(e);

d. Linear development which meets the Rule on Location of Linear Development (N.J.A.C. 7:7E-6.1);

2. Beach maintenance activities which do not adversely affect the natural functioning of the beach and dune system, and which do not preclude the development of a stable dune along the back beach area. These activities include routine cleaning, debris removal, mechanical sifting, maintenance of access ways and Department approved dune creation and maintenance activities; and Post-storm beach restoration activities involving the placement of clean fill material on beaches, and the mechanical redistribution of sand along the beach profile from the lower beach to the upper beach. These post-storm activities, which are different than routine beach maintenance activities, must be carried out in accordance with the standards found at N.J.A.C. 7:7E-3A.

3. Public access and barrier free access to beaches and the water's edge is encouraged. Coastal development that unreasonably restricts public access is prohibited.

7:7E-3.23 Filled Water's Edge

Policy:

1. The waterfront portion of the site shall be developed with a water dependent use (see N.J.A.C. 7:7E-1.5(c) for definitions) or left undeveloped for future water dependent uses;

2. On the remaining non-waterfront portion of the site, provision of additional area devoted to water dependent or water-oriented uses may be required as a special case at locations which offer a particularly appropriate combination of natural features and opportunity for waterborne commerce and recreational boating; and

3. On large filled water's edge sites, of about 10 acres or more upland acres, where water-dependent and water-oriented uses can co-exist with other types of development, a greater mix of land uses may be acceptable or even desirable. In these cases, a reduced waterfront portion, that is, less than that provided by a 100 foot setback, may be acceptable provided that non-water related uses do not adversely affect either access to or use of the waterfront portion of the site.

4. On filled water's edge sites without direct access to navigable water, the area to be devoted to water related uses will be determined on a case-by-case basis.

5. On filled water's edge sites with an existing or pre-existing water dependent use, that is, one existing at any time since July of 1977, development must comply with the following additional conditions:

6. Along the Hudson River and in other portions of the Northern Waterfront and Delaware River Region, where water dependent uses are deemed infeasible, some part of the waterfront portion of the site may be acceptable for non-water dependent development under the following conditions:

    a. The development proposal addresses, as a minimum, past use of the site as well as potential for future water dependent, commercial, transportation, recreation, and compatible maritime support services uses;

    b. The developed land uses closest to the water's edge are water oriented;

    c. Currently active maritime port and industrial land uses are preserved;

    d. Adverse impacts on local residents and neighborhoods are mitigated to the maximum extent practicable; and

    e. All other coastal rules are met.

7:7E-3.27 Wetlands

Policy:

1. Development in wetlands defined under the Freshwater Wetlands Protection Act of 1987 is prohibited unless the development is found to be acceptable under the Freshwater Wetlands Protection Act Rules (N.J.A.C. 7:7A).

2. Development of all kinds in all other wetlands not defined in (1) above is prohibited unless the Department can find that the proposed development meets the following four conditions:

    a. Requires water access or is water oriented as a central purpose of the basic function of the activity (this rule applies only to development proposed on or adjacent to waterways). This means that the use must be water dependent as defined in N.J.A.C. 7:7E-1.5;

    b. Has no prudent or feasible alternative on a non-wetland site;

    c. Will result in minimum feasible alteration or impairment of natural tidal circulation (or natural circulation in the case of non-tidal wetlands); and

d. Will result in minimum feasible alteration or impairment of natural contour or the natural vegetation of the wetlands.

3. In particular, dumping solid or liquid wastes and applying or storing certain pesticides on wetlands are prohibited.

4. No action by the Commissioner shall prohibit, restrict or impair the exercise or performance of the powers and duties conferred or imposed by law on the Department of Environmental Protection, the Natural Resource Council and the State Mosquito Control Commission in said Department, the Department of Health, or any mosquito control or other project or activity operating under or authorized by the provisions of chapter 9 of Title 26 of Revised Statutes. This rule does not supersede the authority of the State Mosquito Commission to undertake mosquito control projects authorized by chapter 9 of Title 26 of the Revised Statutes.

5. Development that adversely affects white cedar stands such as water table drawdown, surface and groundwater quality changes and the introduction of non-native plant species is prohibited.

6. For projects which require a Waterfront Development permit, the reuse of former dredged material disposal sites for continued dredged material disposal is conditionally acceptable provided the following criteria are met:

   a. The site has been used for dredged material disposal within the past 10 years;

   b. The site has existing dikes or berms in sound condition, and/or has sufficient area of previously disposed material within the previously disturbed disposal area to allow the construction of structurally sound dikes and berms;

   c. There are no anticipated adverse effects on threatened or endangered species;

   d. There are no colonial nesting birds present on site which would be adversely affected (seasonal restrictions may be required);

   e. No wetlands regulated pursuant to the Wetlands Act of 1970 would be adversely affected

   f. The former dredged material disposal area is not subject to daily tidal innundation, and the vegetation community is limited primarily to scrub/shrub or phragmites;

   g. and the required Waterfront Development permit and Water Quality Certification are obtained

7. If an application to disturb or destroy wetlands meets the standards for permit approval, the Department will require the applicant to mitigate for the loss or degradation of the wetlands in accordance with the following:

    a. Mitigation for the loss of wetlands subject to the Freshwater Wetlands Protection Act, N.J.S.A. 13:9B-1 et seq., shall meet the standards of N.J.A.C. 7:7A.

    b. When a permit allows the disturbance or loss of wetlands by filling or other means, this disturbance or loss shall be compensated for as specified under (h)9 below unless the applicant can prove through the use of productivity models or other similar studies, that by restoring or creating a lesser area, there will be replacement of wetlands of equal ecological value. In order to demonstrate equal ecological value, the applicant shall survey and provide written documentation regarding, at a minimum, existing soil, vegetation, water quality functions, flood storage capacity, soil erosion and sediment control functions, and wildlife habitat conditions and detail how the proposed mitigation plan will replace the ecological values of the wetland to be lost or disturbed.

    c. Mitigation shall be performed prior to or concurrent with activities that will permanently disturb wetlands and immediately after activities that will temporarily disturb these habitats. Applicants shall be required to obtain a secured bond, or other surety acceptable to the Department including an irrevocable letter of credit or money in escrow, that shall be sufficient to hire an independent contractor to complete and maintain the proposed mitigation should the applicant default. The performance bond for the construction of the proposed mitigation shall be posted in an amount equal to 115 percent of the estimated cost of construction of the mitigation activity. In addition, a maintenance bond to assure the success of the mitigation shall be posted in the amount equal to 30 percent of the estimated cost of construction. The performance and maintenance bonds will be reviewed annually and shall be adjusted to reflect current economic factors.

    d. The performance bond or other surety will be released upon an inspection by the Department confirming completion of construction and planting of the mitigation site. The maintenance bond will be released upon the Department's confirmation that the three-year, post-planting monitoring period has been successfully completed and that no additional maintenance is required in order to meet the specifications of the approved mitigation plan.

    e. Where the Department permits a mitigation surface area of less than 2:1, monitoring by the permittee at a frequency determined by the Department to be appropriate on a case-by-case basis shall be required. In such cases, additional mitigation or further remedial action shall be required at a level and within the forms determined to be appropriate on a case-by-case basis by the Department when the Department determines that a net loss of equal ecological value occurs. Under no circumstances shall the mitigation area be smaller than the disturbed area. Creation of wetlands from existing natural resources protected under the applicable Special Area Rules (N.J.A.C. 7:7E-3) is not an acceptable form of mitigation, nor is transfer of title of existing wetlands or intertidal or subtidal shallows to a government agency or conservation organization.

8. The Department will not consider a mitigation proposal in determining whether a project should be awarded a permit, but will require mitigation as a condition of any permit found to be acceptable under the criteria listed in N.J.A.C. 7:7A-3 and/or N.J.A.C. 7:7E-3.15 and 3.27.

9. As a condition of every creation or enhancement plan authorized under this subsection, an applicant shall sign a Department approved conservation easement and register this restriction on the deed for the subject parcel. This restriction will provide that no regulated activities will occur in the created or enhanced wetland area. This restriction shall be memorialized in a deed restriction meeting the Department's requirements and shall run with the land and be binding upon the applicant and the applicant's successors in interest in the premises or any part thereof. The permit will not become effective until the deed restriction is registered with the county clerk or Registrar of Deeds and Mortgages, if applicable. Any regulated activities undertaken on the site before a copy of the registered restriction is submitted to the Department will be considered in violation of these rules.

10. No future development will be permitted on the mitigation site unless the Department finds that the regulated activity has no practicable alternative which would:

    a. Not involve a wetland site;

    b. Involve a wetland but would have a less adverse impact on the aquatic ecosystem;

    c. Not have other significant adverse environmental consequences, that is it shall not merely substitute other significant environmental consequences, for those attendant on the original proposal; and

    d. There is a compelling public need for the activity greater than the need to protect the mitigation site.

11. The Department distinguishes between four types of mitigation: restoration, creation, enhancement, and contribution. Depending on the circumstances under which

wetlands are lost or disturbed, different types of mitigation may be required by the Department. The types of mitigation are explained below, in decreasing order of their desirability:

12. Restoration refers to actions performed on the site of a regulated activity, within six months of the commencement of the regulated activity, in order to reverse or remedy the effects of the activity on the wetland and to restore the site to preactivity condition.

13. Restoration shall be required at a ratio of one acre created to one acre lost or disturbed. If restoration actions are performed more than six months after the commencement of the regulated activity which disturbed the wetland, these actions will no longer be considered restoration, but will be considered creation, and will be governed by the provisions of (h)9ii(3) below.

14. If restoration actions are performed on degraded wetlands offsite, these actions will be considered enhancement and will be governed by the provisions of (h)9iii below.

15. Creation refers to actions performed to establish wetland characteristics, habitat and functions on:

    a. A non-wetlands site; or

    b. A former wetlands site which has been filled or otherwise disturbed such that it no longer retains wetland characteristics. If the site retains wetland characteristics such that it meets the definition of a degraded wetland pursuant to N.J.A.C. 7:7A-1.4, it is not eligible for use in creation. Rather, it is only eligible for enhancement activities pursuant to (h)9iii below. If the disturbance to a formerly wetlands site is the result of a violation of the Freshwater Wetlands Protection Act and/or the Wetlands Act of 1970, the Department may, at its discretion, condition an approval of a mitigation proposal, or a permit, or both, on the resolution of the violation.

16. Creation will be required at a ratio of two acres created to one acre lost or disturbed. Under no circumstances shall the mitigation area be smaller than the disturbed area.

17. Creation shall not be permitted on a site that retains wetlands characteristics.

18. Enhancement refers to actions performed to improve the characteristics, habitat and functions of an existing, degraded wetland such that the enhanced wetland will have resource values and functions similar to an undisturbed wetland. The enhancement requirement will be determined on a case-by-case basis.

19. Contribution refers to the donation of money or land. The Department will permit the donation of land only after determining that all alternatives to the donation are not practicable or feasible, or that the permanent protection of the land will provide

ecological benefits equal to or greater than those resulting from the creation of wetlands. This determination will be made in consultation with the United States Environmental Protection Agency (USEPA) for freshwater wetlands. Monies donated shall be used for the purchase of land to provide areas for wetland losses, to provide areas for restoration of degraded wetlands, and to provide areas to preserve wetlands and transition areas determined to be of critical importance, and the transfer of funds for research to enhance the practice of mitigation. If money is donated, the Department will require an amount equivalent to the lesser of the following costs:

a. **Purchasing and enhancing existing degraded wetlands, resulting in preservation of wetlands of equal ecological value to those which are being lost; or**
b. Purchase of property and the cost of creation of wetlands of equal ecological value to those which are being lost.

20. If the Department determines that land may be donated as part or all of a contribution to mitigate for the destruction of freshwater wetlands, the Wetlands Mitigation Council must first determine that the donated land has the potential to be a valuable component of the wetlands ecosystem.

21. All mitigation projects shall be carried out on-site to the maximum extent practicable. Mitigation of wetlands, on- site or off-site, from other existing climax habitats is not practicable and is discouraged.

    a. If on-site mitigation is found to be impracticable, off-site mitigation shall be considered and implemented within the same watershed or estuary if feasible.
22. All mitigation proposals submitted to the Department shall be prepared in accordance with N.J.A.C. 7:7E-3B.

7:7E-3.28 Wetlands Buffers

Policy:

1. Development is prohibited in a wetlands buffer around all other wetlands, unless it can be demonstrated that the proposed development will not have a significant adverse impact and will cause minimum feasible adverse impact, through the use of mitigation where appropriate on the wetlands, and on the natural ecotone between the wetlands and surrounding upland. The precise geographic extent of the actual wetlands buffer required on a specific site shall be determined on a case-by-case basis using these standards.

7:7E-3.36 Historic and Archaeological Resources

Policy:

1. Development that detracts from, encroaches upon, damages, or destroys the value of historic and archaeological resources is discouraged.

2. Development that incorporates historic and archaeological resources in sensitive adaptive reuse is encouraged.

3. Scientific recording and/or removal of the historic and archaeological resources or other mitigation measures must take place if the proposed development would irreversibly and/or adversely affect historic and archaeological resources. Surveys and reports to identify and evaluate historic and archaeological resources potentially eligible for the New Jersey or National Registers shall be performed by professionals who meet the National Park Service's Professional Qualifications Standards in the applicable discipline. Professional procedures and reports shall meet the applicable Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation and the New Jersey Historic Preservation Office's professional reporting and surveying guidelines, once these guidelines are promulgated as rules, in accordance with the Administrative Procedure Act, N.J.S.A. 52:14B-1 et seq. A description of the qualifications and performance standards is available at the Historic Preservation Office.

4. New development in undeveloped areas near historic and archaeological resources is conditionally acceptable, provided that the design of the proposed development is compatible with the appearance of the historic and archaeological resource. For archaeological resources within the area of the undertaking, avoidance and protection is appropriate. When this is not feasible and prudent, and these resources are of value solely for the information which they contain, archaeological data recovery to mitigate the project impact will be required.

5. Recovery of shipwrecks consistent with the protection of historic values and environmental integrity of shipwrecks and their sites may be permitted subject to the following conditions:

   a. The proposed project is in the public interest;

   b. The archaeological knowledge gained will outweigh the loss to future archaeological research and to the public of the preserved shipwreck;

   c. The applicant has expertise in underwater archaeology as outlined by the Federal Requirements 36 CFR 66, pursuant to the Archaeological and Historic Preservation Act of 1974 (P.L. 93-291), and through the National Environmental Policy Act, the National Historic Preservation Act of 1966, (as amended), the Abandoned Shipwreck Act of 1987, and their respective implementing regulations and guidelines;

   d. Artifacts will be recovered in an archaeologically appropriate manner;

   e. Recovered artifacts will be analyzed and inventoried, and as appropriate, preserved, restored, and/or made accessible to future researchers;

f. Two copies of a professional archaeological report will be prepared for the Department giving the following information about the shipwreck and its excavation: Historic background, description of environment, salvage methodology, artifact analysis, description of techniques used in preservation of artifacts, base map, narrative and grid map on artifacts recovered, bibliography, photographs, National Register documentation and conclusions; and

g. The entire exploration and salvage effort will be in accordance with the Secretary of the Interior's 1983 Standards and Guidelines for Archaeology and Historic Preservation, and the Department of the Interior's 1990 Abandoned Shipwreck Act Final Guidelines which are available from the Historic Preservation Office.

h. The Department may require the submission of a cultural resource survey report if it is determined that there is a known historic or prehistoric resource in the project area, or a reasonable potential for the presence of such a resource, which may be affected by a proposed development. However, in general, such surveys will not be required for the developments and/or sites listed below:

6. The ultimate decision on the requirement for a cultural resource survey will be made by the Department's Land Use Regulation Program, based on information received in response to public comments or information provided by the New Jersey Historic Preservation Office regarding the presence of known historic and prehistoric resources or the potential for their presence.

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

Policy:

1. Development of this special area is prohibited unless it can be demonstrated that endangered or threatened wildlife or vegetation species habitat would not directly or through secondary impacts on the relevant site or in the surrounding area be adversely affected.

7:7E-3.40 Public Open Space

Policy:

1. New or expanded public or private open space development is encouraged at locations compatible or supportive of adjacent and surrounding land uses.

2. Development that adversely affects existing public open space is discouraged.

3. Development within existing public open space is conditionally acceptable, provided that the development complies with the Rules on Coastal Zone Management and is consistent with the character and purpose of public open space, as described by the park master plan when such a plan exists.

4. Provision of barrier free access to public open space is encouraged.

5. All new development adjacent to public open space will be required to provide an adequate buffer area and to comply with the Buffers and Compatibility of Uses rule (N.J.A.C. 7:7E-8.13). The buffer required will be dependent upon adjacent land uses and potential conflicts between users of public open space and the proposed adjacent land use.

7:7E-3.41 Special Hazard Areas

Policy:

1. Coastal development, especially residential and labor-intensive economic development, within special hazard areas is discouraged. All development within special hazard areas must include appropriate mitigating measures to protect the public health and safety.

7:7E-3.43 Special Urban Areas

Policy:

1. Development that will help to restore the economic and social viability of special urban areas is encouraged. Development that would adversely affect the economic well being of these areas is discouraged, when an alternative which is more beneficial to the special urban areas is feasible. Development that would be of economic and social benefit and that serves the needs of local residents and neighborhoods is encouraged.

2. Where piers have been removed as part of the harbor clean up program, the equivalent pier area may be replaced in either the same or other nearby location;

3. Where structurally sound existing pilings have been reconfigured, provided that the total area of water coverage is not increased and that fisheries resources are not adversely impacted; or

4. Where expansion of the existing total area water coverage has occurred, provided that it can be shown that extensions are functionally necessary for water dependent uses. For example, additional piers and pilings would be conditionally acceptable for a marina which is a water dependent use.

7:7E-3.45 Hackensack Meadowlands District

Policy:

1. The HMDC will act as the lead coastal planning and management agency within this Special Area. The HMDC Master Plan Zoning Rules (N.J.S.A. 19:4) are adopted as part of the Coastal Management Program (see Appendix I) and the Hackensack Meadowlands District is designated a Geographic Area of Particular Concern (see section on GAPS in Chapter 4). The Division will periodically review Commission actions and will consider incorporating any proposed changes in HMDC plans or policies into the Coastal Management Program with particular attention to continued protection of wetlands and other environmental resources.

2. Coastal activities under the jurisdiction of the HMDC shall not require a Freshwater Wetlands permit, or be subject to transition area requirements of the Freshwater Wetlands Protection Act, except that discharge of dredged or fill materials may require a permit issued under the provisions of Section 404 of the Federal Water Pollution Control Act of 1972 as amended by the Federal Clean Water Act of 1977, or under an individual or general permit program administered by the State under the provisions of the Federal Act and applicable State laws.

7:7E-4.2 (f) Standards relevant to maintenance dredging are as follows:

Policy:

1. Maintenance dredging is conditionally acceptable to the authorized depth, length and width within all General Water Areas to ensure that adequate water depth is available for safe navigation, provided that:

    a. An acceptable dredged material disposal site with sufficient capacity exists (see (g) below and N.J.A.C. 7:7E-7.12 for rules on dredged material disposal).

    b. Pre-dredging chemical and physical analysis of the dredged material and/or its elutriate may be required where the Department suspects contamination of sediments. Additional testing, such as bioaccumulation testing, and bioassay of sediments, may also be required. The results of these tests will be used to determine if contaminants may be resuspended at the dredging site and what methods may be needed to control their escape. The results will also be used to determine acceptability of the proposed disposal method.

    c. Turbidity concentrations (that is, suspended sediments) and other water quality parameters at, downstream, and upstream of the dredging site, and slurry water overflows shall meet applicable State Surface Water Quality Standards in N.J.A.C. 7:9-4. NJDEP may require the permittee to conduct biological, physical and chemical water quality monitoring before, during and after dredging and disposal operations to ensure that water quality standards will not be exceeded.

    d. If predicted water quality parameters are likely to exceed State Surface Water Quality Standards, or if pre- dredging chemical analysis of dredged material or elutriate reveals significant contamination, then the Department will work cooperatively with the applicant to fashion acceptable control measures and will impose seasonal restrictions under the specific circumstances identified below.

    e. For maintenance dredging using mechanical dredges such as clamshell bucket, dragline, grab, orange peel, or ladders, deploying silt curtains at the dredging site may be required, if feasible based on site conditions. In sites at which the use of silt curtains is infeasible, dredging using closed watertight buckets or lateral digging buckets will be examined. NJDEP may decide not to allow mechanical dredging of highly contaminated sites even if turbidity control measures were planned.

f. In the waterways characterized below, if the applicant for mechanical maintenance dredging cannot meet the acceptability conditions in (f)i through v above, then the Department will authorize dredging on a seasonally restricted basis only, in waterways characterized by the following:

(1) Known spawning or nursery areas of Endangered shortnose sturgeon (N.J.A.C. 7:7E-3.38);

(2) Known spawning sites of anadromous fishes such as: Atlantic sturgeon; alewife; blueback herring; and striped bass;

(3) Waterbodies downstream of known anadromous fish spawning sites, as in N.J.A.C. 7:7E-3.9, where the predicated turbidity plume will encompass the entire cross-sectional area of the water body, thus forming a potential blockage to upstream migration;

(4) Areas of contaminated sediments with high levels of fecal coliform and/or streptococcus bacteria, and/or hazardous substances adjacent to (upstream or downstream) State approved shellfishing waters and public or private bathing beaches;

(5) Areas within 1,000 meters or less of oyster beds as defined in N.J.A.C. 7:7E-3.2; or

(6) Known female blue crab winter hibernation areas. These typically are located in higher salinity water near bay mouths.

g. For hydraulic dredges, if the applicant cannot meet the above acceptability conditions in (f)i through v above, specific operational procedures, such as removal of cutter head, flushing of pipeline sections prior to disconnection, limitations on depth of successive cuts, etc. shall be examined. Seasonal dredging restrictions may be imposed in the following areas to prevent entrainment and mortality of aquatic organisms:

(1) Known female blue crab winter hibernation areas;

(2) Known spawning, nursery, or wintering areas of the endangered shortnose sturgeon as in N.J.A.C. 7:7E-3.38 and/or winter flounder; or

(3) Known wintering areas of adult Atlantic or shortnose sturgeon, striped bass and/or white perch.

h. To mitigate adverse impacts upon Shellfish Habitat (N.J.A.C. 7:7E-3.2) or Endangered and Threatened Wildlife or Vegetation Species Habitat (N.J.A.C. 7:7E-3.38), Finfish Migratory Pathways (N.J.A.C. 7:7E-3.5), Marine Fish and

Fisheries (N.J.A.C. 7:7E-8.2) and wintering area for finfish or blue crabs, and to prevent reduction of ambient dissolved oxygen below critical levels, or the increase of turbidity or the resuspension of toxic substances above critical levels, seasonal limitations may be imposed on maintenance dredging as specifically described in this subsection.

7:7E-4.2 (g) Standards relevant to new dredging are as follows:

Policy:

1. New dredging is conditionally acceptable in all General Water Areas for boat moorings, navigation channels or anchorages (docks) provided that:

    a. There is a demonstrated need that cannot be satisfied by existing facilities;

    b. The facilities served by the new dredging satisfy the location requirements for Special Water's Edge Areas;

    c. The adjacent water areas are currently used for recreational boating, commercial fishing or marine commerce;

    d. The dredge area causes no significant disturbance to Special Water or Water's Edge Areas;

    e. The adverse environmental impacts are minimized to the maximum extent feasible;

    f. Dredging will be accomplished consistent with all conditions described under the maintenance dredging provisions, (f)2(i) through vii above, as appropriate to the dredging method;

    g. An acceptable dredge spoil disposal site exists;

    h. The dredge area is reduced to the minimum practical;

2. The maximum depth of the newly dredged area shall not exceed that of the connecting access or navigation channel necessary for vessel passage to bay or ocean; and

    a. Dredging will have no adverse impacts on groundwater resources.

3. To mitigate adverse impacts upon Shellfish Habitat (N.J.A.C. 7:7E-3.2), Endangered or Threatened Wildlife or Vegetation Species Habitat (N.J.A.C. 7:7E-3.38), Finfish Migratory Pathways (N.J.A.C. 7:7E-3.5), Marine Fish and Fisheries (N.J.A.C. 7:7E-8.2), spawning or wintering areas for finfish, or female blue crab wintering areas, and to prevent reduction of ambient dissolved oxygen below critical levels, or the increase of turbidity or the resuspension of toxic substances above critical levels, seasonal and/or dimensional limitations may be imposed on new dredging.

4. New dredging or excavation to create new lagoons for residential development is prohibited in Wetlands, Wetlands Buffer, Endangered or Threatened Wildlife or Vegetation Species Habitats as defined in N.J.A.C. 7:7E-3.25, 3.26 and 3.40 and discouraged elsewhere.

5. New dredging is conditionally acceptable to control siltation in lakes, ponds and reservoirs, provided that an acceptable sedimentation control plan is developed to address re-sedimentation of these water bodies.

7:7E-4.2 (h) Standards relevant to dredged material disposal are as follows:

Policy:

1. Dredged material disposal is prohibited in tidal guts, man-made harbors, and medium rivers, creeks and streams.

2. Dredged material disposal is discouraged in open bays, semi-enclosed and backbays where the water depth is less than six feet.

3. Disposal of dredged materials in the ocean and bays deeper than six feet is conditionally acceptable provided that it is in conformance with the USEPA and US Army Corps of Engineers Guidelines parts 220-228 and 33 CFR, Parts 320-330 and 335-338) established under Section 404(b) of the Clean Water Act.

4. EPA Guidelines require that consideration be given to the need for the proposed activity, the availability of alternate sites and methods of disposal that are less damaging to the environment, and applicable water quality standards. They also require that the choice of the site minimize harm to municipal water supply intakes, shellfish, fisheries, wildlife, recreation, threatened and endangered species, benthic life, wetlands and submerged vegetation, and that it be confined to the smallest practicable area.

5. Overboard disposal (also known as aquatic, open water, side casting, subaqueous or wet) of uncontaminated sediments into unconfined disposal sites is conditionally acceptable in existing anoxic dredge holes, provided that data on water quality, benthic productivity and seasonal finfish use evidence limited biological value and submerged elbow or underwater diffuser is used. The hole shall not be filled higher than the depth of the surrounding waters.

6. Overboard disposal of sediments less than 90 percent sand shall be acceptable in unconfined disposal sites when shallow waters preclude removal to an upland or confined site provided that: Shellfish Habitats (as defined in N.J.A.C. 7:7E-3.2) are not within 1,000 meters; disposal will not smother or cause condemnation or contamination of harvestable shellfish resources (as in N.J.A.C. 7:7E-3.2); and sediment characteristics of the dredged material and disposal site are similar. If unconfined aquatic disposal can not meet these conditions, then NJDEP shall impose a seasonal restriction appropriate to the resource of concern.

7. Uncontaminated dredged sediments with 75 percent sand or greater are generally encouraged for beach nourishment.

8. Dredged material disposal in lakes, ponds and reservoirs is prohibited.

9. 9.. Conditions for dredged material disposal on land are indicated in N.J.A.C. 7:7E-7.12.

7:7E-4.2 (i) Standards relevant to dumping (solid waste or sludge) are as follows: Policy:

1. Filling is prohibited in lakes, ponds, reservoirs, and open bay areas at depths greater than 18 feet, unless the filling is consistent with the Freshwater Wetlands Protection Act (N.J.S.A. 13:9B-1 et seq.) and Regulations, N.J.A.C. 7:7A.

2. In all other natural water areas, filling is discouraged, but limited filling may be considered for acceptability provided that:

   a. The use that requires the fill is water dependent;

   b. There is a demonstrated need that cannot be satisfied by existing facilities;

   c. There is no feasible or practical alternative site on an existing Water's Edge;

   d. The minimum practical area is filled;

   e. The adverse environmental impacts are minimized, e.g. by compensating for the loss of aquatic habitat by creation of an area of equivalent or greater environmental value elsewhere in the same estuary;

   f. Minimal feasible interference is caused to Special Areas; and

   g. Pilings and columnar support or floating structures are unsuitable for engineering or environmental reasons.

3. Filling in a man-made lagoon is discouraged unless it complies with the conditions found under (j)2ii above or the following two conditions:

   a. In those areas where two existing lawful bulkheads are not more than 75 feet apart and no limit of fill line has been promulgated, the connecting bulkhead may not extend seaward of a straight line connecting the ends of the existing bulkheads. Compliance with the mitigation rule shall not be required in such cases.

b. Elsewhere, the proposed retaining structure shall not extend seaward of the spring high water line.

c. In no event may regulated wetlands be filled except under the conditions of the Wetlands Special Area Rule (N.J.A.C. 7:7E-3.27).

4. Filling using clean sediment of suitable particle size and composition is acceptable for beach nourishment projects (see the Coastal Engineering Use Rules N.J.A.C. 7:7E-7.11).

5. Standards relevant to the removal of unauthorized fill are as follows:

a. For filling which took place prior to September 26, 1980 (the effective date of the Rules on Coastal Zone Management, N.J.A.C. 7:7E), or prior to September 28, 1978 for areas within the coastal area defined at N.J.S.A. 13:19-4 (CAFRA), removal shall be required only if the fill has resulted in ongoing significant adverse environmental impacts, such as the blocking of an otherwise viable tidal wetland or waterbody, and its removal will alleviate the adverse impacts.

b. For filling which took place subsequent to September 26, 1980 (or subsequent to September 28, 1978 for areas within the coastal area defined at N.J.S.A. 13:19-4), removal shall be required if it violates the acceptability conditions for filling in water areas set forth in this subsection.

7:7E-4.2 (l) Standards relevant to sand and gravel extraction are as follows:

Policy:

1. Sand and gravel extraction is prohibited in lakes, ponds and reservoirs, man-made harbors and tidal guts unless the waterbody was created by the extraction process, in which case the use is conditionally acceptable. This activity is discouraged in all other General Water Areas. In these General Water Area types, priority will be given to sand extraction for beach nourishment, and extraction is conditionally acceptable provided that:

a. Special areas are not directly or indirectly degraded;

b. Turbidity and resuspension of toxic materials is controlled throughout the extraction operation consistent with the Department's Surface Water Quality Standards (N.J.A.C. 7:9-4);

c. There is an acceptable disposal site for the waste from washing operations;

d. In rivers, creeks and streams, the depth of water at the mining site is at least six feet MLW;

e. The mining will not increase shoreline erosion; and

f. The mining will not create anoxic water conditions.

7:7E-7.11 Coastal Engineering

Policy:

1. Non-structural solutions to shoreline erosion problems are preferred over structural solutions. Vegetative shore protection measures have been proven effective, and are preferred at shoreline sites in which they are feasible. Feasibility is dependent on the following factors: shoreline geometry; shoreline slope; sediment type; boat traffic; and wind and extent of exposed land/water surface (fetch). The infeasibility and impracticability of a non-structural solution must be demonstrated before structural solutions may be deemed acceptable.

7:7E-7.11 (d) Standards relevant to beach nourishment are as follows:

Policy:

1. Beach nourishment projects, such as non-structural shore protection measures, are encouraged, provided that:

a. The particle size and type of the fill material is compatible with the existing beach material to ensure that the new material will not be removed to a greater extent than the existing material would be by normal tidal fluctuations;

b. The elevation, width, slope, and form of proposed beach nourishment projects are compatible with the characteristics of the existing beach;

c. The sediment deposition will not cause unacceptable shoaling in downdrift inlets and navigation channels; and

d. Public access to the nourished beach is provided in cases where public funds are used to complete the project.

7:7E-7.11 (e) Standards relevant to structural shore protection are as follows:

Policy:

1. The construction of new shore protection structures or expansion or fortification of existing shore protection structures, including, but not limited to, jetties, groins, seawalls, bulkheads, and other retaining structures to retard longshore transport and/or to prevent tidal waters from reaching erodible material is acceptable only if it meets all of the following five conditions:

a. The structure is essential to protect water dependent uses or heavily used public recreation beach areas in danger from tidal waters or erosion, or the structure is essential to protect existing structures and infrastructure in developed shorefront areas in danger from erosion, or the structure is essential to mitigate, through, for example, the construction of a retained earthen berm, the projected erosion in an erosion hazard area along a headland and provide erosion protection for a development that is otherwise acceptable under the Rules on Coastal Zone Management;

b. The structure will not cause significant adverse impacts on local shoreline sand supply;

c. The structure will not create net adverse shoreline sand movement downdrift, including erosion or shoaling;

d. The structure will cause minimum feasible adverse impact to living marine and estuarine resources;

e. The structure is consistent with the State's Shore Protection Master Plan;

f. If the proposed project requires filling of a water area it must be consistent with the General Water Area rule for Filling (N.J.A.C. 7:7E-4.2(j)) and all other relevant coastal rules.

2. Maintenance or reconstruction of an existing bulkhead is conditionally acceptable, provided it does not result in the extension of the structure or the upland by more than 18 inches in any direction. Maintenance or reconstruction of an existing bulkhead which results in extension of the structure or upland by more than 18 inches shall be considered new construction, unless it can be demonstrated that the existing bulkhead can not physically accommodate an 18 inch replacement. In such cases, the Department may allow for bulkhead replacement at a location which is as close as physically possible to the existing bulkhead sheathing. All measurements shall be made from the waterward face of the existing bulkhead sheathing to the waterward face of the new bulkhead sheathing.

3. Stone rip-rap and sloped concrete revetments which allow for the growth of vegetation are the preferred form of retaining structures.

4. Public access, including parking where appropriate, must be provided to publicly funded shore protection structures and to waterfront land created by public projects, unless public access would create a safety hazard to users. Physical barriers or local regulations which unreasonably interfere with access to, along or across a structure are prohibited.

5. The construction of bulkheads subject to wave runup forces (V-Zones) must be designed and certified by a professional engineer to withstand the forces of wave runup, and must include a splash pad on the landward side. The splash pad must have a minimum width of 10 feet, and may be constructed of concrete, asphalt or other erosion resistant material. If a cobblestone or similar splash pad is utilized, appropriate subbase and filter cloth must be incorporated into the design. A provision for the use of rip-rap along the seaward toe of the bulkhead structure may be required on a case-by-case basis, as a means to limit the scour potential.

7:7E-7.12 Dredge Spoil Disposal on Land

Policy:

1. Dredged material disposal is conditionally acceptable under the following conditions: sediments are covered with appropriate clean material that is similar in texture to surrounding soils, and the sediments will not pollute the groundwater table by seepage, degrade surface water quality, present an objectionable odor in the vicinity of the disposal area, or degrade the landscape.

2. 2.Dredged material disposal is prohibited on wetlands unless the disposal satisfies the criteria found at N.J.A.C. 7:7E-3.27.

3. The use of uncontaminated dredged material of appropriate quality and particle size for beach nourishment is encouraged. Creation of useful materials such as bricks and lightweight aggregate from the dredged material is encouraged.

4. The use of uncontaminated dredged material for purposes such as restoring landscape, enhancing farming areas, creating recreation-oriented landfill sites, including beach protection and general land reclamation, creating marshes, capping contaminated dredged material disposal areas, and making new wildlife habitats is encouraged.

5. Effects associated with the transfer of the dredged materials from the dredging site to the disposal site shall be minimized to the maximum extent feasible.

6. Dredged material disposal in wet and dry borrow pits is conditionally acceptable (see N.J.A.C. 7:7E-3.14, and 3.35).

7. If pre-dredging sediment analysis indicates contamination, then special precautions shall be imposed including but not necessarily limited to increasing retention time of water in the disposal site or rehandling basin through weir and dike design modifications, use of coagulants, ground water monitoring, or measures to prevent biological uptake by colonizing plants.

8. Dewatering releases from confined (diked) disposal sites and rehandling basins shall meet existing State Water Quality Standards (N.J.A.C. 7:9-4 through 6).

7:7E-8.2 Marine Fish and Fisheries

Policy:

1. Coastal actions are conditionally acceptable to the extent that minimal feasible interference is caused to the natural functioning of marine fish and fisheries, including the reproductive and migratory patterns of estuarine and marine estuarine-dependent species of finfish and shellfish.

7:7E-8.4 Water Quality

Policy:

1. Coastal development which would violate the Federal Clean Water Act, or State laws, rules and regulations enacted or promulgated pursuant thereto, is prohibited. In accordance with N.J.A.C. 7:15 concerning the Water Quality Management Planning and Implementation process, coastal development that is inconsistent with an approved Water Quality Management (208) Plan under the New Jersey Water Quality Planning Act, N.J.S.A. 58:11A-1 et seq., is prohibited.

7:7E-8.5 Surface Water Use

Policy:

1. Coastal development shall demonstrate that the anticipated surface water demand of the facility will not exceed the capacity, including phased planned increases, of the local potable water supply system or reserve capacity and that construction of the facility will not cause unacceptable surface water disturbances, such as drawdown, bottom scour, or alteration of flow patterns.

7:7E-8.6 Groundwater Use

1. Coastal development shall demonstrate, to the maximum extent practicable, that the anticipated groundwater withdrawal demand of the development, alone and in conjunction with other groundwater diversions proposed or existing in the region, will not cause salinity intrusions into the groundwaters of the zone, will not degrade groundwater quality, will not significantly lower the water table or piezometric surface, or significantly decrease the base flow of adjacent water sources. Groundwater withdrawals shall not exceed the aquifer's safe yield.

7:7E-8.7 Stormwater Management

Policy:

1. Coastal development shall employ a site design which, to the extent feasible, minimizes the amount of impervious coverage on a project site. In addition, the development shall use the best available technology to minimize the amount of stormwater generated, minimize the rate and volume of off-site stormwater runoff, maintain existing on-site infiltration, simulate natural drainage systems and minimize the discharge of pollutants to ground or surface waters. Consistent with the provisions of the Stormwater Management rule, the overall goal of the post-construction stormwater management system design shall be the reduction from the predevelopment level of total suspended solids (TSS) and soluble contaminants in the stormwater .

    a. Non-structural management practices, including, but not limited to, cluster land use development, minimum site disturbance, open space acquisition, use of sheet flow from streets and parking areas, and the protection of wetlands, steep slopes and vegetation shall be incorporated into project designs. These non-structural management practices shall be utilized, unless it is demonstrated that these practices are not feasible, from an engineering perspective, on a particular site.

b. In determining the appropriate stormwater management system design for a particular project, the existing physical site conditions must be carefully considered. Slopes, depth to seasonal high water table, soil type and texture, watershed area, and property areas are all critical to the selection of a suitable stormwater management technique or combination of techniques.

c. Standards relevant to stormwater management system design are as follows:

1. All stormwater management systems shall be designed in accordance with this section, and shall be consistent with the Standards for Soil Erosion and Sediment Control in New Jersey (N.J.A.C. 2:90). The use of control techniques not specifically listed in this section will be evaluated on a case-by-case basis, and may be permitted in conjunction with the techniques discussed in this section. Alternative techniques may be acceptable, provided that it can be demonstrated that they satisfy the design standards of this section. Complete justification for selection of a particular stormwater management technique, including the engineering basis for exclusion of Department's preferred techniques, shall be provided as part of a complete permit application submission.

2. The following apply to development proposed in tidal areas:

a. The construction of stormwater outfalls into tidal waters may require the incorporation of a tide check or similar valve depending on the physical conditions of the site, including, but not limited to, land elevation, drainage area, bulkhead elevation, tidal elevation and 100-year flood elevation.

b. Because tidal flooding is the result of higher than normal tides, the 100-year tidal flood elevation is not affected by development. Therefore, development activities that are located along or adjacent to tidal water bodies and segments of tidal water bodies, as specified below, are not required to comply with the flood control requirements of (c)3 below. These affected tidal waters include:

(1) Atlantic Ocean;

(2) All water bodies named on the U.S. Geological Survey 7.5' topographic maps as "bays," "canals," "coves," "guts," "harbors," "inlets," "sounds," "thorofares," and "channels," except for the portion of the Delaware River near Camden called "Back Channel";

(3) All man-made lagoons and canals discharging into the water bodies listed in (c)2ii(2) above;

(4) All sections of the "Intracoastal Waterway";

(5) Arthur Kill (entire reach); Hackensack River (Newark Bay to the Pulaski Skyway); Hudson River; Manasquan River (Atlantic Ocean to Route 70); Metedeconk River (Barnegat Bay to Route 70); Navesink River (Shrewsbury River to Coopers Bridge); Passaic River (Newark Bay to the Pulaski Skyway); Raritan River (Raritan Bay to the New Jersey Turnpike); Shark River (Atlantic Ocean to confluence with Laurel Gully Brook; Shrewsbury River (Sandy Hook Bay to Seven Bridge Road); Waretown Creek (Atlantic Ocean to Route 9); Whale Brook (Raritan Bay to Route 35); Wreck Pond (Atlantic Ocean to Route 71); and

(6) Along watercourses not specifically identified in (c)2ii(1) through (5) above, that flow into tidal water bodies listed above, the reach between the mouth and either the first bridge or culvert upstream or the point upstream where the regulatory flood (as per N.J.A.C. 7:13) exceeds the 100-year tidal elevation, whichever is closest to the mouth.

3. The following apply to flood control design:

a. If a regional stormwater management plan has been developed for the watershed, the applicant shall meet the flood control requirement of the Stormwater Management rule by conforming to the regional management plan. If no regional stormwater management plan has been developed then the applicant shall design the stormwater system so that the post-development peak runoff rate for the two year storm event is 50 percent of the pre-development peak runoff rate and the post-development peak runoff rates for the 10- and 100-year storm events are 75 percent of the pre-development peak runoff rate.

b. The design storms used to achieve the required level of site runoff control described in (c)3i above shall be defined as either the 24-hour storm using the rainfall distribution recommended by the U.S. Department of Agriculture Soil Conservation Service, or as the total rainfall uniformly distributed throughout the critical storm duration as determined by the Modified Rational Method (T.J. Mulvaney, 1851, On the Use of Self-registering Rain and Flood Gages in Making Observations of the Relations of Rainfall and Flood Discharges in a Given Catchment, Proc. Inst. Civil Engineering, Ireland, vol. 4, pp. 18-31). A 20 acre drainage area limit shall be used for the Modified Rational Method unless otherwise approved by the Department.

c. For the purposes of computing runoff, all lands in the site shall be assumed, prior to development, to be in good hydrologic condition if the lands are pastures, lawns or parks, with good cover if the lands are woods, or with conservation treatment if the land is cultivated, regardless of conditions existing at the time of computation. For lands to be considered cultivated, they must have been used for such purposes without interruption for a period of at least 5 years prior to the time of computation. If such use has not occurred or cannot be satisfactorily documented, woods shall be assumed to be the predeveloped land condition. In computing pre-development runoff, all significant land features, such as ponds, depressions or hedgerows which increase the ponding factors shall be accounted for.

d. Plans and calculations shall be provided to show that the discharge will not cause erosion along the flow path between the outfall and the receiving waterbody. All stormwater discharge paths shall be stabilized in accordance with the criteria in 2.90, Standards for Soil Erosion and Sediment Control in New Jersey.

4. The following apply to water quality control design:

a. The water quality control standard shall be the maximum feasible reduction of the total suspended solids (TSS) loading after construction has been completed, up to and including the water quality design storm. At a minimum, post-construction loadings of TSS shall match the predevelopment loadings of TSS for the water quality design storm.

7:7E-8.8 Vegetation

Policy:

1. Coastal development shall preserve, to the maximum extent practicable, existing vegetation within a development site. Coastal development shall plant new vegetation, particularly appropriate native coastal species, to the maximum extent practicable.

7:7E-8.10 Air Quality

Policy:

1. Costal development shall conform to all applicable State and Federal regulations, standards and guidelines and be consistent with the strategies of New Jersey's State Implementation Plan (SIP). See N.J.A.C. 7:27 and New Jersey SIP for ozone, particulate matter, sulfur dioxide, nitrogen dioxide, carbon monoxide, lead, and visibility.

7:7E-8.12 Scenic Resources and Design

Policy:

1. New coastal development that is visually compatible with its surroundings in terms of building and site design, and enhances scenic resources is encouraged. New coastal development that is not visually compatible with existing scenic resources in terms of large-scale elements of building and site design is discouraged.

2. In all areas, except the Northern Waterfront region, the Delaware River Region and Atlantic City, new coastal development adjacent to a bay or ocean or bayfront or oceanfront, beach, dune or boardwalk and higher than 15 feet in height measured from the existing grade of the site or boardwalk shall:

3. Provide an open view corridor perpendicular to the water's edge in the amount of 30 percent of the frontage along the waterfront where an open view currently exists; and

4. Be separated from either the beach, dune, boardwalk, or waterfront, whichever is further inland, by a distance of equal to two times the height of the structure. However, exceptions may be made for infill sites within existing commercial areas along a public boardwalk where the proposed use is commercial and where the set-back requirement is visually incompatible with the existing character of the area.

7:7E-8.13 Buffers and Compatibility of Uses

Policy:

1. Development shall be compatible with adjacent land uses to the maximum extent practicable.

   a. Development that is likely to adversely affect adjacent areas, particularly Special Areas (N.J.A.C. 7:7E-3.1 through 3.48) or residential or recreation uses, is prohibited unless the impact is mitigated by an adequate buffer. The purpose, width and type of the required buffer shall vary depending upon the type and degree of impact and the type of adjacent area to be affected by the development, and shall be determined on a case-by-case basis.

   a. The rule regarding wetland buffers is found at N.J.A.C. 7:7E-3.28.

2. The following apply to buffer treatment

   a. All buffer areas shall be planted with appropriate vegetative species, either through primary planting or supplemental planting. This landscaping shall include use of mixed, native vegetative species, with sufficient size and density to create a solid visual screen within five years from the date of planting.

   b. Buffer areas which are forested may require supplemental vegetative plantings to ensure that acceptable visual and physical separation is achieved.

   c. Buffer areas which are non-forested will require dense vegetative plantings with mixed evergreen and deciduous trees and shrubs. Evergreens must be at least eight feet tall at time of planting; deciduous trees must be at least three inches caliper, balled and burlapped; shrubs must be at least three to four feet in height.

7:7E-8.14 Traffic

Policy:

1. Coastal development shall be designed, located and operated in a manner to cause the least possible disturbance to traffic systems.

   a. Alternative means of transportation, that is, public and private mass transportation facilities and services, shall be considered and, wherever feasible, incorporated into the design and management of a proposed development, to reduce the number of individual vehicle trips generated as a result of the facility. Examples of alternative means or transportation include: van pooling, staggered working hours and installation of ancillary public transportation facilities such as bus shelters.

   b. When the level of service of traffic systems is disturbed by approved development, the necessary design modifications or funding contribution toward an area wide traffic improvement shall be prepared and implemented in conjunction with the coastal development, the satisfaction of the New Jersey Department of Transportation and any regional agencies.

   c. Any development that causes a location on a roadway to operate in excess of capacity Level D is discouraged. A developer shall undertake mitigation or other corrective measures as may be necessary so that the traffic levels at any affected intersection remain at capacity Level D or better. A developer may, by incorporating design modification or by contributing to the cost of traffic improvements, be able to address traffic problems resulting from the development, in which case development would be conditionally acceptable. Determinations of traffic levels which will be generated will be made by the New Jersey Department of Transportation.

   d. Coastal development shall provide sufficient on-site and/or off-site parking for its own use at a ratio of two spaces per residential unit. In general, on street parking spaces along public roads cannot be credited as part of off-site parking provided for a project. All off-site parking facilities must be located in either in areas within reasonable walking distance to the development or areas identified by any local or regional transportation plans as suitable locations. All off-site parking facilities must also comply with N.J.A.C. 7:7E-7.5(d), the Parking Facility rule, where applicable.

APPENDIX C

Cultural Resources Correspondence

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State of New Jersey

Christine Todd Whitman
Governor

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

Robert C. Shinn, Jr.
Commissioner

HPO-K99-17
106/98-1640 + 99-1524
November 3, 1999

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

ATTN: Lynn Rakos

Dear Mr. Santomauro:

Thank you for providing the February 25, 1999 *Final Draft A Geomorphological and Archaeological Analysis of Potential Dredged Material Management Alternative Sites in the New York Harbor-Apex Region* prepared by La Porta & Associates, Inc. with contributions by Woods Hole Oceanographic Institute and Palynology Laboratory. The report is a contribution to the historic preservation coordination associsated with this project.

I concur with your assessments and recommendations, based in large part on the survey report regarding high, moderate and low areas of sensitivity and the planned treatment options for the respective areas. In addition, since disposal sites have not yet been determined, I also concur with your current judgment (your letter of September 27th, 1999), that a Memorandum of Agreement may not be appropriate for an as yet unspecified set of dredge material alternatives and locations.

Thank you again for providing this opportunity for review and consultation. If you have any questions, please do not hesitate to contact Deborah Fimbel of my staff.

Sincerely,

Dorothy P. Guzzo

Dorothy P. Guzzo
Deputy State Historic
Preservation Officer

DPG:DRF
c. Larry Schmidt, Office of Program Coordination

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090
September 27, 1999

REPLY TO
ATTENTION OF
Environmental Assessment Section
Environmental Analysis Branch

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

Dear Ms. Guzzo:

The U.S. Army Corps of Engineers, New York District (Corps), has recently completed a Draft Programmatic Environmental Impact Statement (EIS) for the Dredged Material Management Plan (DMMP) for the Port of New York and New Jersey (Port). This document will be mailed to your office under a separate cover. The DMMP provides a plan that allows for the safe handling and placement of dredged material while also providing opportunities to protect the marine and estuarine environment. Disposal issues are presently of crucial concern for the Port as studies proceed on the feasibility of deepening many navigation channels. Options for disposal include contaminant reduction; sediment reduction; beneficial uses such as habitat creation, enhancement and restoration and land remediation; decontamination; confined aquatic disposal facilities (pits); and confined disposal facilities (upland, nearshore, or offshore). A disposal alternative consists of two or more options or locations.

All previous correspondence from the Corps to your office had indicated that a Draft Memorandum of Agreement (MOA) would be prepared for the DMMP and coordinated with your office and the New York State Historic Preservation Office (SHPO). Since that time the DMMP study has resulted in a Programmatic EIS due to the fact that the disposal alternatives and locations have not been definitively determined. As alternative(s) and location(s) are selected they will undergo studies to ensure National Environmental Policy Act (NEPA) compliance. At that time, each option and location will also be subject to appropriate culture resource studies to ensure compliance with Section 106 of the National Historic Preservation Act. This work will be coordinated the appropriate SHPO(s). As a result, it is the opinion of the Corps that an MOA would not be appropriate for the DMMP as a whole. Individual MOAs may be produced as the result of cultural resource studies at the selected disposal locations.

A preliminary assessment and scoping document for DMMP cultural resource issues was previously coordinated with your office (Attachments 1, 2, 3 and 4). Two cultural resource studies undertaken in connection with the DMMP were submitted and reviewed by your staff (Attachments 5, 6, 7 and 8). These studies addressed off-shore locations that were proposed as potential disposal sites. A remote sensing survey was conducted for two zones in Raritan Bay and a geomorphological study was conducted in three zones and proposed in-channel disposal locations in the Bight and Upper and Lower Bay.

As previously coordinated, no further cultural resources work will be required if existing offshore pits are selected for use and work will be limited to the area previously disturbed by dredging. If work is limited to the existing channels at Constable Hook/Port Jersey, the Newark Bay channel, or the center portion of the Hudson River, no additional cultural resource studies will be required (Attachments 5, 6 and 8). All other proposed options and locations will be subject to appropriate cultural resource studies and Section 106 review as the project proceeds.

Please provide Section 106 comments, pursuant to 36 CFR 800.5. If you or your staff require additional information or have any questions, please contact Lynn Rakos, Project Archaeologist, at (212) 264-0229

Sincerely,

Frank Santomauro, P.E.
Chief, Planning Division

Attachments

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

September 27, 1999

REPLY TO
ATTENTION OF
Environmental Assessment Section
Environmental Analysis Branch

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

Dear Ms. Pierpont:

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As previously coordinated, no further cultural resources work will be required if existing offshore pits are selected for use and work will be limited to the area previously disturbed by dredging or if work is limited to the center portion of the Hudson River (Attachments 5, 6 and 8). All other proposed options and locations will be subject to appropriate cultural resource studies and Section 106 review as the project proceeds.

Please provide Section 106 comments, pursuant to 36 CFR 800.5. If you or your staff require additional information or have any questions, please contact Lynn Rakos, Project Archaeologist, at (212) 264-0229

Sincerely,

Joseph Vietri

Frank Santomauro, P.E.
Chief, Planning Division

Attachments

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

September 27, 1999

REPLY TO ATTENTION OF

Environmental Assessment Section
Environmental Analysis Branch

Dr. Arthur Bankoff
New York City Landmarks Preservation Commission
100 Old Slip
New York, NY 10005

Dear Dr. Bankoff:

The U.S. Army Corps of Engineers, New York District (Corps), has recently completed a Draft Programmatic Environmental Impact Statement (EIS) for the Dredged Material Management Plan (DMMP) for the Port of New York and New Jersey (Port). This document will be mailed to your office under a separate cover. The DMMP provides a plan that allows for the safe handling and placement of dredged material while also providing opportunities to protect the marine and estuarine environment. Disposal issues are presently of crucial concern for the Port as studies proceed on the feasibility of deepening many navigation channels. Options for disposal include contaminant reduction; sediment reduction; beneficial uses such as habitat creation, enhancement and restoration and land remediation; decontamination; confined aquatic disposal facilities (pits); and confined disposal facilities (upland, nearshore, or offshore). A disposal alternative consists of two or more options or locations.

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Please provide any comments you may have. If you or your staff require additional information or have any questions, please contact Lynn Rakos, Project Archaeologist, at (212) 264-0229

Sincerely,

Frank Santomauro, P.E.
Chief, Planning Division

Attachments

OFFICE OF PARKS, RECREATION, HISTORIC PRESERVATION
NEW YORK STATE

Bernadette Castro
Commissioner

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

June 1, 1999

Frank Santomauro, P.E.
Chief, Planning Division
U.S. Army Corps of Engineers
NY District
Jacob K. Javits Federal Bldg.
New York, New York 10278-0090

Dear Mr. Santamauro:

Re: CORPS
Dredged Material Management Plan/Port of New York & New Jersey
Multiple Cities, Multiple Counties
96PR2916

Thank you for requesting the comments of the State Historic Preservation Office (SHPO). We have reviewed the Dredged Material Management Plan (DMMP) project in accordance with Section 106 of the National Historic Preservation Act of 1966 and the relevant implementing regulations.

Based upon this review, the SHPO approves the Final Draft report, A Geomorphological and Archaeological Analysis of Potential Dredged Material Management Alternative Sites in the New York Harbor-Apex Region.

We concur with the recommendations of your May 17, 1999, letter and look forward to continued consultation in accordance with Section 106.

When responding please be sure to refer to the SHPO project review (PR) number noted above. If you have any questions, please feel free to call me at (518) 237-8643 ext. 255.

Sincerely,

Robert D. Kuhn
Assistant Director

RDK:bsd

THE CITY OF NEW YORK LANDMARKS PRESERVATION COMMISSION
100 Old Slip, New York, NY 10005 (212) 487-6800

ENVIRONMENTAL REVIEW

USACE/106-Y — 05/24/99

PROJECT NUMBER — DATE RECEIVED

The Following Properties Possess Architectural or Archaeological Significance:

0 DMMP

COMMENTS: The Dredged Material Management Plan report of 2-25-99 appears to adequately identify potential for impacts to, and treatment plans for prehistoric cultural resources within the area of potential effect.

06/04/99

SIGNATURE — DATE

0C:5470

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

REPLY TO
ATTENTION OF

May 17, 1999

Environmental Assessment Section
Environmental Analysis Branch

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

Dear Ms. Guzzo:

The U.S. Army Corps of Engineers, New York District (Corps), is pleased to furnish you with a copy of a final draft report entitled "A Geomorphological and Archaeological Analysis of Potential Dredged Material Management Alternative Sites in the New York Harbor-Apex Region, Affecting the Coastal Areas of New York, Queens, Kings and Richmond Counties in New York and Bergen, Hudson, Middlesex and Monmoth Counties in New Jersey." The study was undertaken for the Corps by Philip C. La Porta, Linda E. Sohl and Margaret C. Brewer in association with Woods Hole Oceanographic Institute and Texas A&M Palynology Laboratory. The draft report was submitted to you office for Section 106 comments on July 20, 1998 (Enclosures 1 and 2; NJHPO# 98-1640; HPO-J98-110). As per comments received from your office, as well as Corps review comments, sections of the draft report were expanded and technical issues were more clearly explained in the final draft document.

Based on results of study by LaPorta, et al., it is the opinion of the Corps that work associated with the Dredged Material Management Plan (DMMP) proposed in areas of low archaeological sensitivity will require no further cultural resource studies. The DMMP project locations in New Jersey waters with low sensitivity are the center channel of the Hudson River and the previously dredged navigation channels at Constable Hook/Port Jersey and Newark Bay. Areas considered to posses moderate sensitivity will be subject to additional studies in the form of remote sensing surveys and additional corings. Areas within Newark Bay that have not been previously dredged have been determined to be moderately sensitive. Moderate sensitivity has also been applied to an area in southeast corner of Zone 1 and to all of Zones 2 and 3 (note, though, that the locations of these draft zones are subject to change based on comments we may receive and incorporation of new data and if they change additional cultural resource evaluations will be undertaken). Highly sensitive areas, such as those at Ward's Point, at the border with New York and New Jersey, and a swath of Zone 1 in Raritan Bay, will be studied further through remote sensing, vibracores, and sediment testing. The locations under consideration for the DMMP continue to be evaluated and revised and therefore not all locations examined by LaPorta et al. will be pursued as part of the DMMP. Section 106 coordination will continue as the project becomes more defined.

Additional information has been collected in a number of these areas during the course of cultural resource work associated with the New York and New Jersey Harbor Navigation Project. The draft report documenting the study will be submitted to the Corps in July and will be forwarded to your office for review. The results of this on-going work may provide additional information which will allow the areas of sensitivity to be more clearly defined. Ultimately, the Corps is hoping to develop a model of prehistoric and paeloenvironmental sensitivity for the New York and New Jersey Harbor. This model will greatly facilitate project planning and will provide a useful research tool for the archaeological community.

Please review the enclosed revised document and provide Section 106 comments, pursuant to 36 CFR 800.5. If you or your staff require additional information or have any questions, please contact Lynn Rakos, Project Archaeologist, at (212)264-0229.

Sincerely,

Frank Santomauro, P.E.
Chief, Planning Division

Enclosures

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

REPLY TO
ATTENTION OF

May 17, 1999

Environmental Assessment Section
Environmental Analysis Branch

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

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Based on results of study by LaPorta, et al., it is the opinion of the Corps that work associated with the Dredged Material Management Plan (DMMP) proposed in areas of low archaeological sensitivity will require no further cultural resource studies. The DMMP project location in New York State with low sensitivity is the center channel of the Hudson River. Areas considered to posses moderate sensitivity will be subject to additional studies in the form of remote sensing surveys and additional corings. Bowery Bay has been determined to be moderately sensitive. Moderate sensitivity has also been applied to an area in the southeast corner of Zone 1 and to all of Zones 2 and 3 (note, though, that the locations of these draft zones are subject to change based on comments we may receive and incorporation of new data and if they change additional cultural resource evaluations will be undertaken). Additional vibracores are recommended for Red Hook/Bay Ridge which was evaluated to have a moderate to low sensitivity. Highly sensitive areas, such as those at Ward's Point and a swath of Zone 1 in Raritan Bay, will be studied further through remote sensing, vibracores, and sediment testing. The locations under consideration for the DMMP continue to be evaluated and revised and therefore not all locations examined by LaPorta et al. will be pursued as part of the DMMP. Section 106 coordination will continue as the project becomes more defined.

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Sincerely,

Frank Santomauro, P.E.
Chief, Planning Division

Enclosures

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

REPLY TO
ATTENTION OF

May 17, 1999

Environmental Assessment Section
Environmental Analysis Branch

Dr. Arthur Bankoff
New York City Landmarks Preservation Commission
100 Old Slip
New York, New York 10005

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The U.S. Army Corps of Engineers, New York District (Corps), is pleased to furnish you with a copy of a final draft report entitled "A Geomorphological and Archaeological Analysis of Potential Dredged Material Management Alternative Sites in the New York Harbor-Apex Region, Affecting the Coastal Areas of New York, Queens, Kings and Richmond Counties in New York and Bergen, Hudson, Middlesex and Monmoth Counties in New Jersey." The study was undertaken for the Corps by Philip C. La Porta, Linda E. Sohl and Margaret C. Brewer in association with Woods Hole Oceanographic Institute and Texas A&M Palynology Laboratory. The draft report was submitted to you office for Section 106 comments on July 20, 1998 (Enclosures 1 and 2). As per comments received from your office and the New York and New Jersey State Historic Preservation Offices, as well as Corps review comments, sections of the draft report were expanded and technical issues were more clearly explained in the final draft document.

Based on results of study by LaPorta, et al., it is the opinion of the Corps that work associated with the Dredged Material Management Plan (DMMP) proposed in areas of low archaeological sensitivity will require no further cultural resource studies. The DMMP project location in New York State with low sensitivity is the center channel of the Hudson River. Areas considered to posses moderate sensitivity will be subject to additional studies in the form of remote sensing surveys and additional corings. Bowery Bay has been determined to be moderately sensitive. Moderate sensitivity has also been applied to an area in the southeast corner of Zone 1 and to all of Zones 2 and 3 (note, though, that the locations of these draft zones are subject to change based on comments we may receive and incorporation of new data and if they change additional cultural resource evaluations will be undertaken). Additional vibracores are recommended for Red Hook/Bay Ridge which was evaluated to have a moderate to low sensitivity. Highly sensitive areas, such as those at Ward's Point and a swath of Zone 1 in Raritan Bay, will be studied further through remote sensing, vibracores, and sediment testing. The locations under consideration for the DMMP continue to be evaluated and revised and therefore not all locations examined by LaPorta et al. will be pursued as part of the DMMP. Coordination will continue as the project becomes more defined.

Additional information has been collected in a number of these areas during the course of cultural resource work associated with the New York and New Jersey Harbor Navigation Project. The draft report documenting the study will be submitted to the Corps in July and will be forwarded to your office for review. The results of this on-going work may provide additional information which will allow the areas of sensitivity to be more clearly defined. Ultimately, the Corps is hoping to develop a model of prehistoric and paeloenvironmental sensitivity for the New York and New Jersey Harbor. This model will greatly facilitate project planning and will provide a useful research tool for the archaeological community.

Please review the enclosed revised document and provide comments. If you or your staff require additional information or have any questions, please contact Lynn Rakos, Project Archaeologist, at (212)264-0229.

Sincerely,

Frank Santomauro, P.E.
Chief, Planning Division

Enclosures

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

REPLY TO
ATTENTION OF

January 4, 1999

Environmental Assessment Section
Environmental Analysis Branch

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

Dear Ms. Guzzo,

The U.S. Army Corps of Engineers, New York District (Corps), is pleased to furnish you with a copy of the final Archeological Remote Sensing Survey Report for the Dredged Material Management Plan (DMMP), Raritan Bay and Lower Bay, New York Harbor, Monmouth County, New Jersey and Richmond County, New York. The study was undertaken for the Corps by Dolan Research, Inc. in association with Dames & Moore and Battelle Ocean Sciences. The draft report was submitted to you office for Section 106 comments on 20 July 1998. The comments provided by your office upon review of the draft report were incorporated into the final document.

Thank you for your assistance in the Section 106 process. If you or your staff require additional information or have any questions, please contact Lynn Rakos, Project Archaeologist, at (212)264-0229.

Sincerely,

Frank Santomauro

Frank Santomauro, P.E.
Chief, Planning Division

Enclosure

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

REPLY TO
ATTENTION OF

January 4, 1999

Environmental Assessment Section
Environmental Analysis Branch

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

Dear Ms. Pierpont,

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Thank you for your assistance in the Section 106 process. If you or your staff require additional information or have any questions, please contact Lynn Rakos, Project Archaeologist, at (212)264-0229.

Sincerely,

Frank Santomauro

Frank Santomauro, P.E.
Chief, Planning Division

Enclosure

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

REPLY TO ATTENTION OF

January 4, 1999

Environmental Assessment Section
Environmental Analysis Branch

Dr. Arthur Bankoff
New York City Landmarks Preservation Commission
100 Old Slip
New York, New York 10005

Dear Dr. Bankoff,

The U.S. Army Corps of Engineers, New York District (Corps), is pleased to furnish you with a copy of the final Archeological Remote Sensing Survey Report for the Dredged Material Management Plan (DMMP), Raritan Bay and Lower Bay, New York Harbor, Monmouth County, New Jersey and Richmond County, New York. The study was undertaken for the Corps by Dolan Research, Inc. in association with Dames & Moore and Battelle Ocean Sciences. The draft report was submitted to you office for Section 106 comments on 20 July 1998. The comments provided by your office upon review of the draft report were incorporated into the final document.

Thank you for your assistance in the Section 106 process. If you or your staff require additional information or have any questions, please contact Lynn Rakos, Project Archaeologist, at (212)264-0229.

Sincerely,

Frank Santomauro

Frank Santomauro, P.E.
Chief, Planning Division

Enclosure

State of New Jersey

Christine Todd Whitman
Governor

Department of Environmental Protection
Natural & Historic Resources
PO Box 404
Trenton, N.J. 08625-0404
TEL: (609)292-3541
FAX: (609)984-0836

Robert C. Shinn, Jr.
Commissioner

98-1640
HPO-J98-110
October 21, 1998

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

Attn: Lynn Rakos

RE: Bergen, Hudson, Middlesex and Monmouth Counties
Dredged Material Management Plan (DMMP) for
the Port of New York and New Jersey
Comments on July draft cultural resource documents

Dear Santomauro:

Thank you for having provided the opportunity to comment on the draft July 1, 1998 *Remote Sensing Survey* prepared by Dames & Moore and the draft July 7, 1998 *Cultural Resource Assessment of Proposed Dredged Material Management Alternative Sites in the New York Harbor-Apex Region* prepared by LaPorta & Associates, Inc. Generally, the reports are well prepared and are good steps in addressing Section 106 responsibilities associated with this project. However, I do have some comments on the reports and recommendations.

Because of recent damage or destruction to wrecks in avoidance areas, more stringent methodologies need to be developed and implemented for their protection. Targets identified which could be shipwrecks within Zones 1 and 2, should, at minimum, be subjected to diving to determine what if anything is visible on the surface. Further, for targets which are identified as shipwrecks or cannot be discounted as being shipwrecks (if not visible), and therefore are potentially National Register eligible, a detailed plan for avoidance will need to be developed in conjunction with the Historic Preservation Office. This will need to include large avoidance areas (recent ones developed by or in conjunction with the Philadelphia District have been 1000 feet on all sides of targets), identification of locations and significance in project plans and specifications, accurate methods for demarcating and avoiding avoidance zones, etc. Deborah Fimbel of my staff has provided Lynn Rakos with some of the recent comments and methodologies used for avoidance of wrecks to serve as potential examples. Also, the remote sensing survey report needs to incorporate USGS maps illustrating the areas surveyed.

Related to the draft LaPorta and Associates, Inc. report, at minimum, summary and recommendations sections should be expanded or rewritten to be more lay level explanations; they should explain in lay terms why testing was located where it was and why the recommendations rendered have been made (i.e. how the testing and analysis which has been done has led to the recommendations which have been put forth).

Thank you again for providing this opportunity for review and Consultation. I look forward to receiving the revised reports and upcoming reports on the following phases of work. If you have any questions, please do not hesitate to contact Deborah Fimbel at (609) 984-6019.

Sincerely,

James F. Hall
Deputy State Historic
Preservation Officer

JFH:DRF

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

Bernadette Castro
Commissioner

September 3, 1998

Mr. Frank Santomauro, P.E.
Chief, Planning Division
Environmental Assessment Section
Environmental Analysis Branch
Department of the Army
New York District, Corps of Engineers
Jacob K. Javits Federal Building
New York, NY 10278-0090

Dear Mr. Santomauro:

RE: **CORPS**
Dredged Material Management Plan
Port of New York/New Jersey
96PR2916

Thank you for requesting the comments of the State Historic Preservation Office (SHPO). We have reviewed the Dredged Material Management Plan (DMMP) project in accordance with Section 106 of the National Historic Preservation Act of 1966 and the relevant implementing regulations.

Based upon this review, the SHPO approves the two reports: <u>Field Support of Dredged Material Management Alternatives for New York District, Remote Sensing Survey</u> and <u>Preliminary Draft, Cultural Resource Assessment of Proposed Dredged Material Management Alternative Sites in the New York Harbor-Apex Region.</u>

We concur with the recommendations in your July 20, 1998 correspondence and look forward to continued consultation towards the goal of establishing a Programmatic Agreement for this undertaking.

When responding, please be sure to refer to the OPRHP project review (PR) number noted above. If you have any questions, please feel free to call me at (518) 237-8643 ext. 255.

Sincerely,

Robert D. Kuhn, Ph.D
Historic Preservation Coordinator
Field Services Bureau

RDK/rma

THE CITY OF NEW YORK LANDMARKS PRESERVATION COMMISSION
100 Old Slip, New York, NY 10005 (212) 487-6800

ENVIRONMENTAL REVIEW

USACE/106-Y	07/28/98
PROJECT NUMBER	DATE RECEIVED

PROJECT

DMMP: DREDGED MATERIAL MANAGEMENT PLAN

[X] No architectural significance

[ ] No archaeological significance

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

[ ] Listed on National Register of Historic Places

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

[X] May be archaeologically significant; requesting additional materials

COMMENTS

The reports titled, "Preliminary Draft, Cultural Resource Assessment of Proposed Dredged Material Management Alternative Sites in the New York Harbor-Apex Region," and "Field Support of Dredged Material, Remote Sensing Survey," are acceptable. Notify the Commission in the event that a determination is made that historic properties will be affected by the proposed action.

[signature]	08/10/98
SIGNATURE	DATE

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

July 20, 1998

REPLY TO
ATTENTION OF

Environmental Assessment Section
Environmental Analysis Branch

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

Dear Ms. Guzzo,

The U.S. Army Corps of Engineers, New York District (Corps), is currently conducting further studies in connection with the Dredged Material Management Plan (DMMP) for the Port of New York and New Jersey. A preliminary assessment and scoping document for cultural resources was previously coordinated with your office (Attachments 1 and 2). At that time, the DMMP study area was vast and it was not feasible to conduct cultural resource studies. Since then, reconnaissance level geomorphological and remote sensing investigations have been conducted for off-shore disposal options (pits and islands) where proposed project locations have been more succinctly defined through geophysical studies and other siting criteria.

Cultural resource studies have been undertaken in the currently identified zones of siting feasibility, Zones 1, 2 (Attachment 3) and 3 (Attachment 4) and the in-channel disposal areas (Ward's Point Bend, Newark Bay, Hudson River, Bowery Bay, Constable Hook/Port Jersey and Red Hook/Bay Ridge) (Attachment 5). Zone 1 was divided into three subzones, Zones 1A, 1B and 1C due to the presence of pipelines across the larger Zone 1. These smaller parcels were surveyed for cultural resources. To date, only the central portion of Zone 2 has been surveyed. Zones 1 and 2 are located in the Lower Bay Complex and are potential areas for the construction of new Contained Aquatic Disposal Pits. Zone 3 lies in the New York Bight Apex and has been identified, along with Zone 2, as a potential location for the construction of an Island Confined Disposal Facility. In-channel pit disposal is proposed within the existing navigation channels, listed above, in the Upper Bay Complex. Ward's Point Bend, an in-channel option, is located in the Lower Bay.

A geomorphological study was conducted to assess the potential for prehistoric resources. During the late Pleistocene and Holocene periods, the DMMP study area was on a relatively dry coastal plain that may have been inhabited by Native American populations. The geomorphological study concentrated on the analysis of pollen, foraminifera, and grain size coupled with limited radiocarbon dating of sediments obtained from vibracores and borings. These data were used to reconstruct the paleoenvironment and ascertain areas that may have been favorable for site locations and that are more likely to be preserved, having withstood geological and human scouring processes.

The analysis suggests that most areas examined have some potential to preserve prehistoric sites although some are more sensitive than others. The areas rated to have a "high potential" are Ward's Point and all of Zones 1 and 2. The Newark Bay area and Zone 3 were designated as having a "moderate potential." Bowery Bay and Red Hook/Bay Ridge, both in New York State, were classified as "moderate to low." Constable Hook/Port Jersey was deemed to have a "low potential" primarily because modern construction has disturbed any remains of prehistoric occupation. The Hudson River channel was assessed as "low potential" for the middle channel where a river channel has been in place prior to any occupation of the area but the outer portions of the river channel have been assessed as "moderate to high." Radio-Carbon dating results were not available at the time the remote sensing report was submitted to the Corps. The results and interpretation of this additional data will be submitted as an addendum to the attached report and will be forwarded to your office as soon as it is received.

It is the Corps opinion that if proposed work is limited to the existing channels in Constable Hook/Port Jersey and the center portion of the Hudson River then no further cultural resource investigations will be required. Additional studies to evaluate and delimit the potential archeologically sensitive areas will be undertaken for the other proposed off-shore disposal locations, if they remain under consideration.

A remote sensing survey was conducted to assess the potential of the DMMP off-shore study areas for historic resources. The locations proposed for in-channel options were not surveyed as historic dredging in the channels and anchorages would have likely removed any historic shipwrecks or debris. A remote sensing survey has not been conducted, to date, in Zone 3 but a survey will be programmed if this zone remains under consideration as a potential disposal location.

The results of the remote sensing survey in Zones 1 and 2 indicate that four targets are potential cultural resources. The Corps proposes to avoid these targets and establish a buffer zone around them. However, no underwater inspection of these targets has occurred, to date, to confirm that these targets are in fact cultural resources and no assessment has been made of their eligibility for the National Register of Historic Places. If avoidance is not possible, further study in the form of research and a diving inspection by a qualified underwater archaeologist would be necessary to determine what these targets represent. If a target is found to be modern debris or a rock outcropping then it will not be necessary to avoid that location. If the target is shown to be eligible and cannot be avoided, mitigation plans will be developed. We will coordinate with your office regarding the definition of protocols for ensuring adequate safety margins are provided for these potential resources.

Cultural resource investigations to identify properties and evaluate their eligibility for the National Register of Historic Places (NRHP) will be programmed for all other options, as appropriate, as the DMMP study proceeds. A draft Programmatic Agreement is presently being written and will be coordinated with your office. This agreement document will address the direction and procedures for further cultural resources work as well as those options that will require no further study.

Please review the enclosed documents and provide Section 106 comments, pursuant to 36 CFR 800.5. If you or your staff require additional information or have any questions, please contact Lynn Rakos, Project Archaeologist, at (212)264-0229

Sincerely,

for Frank Santomauro, P.E.
Chief, Planning Division

Attachments

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

July 20, 1998

REPLY TO
ATTENTION OF

Environmental Assessment Section
Environmental Analysis Branch

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

Dear Ms. Pierpont,

The U.S. Army Corps of Engineers, New York District (Corps), is currently conducting further studies in connection with the Dredged Material Management Plan (DMMP) for the Port of New York and New Jersey. A preliminary assessment and scoping document for cultural resources was previously coordinated with your office (Attachments 1 and 2). At that time, the DMMP study area was vast and it was not feasible to conduct cultural resource studies. Since then, reconnaissance level geomorphological and remote sensing investigations have been conducted for off-shore disposal options (pits and islands) where proposed project locations have been more succinctly defined through geophysical studies and other siting criteria.

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Sincerely,

Frank Santomauro, P.E.
Chief, Planning Division

Attachments

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

July 20, 1998

REPLY TO
ATTENTION OF

Environmental Assessment Section
Environmental Analysis Branch

Dr. Arthur Bankoff
New York City Landmarks Preservation Commission
100 Old Slip
New York, New York 10005

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Please review the enclosed documents and provide comments. If you or your staff require additional information or have any questions, please contact Lynn Rakos, Project Archaeologist, at (212)264-0229

Sincerely,

Simeon Hook

for Frank Santomauro, P.E.
Chief, Planning Division

Attachments

State of New Jersey
Department of Environmental Protection
Division of Parks and Forestry
Historic Preservation Office
CN-404
Trenton, N.J. 08625-0404
TEL: (609)292-2023
FAX: (609)984-0578

Christine Todd Whitman
Governor

Robert C. Shinn, Jr.
Commissioner

HPO-F97-123
June 19, 1997

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

ATTN: Ms. Lynn Rakos

Re: Multiple Counties, Multiple Municipalities
Port of New York/New Jersey Dredged Material
Management Plan (DMMP)

Dear Mr. Piken:

Thank you for providing the opportunity for Consultation under Section 106 on this project: specifically for the opportunity to review the August 1996 **Preliminary Assessment of Cultural Resource Sensitivity and Scoping Document for Additional Studies in Connection With the New York Harbor Apex Region Dredged Material Management Plan (DMMP), New York and New Jersey** prepared by Lynn Rakos. This assessment successfully takes into account the potential for significant resources and identifies means to identify, evaluate and treat resources associated with various types of activities under the different alternatives and aspects associated with the DMMP. The only substantive comment I have on the preliminary assessment is on statements in the last paragraph on page 26 and the third paragraph on page 29. As stated elsewhere in the document, identification of eligible prehistoric resources is not a goal associated with studies in these locations. Consequently, if later editions of this assessment are produced, this sentence should be omitted.

In preparing a Programmatic Memorandum of Agreement for the project, I recommend keeping abreast of the emergent PMOA for the Green Brook Flood Control Project, and possibly involving the Advisory Council on Historic Preservation (ACHP) early in its review. The ACHP has significantly revised the structure of model PMOA's so that this early consultation might avoid the need for revisions of the PMOA later in time.

Thank you again for this opportunity for consultation under Section 106 of the National Historic Preservation Act. If you have any questions please do not hesitate to contact Deborah Fimbel, staff reviewer for this project.

Sincerely,

Dorothy P. Guzzo
Deputy State Historic
Preservation Officer

DPG:DRF
C:\PW\wd\106\971591
c. Bernard Moore, Administrator, Division of Engineering and Construction

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

518-237-8643

Bernadette Castro
Commissioner

June 03, 1997

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

Re: CORPS
Dredged Material Management Plan
Port of New York/New Jersey
(Preliminary Assessment of Cultural Resources Sensitivity)
96PR2916

Dear Mr. Piken:

Thank you for providing this office with a copy of your preliminary report on cultural resources and providing us with an opportunity to comment early in the planning process. The State Historic Preservation Office (SHPO) concurs with the approach to the identification of historic and archaeological resources outlined in your report and the attached cover letter. My staff and I look forward to continuing consultation with your office as dredging alignments and disposal alternatives are specifically defined. Please feel free to contact me at 518-237-8643 ext. 255 if I you have any questions.

Sincerely,

Robert Kuhn

Robert Kuhn, PhD.
Historic Preservation Program Coordinator
Historic Preservation
Field Services Bureau

THE CITY OF NEW YORK LANDMARKS PRESERVATION COMMISSION
100 Old Slip, New York, NY 10005 (212) 487-6800

ENVIRONMENTAL REVIEW

USACE/106-R — PROJECT NUMBER

05/23/97 — DATE RECEIVED

PROJECT

DMMP: DREDGED MATERIAL MANAGEMENT PLAN

[ ] No architectural significance

[ ] No archaeological significance

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

[ ] Listed on National Register of Historic Places

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

[ ] May be archaeologically significant; requesting additional materials

COMMENTS

"Preliminary Assessment of Cultural Resources Sensitivity and Scoping Document for Additional Studies in Connection with the New York Harbor Apex Region Dredged Material Management Plan (DMMP), New York and New Jersey, August, 1996" is accepted. Please provide a map of proposed on-shore locations, if any.

SIGNATURE

09/17/97 — DATE

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

REPLY TO
ATTENTION OF

April 25, 1997

Environmental Assessment Section
Environmental Analysis Branch

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

Dear Ms. Guzzo,

The U.S. Army Corps of Engineers, New York District (Corps) is responsible for maintaining navigation channels in the Port of New York/New Jersey. A Dredged Material Management Plan (DMMP) is currently being developed to successfully continue this work. Numerous locations are presently undergoing preliminary analyses to identify short- and mid-term disposal alternatives as well as to determine the potential for sites to be selected for detailed investigation and design. Attached is a preliminary assessment of cultural resources sensitivity and scoping document for additional studies that may be necessary depending on which alternatives are implemented as part of the final DMMP.

As indicated in a previous letter to your office (attached), the overall study area as presently defined is extensive and the potential for cultural resources is vast. Cultural resource issues will be addressed for each of the smaller geographic sub-sets once they are determined and will be used to evaluate the alternative disposal sites. It is in the opinion of the Corps that, based on the general level of survey conducted for this phase of the DMMP, there is a high potential to encounter significant resources for many of the proposed DMMP alternatives.

As the project proceeds, additional cultural resources studies will be programmed, as necessary, for all DMMP alternatives that are selected for detailed investigation. A Programmatic Memorandum of Agreement (PMOA) for the entire DMMP will be developed to specify the process associated with each alternative for identifying historic properties within areas of potential effect, evaluating effects, avoiding adverse effects and minimizing or mitigating for unavoidable impacts. The PMOA will also specify which actions will have no effect on historic properties. Please provide comments on the results of the preliminary cultural resource findings and directions for further studies. This will aid us in programming solutions for the dredged material disposal crisis.

If you or your staff require additional information or have any questions, please contact Lynn Rakos, Project Archaeologist, at (212)264-4663.

Sincerely,

Stuart Piken, P.E.
Chief, Planning Division

Attachments

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

REPLY TO ATTENTION OF

April 25, 1997

Environmental Assessment Section
Environmental Analysis Branch

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

Dear Ms. Pierpont,

The U.S. Army Corps of Engineers, New York District (Corps) is responsible for maintaining navigation channels in the Port of New York/New Jersey. A Dredged Material Management Plan (DMMP) is currently being developed to successfully continue this work. Numerous locations are presently undergoing preliminary analyses to identify short- and mid-term disposal alternatives as well as to determine the potential for sites to be selected for detailed investigation and design. Attached is a preliminary assessment of cultural resources sensitivity and scoping document for additional studies that may be necessary depending on which alternatives are implemented as part of the final DMMP.

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If you or your staff require additional information or have any questions, please contact Lynn Rakos, Project Archaeologist, at (212)264-4663.

Sincerely,

Stuart Piken, P.E.
Chief, Planning Division

Attachments

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

REPLY TO ATTENTION OF

April 25, 1997

Environmental Assessment Section
Environmental Analysis Branch

Dr. Daniel Pagano
New York City Landmarks Preservation Commission
100 Old Slip
New York, New York 10005

Dear Dr. Pagano,

The U.S. Army Corps of Engineers, New York District (Corps) is responsible for maintaining navigation channels in the Port of New York/New Jersey. A Dredged Material Management Plan (DMMP) is currently being developed to successfully continue this work. Numerous locations are presently undergoing preliminary analyses to identify short- and mid-term disposal alternatives as well as to determine the potential for sites to be selected for detailed investigation and design. Attached is a preliminary assessment of cultural resources sensitivity and scoping document for additional studies that may be necessary depending on which alternatives are implemented as part of the final DMMP.

The overall study area as presently defined is extensive and the potential for cultural resources is vast. Cultural resource issues will be addressed for each of the smaller geographic sub-sets once they are determined and will be used to evaluate the alternative disposal sites. It is in the opinion of the Corps that, based on the general level of survey conducted for this phase of the DMMP, there is a high potential to encounter significant resources for many of the proposed DMMP alternatives.

As the project proceeds, additional cultural resources studies will be programmed, as necessary, for all DMMP alternatives that are selected for detailed investigation. A Programmatic Memorandum of Agreement (PMOA) for the entire DMMP will be developed to specify the process associated with each alternative for identifying historic properties within areas of potential effect, evaluating effects, avoiding adverse effects and minimizing or mitigating for unavoidable impacts. The PMOA will also specify which actions will have no effect on historic properties. Please provide comments on the results of the preliminary cultural resource findings and directions for further studies. This will aid us in programming solutions for the dredged material disposal crisis.

If you or your staff require additional information or have any questions, please contact Lynn Rakos, Project Archaeologist, at (212)264-0473.

Sincerely,

Stuart Piken

Stuart Piken, P.E.
Chief, Planning Division

Attachments

State of New Jersey
Christine Todd Whitman
Governor
Department of Environmental Protection
Robert C. Shinn, Jr.
Commissioner
DIVISION OF PARKS AND FORESTRY
HISTORIC PRESERVATION OFFICE
CN-404
TRENTON, N.J. 08625-0404
TEL: (609) 292-2023
FAX: (609) 984-0578

HPO-A97-120
January 24, 1997

Mr. Stuart Piken
Chief, Planning Division
Department of the Army, New York District
Corps of Engineers
Jacob K. Javits Federal Building
New York, NY 10278-0090

ATTN: Mr. Robert Kurtz
CEIS Coordinator

Re: Dredged Material Management Plan for the Port of New York and New Jersey

Dear Mr. Piken:

Thank you for your submission of the September 1996 Interim Report for the Dredged Material Management Plan for the Port of New York and New Jersey and for your notification of intent to prepare a draft Comprehensive Environmental Impact Statement for the Plan.

I look forward to our continuing coordination under Section 106 of the National Historic Preservation Act relating to the sites and areas selected or which may be potentially selected for impact or use under the Plan. One thing I wish to note at this time is that the Office has had reports of one or more shipwrecks in the are near the Mud Dump Site. If this site is subject to remediation which could impact an area larger than the currently approved site, underwater archaeological survey to identify and potentially evaluate potential shipwreck resources would be appropriate.

Thank you again for your notification. If you have any questions, please contact Deborah Fimbel, Historic Preservation Office staff reviewer for this project.

Sincerely,

Dorothy P. Guzzo

Dorothy P. Guzzo
Deputy State Historic
Preservation Officer

C:\PW\wd\106\97430
c. Lynn Rakos, Archaeologist, ACOE

OFFICE OF PARKS · RECREATION · HISTORIC PRESERVATION
NEW YORK STATE

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

Bernadette Castro
Commissioner

January 3, 1997

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

Dear Mr. Piken:

Re: CORPS
Dredged Material Mgmnt Plan:
Port of New York/New Jersey
(Interim Report, 1996)
96PR2916

Thank you for requesting the comments of the New York State Office of Parks, Recreation and Historic Preservation on the above referenced project. As the state agency responsible for the coordination of the State and Federal historic preservation programs, we would like to offer the following comments.

As discussed in the report, the upland disposal of dredge spoils has the potential to negatively impact historic, cultural and/or archeological resources. As a result, a more comprehensive evaluation of these potential impacts will be needed in the CEIS. Once the potential disposal method(s) and site(s) has been selected a comprehensive analysis of the historic resources associated with the site(s) and its surroundings (truck routes and viewsheds) will be required.

The OPRHP also has concerns regarding the potential impacts of the project on underwater archeological sites. The port area is a site highly sensitive to the presence the wrecks and hulks of historic vessels. Therefore, it is our recommendation that an archeological survey of these features is fully warranted as part of the CEIS.

OPRHP welcomes the opportunity to provide early comments in this project as a means of insuring that historic properties are adequately addressed in environmental review process. If you should have any questions, do not hesitate to contact, Robert Kuhn, Program Coordinator at (518) 237-8643, ext. 255.

Sincerely,

Ruth L. Pierpont

Ruth L. Pierpont
Director, Historic Preservation
Field Service Bureau

RLP:cm

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

May 29, 1996

REPLY TO
ATTENTION OF

Environmental Assessment Section
Environmental Analysis Branch

Mr. J. Winthrop Aldrich
New York State Office of Parks,
Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, P.O. Box 189
Waterford, NY 12188-0189

Dear Mr. Aldrich,

The U.S. Army Corps of Engineers, New York District (Corps) is responsible for maintaining navigation channels in the Port of New York/New Jersey. A Dredged Material Management Plan (DMMP) is presently being developed to successfully continue this work.

Several categories of alternatives are under consideration for the DMMP. These categories consist of Existing Pits, New Pits, Nearshore Contained Disposal facilities (CDFs), Ocean Disposal, Upland Disposal and Decontamination. Numerous locations are presently undergoing preliminary analyses to identify short- and mid-term disposal alternatives as well as to determine the potential for sites to be selected for detailed investigation and design. Technical and non-technical data will be used to narrow down a larger set of alternatives and focus on selected locations in smaller geographic sub-sets of the Harbor-Apex region. Currently remote sensing surveys are being undertaken for the entire New York Harbor Bight Apex. The work is being conducted by the Corps' Waterways Experiment Station and the United States Geological Survey. The geophysical data gathered through these surveys will be available for cultural resources analyses.

The overall study area as presently defined is massive and the potential for cultural resources is vast. Cultural resource remote sensing surveys would not be effective at the current scale of the investigation and at this preliminary stage of analysis. Cultural resource issues will be addressed for each of the smaller geographic sub-sets once they are determined and will be used to evaluate the alternative disposal sites.

A preliminary study is underway within the Corps which focuses on the types of cultural resources that might be encountered, a brief examination of existing studies and the direction that further research should take for each alternative under consideration. Many Federal, State and local agencies and organizations have been contacted for information on prehistoric and historic resources on the Continental Shelf including contact by telephone with Mark Peckham of your staff. A draft copy of this Corps report will be provided to you for comment.

We will keep you apprised of the direction of further studies and their results as the project proceeds. Any input you may have regarding this work will be appreciated. We will request Section 106 comments, pursuant to 36 CFR 800.5., as appropriate. Please feel free to provide us with any general comments you may have at the present time.

If you or your staff require additional information or have any questions, please contact Lynn Rakos, Project Archaeologist, at (212)264-4663.

Sincerely,

Stuart Piken

Stuart Piken, P.E.
Chief, Planning Division

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

May 29, 1996

REPLY TO
ATTENTION OF

Environmental Assessment Section
Environmental Analysis Branch

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

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We will keep you apprised of the direction of further studies and their results as the project proceeds. Any input you may have regarding this work will be appreciated. We will request Section 106 comments, pursuant to 36 CFR 800.5., as appropriate. Please feel free to provide us with any general comments you may have at the present time.

If you or your staff require additional information or have any questions, please contact Lynn Rakos, Project Archaeologist, at (212)264-4663.

Sincerely,

Stuart Piken

Stuart Piken, P.E.
Chief, Planning Division

APPENDIX D

Public Involvement

Written Comments on the Draft PEIS
And District Responses

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APPENDIX D

PUBLIC INVOLVEMENT

This appendix contains copies of the written comments received on the Draft Programmatic Environmental Impact Statement for the Dredged Material Management Plan (DMMP) and the District's responses to those comments. The written comments are listed in Table D-1. The comment letters were reviewed and subsections of the letters have been identified with a code in the margin of each letter. A response to each coded subsection follows each letter, which represents the District's response and action taken in relation to each comment.

The oral statements (transcripts) given at the four public meetings on the DPEIS were reviewed by the Corps. These statements were generally in support of, or in opposition to, certain aspects of the DMMP, but did not contain significant technical comments that required revisions in the text of the DPEIS.

Chapter 6 of the FPEIS contains a summary of the public involvement process over the duration of the development of the DMMP. This chapter identifies the dates and locations of the various public meetings held during the plan development process, and demonstrates how the comments influenced the shaping of the DMMP.

The DPEIS was available for review and comments from September 10, 1999 to December 3, 1999. Since that time, the DMMP, PEIS and Technical Appendices have been undergoing revision to incorporate comments and to update aspects of the dredged material management, such as volume projections, placement site availability, and potential changes to the Federal channel deepening project. The DMMP is a thorough updating of the document, which was released in September 1999. The PEIS has been revised to reflect these changes. The updating of the DMMP has not altered the preferred alternative, course-of-action or the priorities for managing dredged material reflected in the plan. The comments and responses contained in the appendix remain relevant and, where appropriate, are incorporated in the FPEIS.

Table D-1 (1 of 2)
Written Comments Received on the DPEIS

Category	Designation	Letter Dated
FEDERAL		
Elected Officials		
Congressman Fossella	F1	Nov. 23, 1999
Agencies		
US Environmental Protection Agency	F2	Dec. 3, 1999
US Dept. of the Interior, Office of the Secretary	F3	Oct. 25, 1999
US Dept. of the Interior, National Park Service	F4	Nov. 12, 1999
US Dept. of Commerce, National Marine Fisheries Service	F5	Dec. 3, 1999
STATE		
New York		
Assemblywoman Helene E. Weinstein	S1	Dec. 3, 1999
NYS Department of State	S2	Nov. 1, 1999
NYS Department of Environmental Conservation	S3	Dec. 8, 1999
NYS Committeewoman 46th AD – Marsha Rapaport	S4	Nov. 24, 1999
New Jersey		
NJ Dept. of Environmental Protection	S5	Oct. 28, 1999
NJ Dept. of Transportation, Maritime Resources	S6	Dec. 1, 1999
Port Authority of New York & New Jersey	S7	Dec. 2, 1999
MUNICIPAL		
President of the Borough of Queens - Claire Shulman	M1	Dec. 1, 1999
Harrison Town Councilman - Dan E. Kelly	M2	Nov. 30, 1999
City of NY, Brooklyn Community Board 13	M3	Nov. 29, 1999
City of NY, Community Board No. 15	M4	Nov. 23, 1999
Monmouth County Board of Health	M5	Nov. 30, 1999
City of NY, Community Board No. 10	M6	Jan. 13, 2000
OTHER		
Citgo Petroleum Corp.	OI1	Nov. 16, 1999
Sea Gate Association	OI2	Nov. 24, 1999
NYS Marine Resources Advisory Council	OI3	Dec. 1, 1999
NJ Petroleum Council	OI4	Dec. 2, 1999
BBL, Inc. for Chemical Land Holdings, Inc.	OI5	Dec. 2, 1999
Atlantic States Legal Foundation, Inc.	OI6	Dec. 3, 1999
ORGANIZATION		
Monmouth County League of Women Voters	OR1	Nov. 22, 1999
Natural Resources Protective Assoc. - Mr. Adolph Malanga	OR2	No date
Natural Resources Protective Assoc. - Ms. Mildred Eiferman	OR3	No date
Natural Resources Protective Assoc. - Pat Semp	OR4	No date
Natural Resources Protective Assoc. - Ms. Sylvia Harris	OR5	No date
Surfers' Environmental Alliance	OR6	Dec. 1, 1999
Natural Resources Protective Assoc. - Mr. James Scarcella	OR7	Dec. 1, 1999
Bensonhurst West End Community Council	OR8	Nov. 22, 1999

TABLE D-1 (2 of 2)
Written Comments Received on the DPEIS

Category	Designation	Letter Dated
Concerned Citizens of Bensonhurst, Inc.	OR9	Nov. 23, 1999
S.I. Taxpayers' Assc., Inc. 1933	OR10	Nov 26, 1999
Clean Ocean Action	OR11	Dec. 3, 1999
Long Island Diver's, Assoc.	OR12	No date
CITIZEN		
Ms. Aileen Scalice	C1	No date
Mr. Matt Madden	C2	Nov. 19, 1999
Ms. Anna Marchini	C3	No date
Mr. Anthony V. Somma	C4	Nov. 23, 1999
Mrs. Harold Langer	C5	Nov. 1999
Mr. Dominic Traina	C6	No date
Mr. Ira Drogin	C7	No date
Mr. Richard Ciaravino	C8	No date
Ms. Dorothy A. Ciaravino	C9	No date
Mr. Alfred L. Lama	C10	Nov. 27, 1999
Mr. William Fink	C11	No date
Ms. Rosemarie Bugenis	C12	Nov. 30, 1999
Mr. James R. Koenig	C13	Dec. 3, 1999
Mr. Boris Konstantinovskiy	C14	No date
Mr. Andrew Waxman	C15	No date
From Mr. Alex Tiethof, Signed by Mr. Kerry Sullivan	C16	Dec. 3, 1999
Mr. Ronald Vaccaro	C17	Dec. 3, 1999
Mr. John Malizia (Staten Island Tuna Club)	C18	Dec. 3, 1999
Mr. John Malizia (Staten Island Yacht Club)	C19	Dec. 3, 1999
Mrs. Rosemarie Bugenis	C20	Nov. 27, 1999
The Bike Shop of Staten Island (signature illegible)	C21	Nov. 23, 1999
Mr. Eugene W. Geer	C22	Nov. 30, 1999
Mr. Anthony Cianci	C23	Dec. 3, 1999
Mr. Lee Gelfand	C24	No date
Rev. Joseph R. Parrish, Jr.	C25	Nov. 30, 1999
Ms. Eva Tsoukalas et al.	C26	Nov. 30, 1999
Signature illegible (to Mayor Giuliani)	C27	No date
Ms. Elizabeth M. Kosich	C29	No date
Ms. Larrell R. Brown	C30	Dec. 26, 1999
Mr. Charles A. Munro III	C31	Dec. 27, 1999
Eleanor and Steve Romaine	C32	Dec. 28, 1999

DISTRICT OFFICES:
4434 AMBOY RD., 2ND FLOOR
STATEN ISLAND, NY 10312
(718) 356-8400
(718) 356-1928 (FAX)

8818 FOURTH AVENUE
BROOKLYN, NY 11209
(718) 630-5277
(718) 630-5388 (FAX)

Congress of the United States
House of Representatives
Vito Fossella
13th District, New York

CAPITOL OFFICE:
431 CANNON BUILDING
WASHINGTON, DC 20515-3213
(202) 225-3371
(202) 226-1272 (FAX)

E-MAIL ADDRESS
vito.fossella@mail.house.gov

November 23, 1999

Colonel William H. Pearce
District Commander,
Army Corp of Engineers
New York District
26 Federal Plaza
New York, NY 10278

Dear Colonel Pearce:

I would like to thank the Army Corps of Engineers (ACOE) for hosting last night's public hearing on the draft Dredged Material Management Plan ("DMMP"), which allowed Staten Island residents to offer their opinions and feedback on an issue that has wide-ranging implications for Staten Island.

I am glad that similar outreach efforts over the past several years prompted the Army Corps to abandon the idea of creating new containment islands and borrow pits in the Raritan Bay for disposal of dredged material. At the same time, I am dismayed and confused by the Army Corps' decision in the DMMP to leave open the possibility of using existing borrow pits in Raritan Bay at some point in the future. Although this option is currently designated "Preference 3," meaning it is not actively under consideration, it is my understanding the Army Corps maintains the right to redesignate it to "Preference 1" or "Preference 2" if necessary. I am bewildered why the Army Corps would ever consider disposing of potentially contaminated dredged material off Staten Island.

We must not compromise the integrity of the existing pits in the waters off Staten Island, nor will we stand by silently if any effort is undertaken that could cause harm to the environment in and around our borough. I do not believe the Army Corps should solve one problem by creating another. Let me be clear: The current "Preference 3" designation should not be left open to future debate. I urge the Army Corps to once again listen to the people of Staten Island and remove this option from the table.

As I testified last night, the designation of placing dredged materials in existing borrow pits as beneficial raises many questions that the Army Corps in its DMMP and programmatic EIS does not answer. Accordingly, I would respectfully request a written answer to the following:

1) What category of contamination will the dredged material be and how does this designation affect the choice of disposal methods? F1-1

2) How will a determination be made that an existing borrow pit has been degraded? How will it be determined that filling in a borrow pit with dredged material is a beneficial use? F1-2

3) It is my understanding that a thriving marine habitat has taken hold off of the Swinburne, Hoffman and West Bank borrow pits. Can the Army Corps confirm this and, if not, what steps will be taken to access whether a marine habitat is present? F1-3

4) If marine life is present at the above-mentioned locations, will the Army Corps officially take these sites off the table? F1-4

5) To what extent will upland disposal sites be a priority now and in the future within "preference 1" options? F1-5

As you know, this issue is of great importance to securing the long-term health of Staten Island's environment. I look forward to continuing speaking with you and others at the Army Corps to help find an efficient and environmentally-sound disposal method for dredged material. Thank you for your attention to this matter. I look forward to hearing from you soon.

Sincerely,

Vito J. Fossella
Member of Congress

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

DEC 03 1999

Mr. Robert J. Kurtz
PEIS Coordinator
Department of the Army
New York District, Corps of Engineers
Jacob K. Javits Federal Building
New York, New York 10278-0090

Class: EC-2

Dear Mr. Kurtz:

The Environmental Protection Agency (EPA) has reviewed the draft programmatic environmental impact statement (PEIS) for the Dredged Material Management Plan (DMMP) for the Port of New York and New Jersey (CEQ # 990319), as well as the DMMP, and its associated technical appendices. This review was conducted in accordance with Section 309 of the Clean Air Act, as amended (42 U.S.C. 7609 12 [a] 84 Stat. 1709) and the National Environmental Policy Act (NEPA).

The stated purpose of the DMMP for the Port of New York and New Jersey is to produce a regionally supported, comprehensive plan to economically meet all dredged material management needs of the port while also protecting and supporting the restoration of the estuary. The plan is broken down into two time periods, 10 years (2000-2010) and 30 years (2010-2040). The plan for the next 10 years takes into account all the planned and underway channel deepening projects, as well as the anticipated maintenance volumes to keep the existing or improved channels/berthing areas open. The 2040 plan covers the Port's needs for the thirty years following the completion of the majority of the channel/berthing area deepenings, and other Port improvements, and is primarily aimed at managing the maintenance related dredged materials.

The draft PEIS evaluates four different alternatives: No Action, the Recommended Course of Action (the preferred alternative), the Environmentally Preferred Alternative, and the Base Plan (Economically Preferred Alternative). The options under consideration for each alternative include: sediment contaminant reduction, sediment/dredging reduction, beneficial uses, decontamination technologies, confined aquatic disposal facilities, and confined disposal facilities. EPA is pleased to note that the PEIS clearly states that subsequent site-specific NEPA documents will be prepared before the implementation of the individual actions proposed in the Recommended Course of Action. EPA reserves the right to comment on these options individually, as they proceed through the NEPA process.

The recommended plan maximizes the beneficial use of dredged material. It promotes further contaminant reduction measures in the estuary, remediates impacted historical ocean disposal areas (HARS), creates and restores habitat in the harbor (many sites), and remediates impacted upland sites (*e.g.*, landfills, brownfields and abandoned mine sites by mixing the dredged material with stabilizers). It also supports various technologies used to decontaminate dredged material and uses it to create usable end products for the construction industry. Aquatic placement is limited to HARS remediation, restoration of an existing degraded pit in an embayment of Jamaica Bay, and the creation of shellfish and bird habitat. Should initial projects using dredged material to restore habitat at the existing degraded pit site prove environmentally beneficial, and with the support of the other involved agencies, restoration of additional degraded pits in other areas of the estuary may also be implemented. Several of the preferred options contained in this plan are already either fully permitted or have permits pending.

EPA formally agreed to become a cooperating agency in the development of the PEIS for the DMMP on April 15, 1998. As a cooperating agency, EPA agreed to review and comment on draft documents prior to their incorporation in the PEIS. In this capacity, EPA commented on the Progress Report on the DMMP on April, 15, 1998, the draft DMMP on November 16, 1998 and its technical appendices on December 18, 1998, and the working draft of the PEIS for the DMMP on February 4, 1999 and August 20, 1999. Additionally, EPA submitted comments on a draft report on the beneficial uses of dredged material prepared for incorporation in the DMMP on May 10, 1999. In addition to our comments on the draft reports, EPA also frequently attended workgroup meetings during the different stages of the development of the DMMP in order to discuss the specific options being considered for incorporation into the document.

While EPA believes that our involvement during the development of the DMMP has been valuable to the process, we have raised issues with regard to certain aspects of the plan over the last year that have not been addressed. In particular, our concern over the preference and status given to future ocean remediation in the plan, the lack of currently permitted placement options, and the required air quality analyses. EPA has raised these issues in numerous comment letters over the course of the development of the plan. With this in mind, EPA would like to take this opportunity to reiterate our aforementioned concerns, and offer the following additional comments on the draft DMMP, PEIS, and Technical Appendices. F2-1

DRAFT DMMP

General Comments

1. EPA would like to commend the U.S. Army Corps of Engineers (USACE), New York District for developing a Dredged Material Management Plan (DMMP) for the Port of New York and New Jersey with a Recommended Course of Action (preferred alternative) which maximizes the beneficial use of dredged material. In addition, it promotes further contaminant reduction measures in the estuary, remediates impacted historical ocean disposal areas (HARS), creates and restores habitat in the harbor

(many sites), and remediates impacted upland sites (*e.g.*, landfills, brownfields and abandoned mine sites by mixing the dredged material with stabilizers). It also supports various technologies to decontaminate dredged material, which would create usable end products for the construction industry. Aquatic placement is limited to HARS remediation, restoration of an existing degraded pit in an embayment of Jamaica Bay, and the creation of shellfish and bird habitat.

2. The September 1999 draft DMMP identifies many options for meeting short-term dredging and disposal needs in addition to identifying a combination of potential options with contingencies for managing the Port's longer-term needs. It also suggests that the flexibility designed into this approach would allow the region to take advantage of the most feasible and supported options through the outyears, as they become available for implementation.

Unfortunately, EPA is troubled by the lack of options currently permitted ("Option Status 1") or in the permitting process ("Option Status 2"). The total volume accommodated by Option Status 1 projects is only (approx) 45 million cubic yards (MCY) HARS suitable material and 8.69 MCY HARS unsuitable material. The volume projected as Option Status 2 is 5 MCY HARS suitable material and 3.4 HARS unsuitable material. The projected volumes for the 2010 Plan are 55 MCY HARS suitable material, 29 MCY HARS unsuitable material, and 9.4 MCY of rock. Therefore, there is a short fall with respect to future placement options which are permitted or are in the permit process. F2-2

EPA recognizes, and sympathizes with the fact that USACE and the States have no control over implementation of privately constructed disposal options, however; the plan as currently presented, provides no reasonable assurance that navigation projects can be effectively maintained in the out years. There are few "on-line"options available to handle large quantities of dredged material. As such, there will be uncertainty with regard to long term dredged material management. Therefore, EPA strongly urges the USACE to work more closely with the stakeholders to better define the long term aspects of the plan in order to resolve this uncertainty, or to pursue disposal options independently. F2-3

EPA acknowledges the need to retain the flexibility to consider environmentally sound, economically feasible new alternatives as they become available. However, deferring a definitive course-of-action for the outyears will not achieve the stated purpose of the report.

3. The DMMP recognizes that in the near-term, New York State (NYS) will have a shortfall of disposal volume vs. dredged material of 500,000 cubic yards. EPA believes that NYS must follow the example set forth by the State of New Jersey to aggressively identify dredged material disposal options. EPA believes it is inadequate

to manage dredged material through "deferred dredging". As such, EPA remains committed to working with the USACE and the States of New York and New Jersey, the Port Authority of New York and New Jersey (PA), as well as other interested stakeholders, in resolving the issues associated with dredged material management. EPA fully supports the USACE's recommendation to develop Cooperative Agreements with the States, involved agencies, commercial developers, and other groups, as appropriate, to ensure that necessary actions of the DMMP are implemented.

4. EPA is disappointed that the DMMP retains future ocean placement options. The DMMP predicts that HARS will reached anticipated capacity based on a 1 meter cap in the year 2018 even with the implementation of other beneficial use alternatives. EPA has stated in the past, if the DMMP must discuss a future ocean placement, EPA could only support placement of dredged material having a beneficial outcome such as remediation. EPA is pleased that the DMMP gives ocean disposal a preference 5 ranking, and no longer considers ocean disposal. EPA Region 2 acknowledges that the Marine Protection Research and Sanctuary Act (MPRSA) and its' implementing regulations allow for ocean disposal/placement, but we believe that the anticipated opposition to the designation of such a site in the New York Bight region would make it's implementation unlikely. In keeping with the spirit of the July 24, 1996 "three party letter", it does not seem prudent to include an alternative as controversial as an open ocean disposal site as a primary contingency. F2-4

5. With regard to the discussion concerning contained aquatic disposal (CAD) facilities, and specifically, the discussion concerning the need for capping, EPA has not reviewed any data to make a determination as to whether caps (interim or final) should be placed on each of the disposal cells to ensure that contaminated sediment is isolated from the environment. As such, we would like to reserve the right to comment on specific pit proposals as they are put forth. As in the past, EPA will cooperate fully with the USACE, the PA, and the States of New Jersey and New York in the development and implementation of site management and monitoring. Prior to the issuance of any federal permit for the proposed Newark Bay Sub-Channel Placement Cells (NBSCPs), EPA would request to review, and concur with, the special conditions of the permit, and the Site Management and Monitoring Plan (SMMP) should new CADs be implemented. F2-5

6. The New York State Department of Environmental Conservation, in order fill degraded Jamaica Bay borrow pits expeditiously, has indicated that they would accept HARS-suitable material as it becomes available for any permitted pit. Because of the lack of permitted management options for HARS-unsuitable material, EPA would prefer and recommend that any Jamaica Bay pit receive only HARS-unsuitable material (with the possible exception of a demonstration project) if it can be demonstrated that this disposal would have an overall net environmental benefit. F2-6

SPECIFIC COMMENTS

1. Section 1.3, page 2- Please note that RCRA does not cover radioactive waste unless, they are "contained in" a RCRA listed waste, or exhibit it as a characteristic. F2-7

2. Section 1.3, page 2- It is simplistic to say that "any dredged material characterized as hazardous...would be disposed of at a properly permitted hazardous waste facility". The Hazardous Waste Identification Rule-Media (HWIR) (40 CFR Part 264 of RCRA's implementing regulations) excludes dredged materials from RCRA Subtitle C if they are managed under an appropriate permit under MPRSA or the Clean Water Act (CWA). F2-8

3. Section 2.1, Page 11 Sentence reads, "Dramatic increases in sediment contamination from 1960's levels have been documented...inconclusive." This sentence is still confusing, and should be clarified with the appropriate documentation referenced. F2-9

Additionally, the draft DMMP sets a goal of .5 MCY of unsuitable /contaminated material to be dredged annually by 2050. However, to achieve this goal, a significant reduction in the amount of contaminated material entering certain areas of the harbor would have to be achieved. While EPA supports such an effort, we believe that the percentages in reduction used in the calculations do not accurately reflect, and take into account the amount of contamination already present. Thus, areas that are presently relatively uncontaminated, are being over represented in the calculations. As a result, this may lead to incorrect estimates in the total amount of contaminate reduction that is possible over a given period of time. F2-10

4. Section 2.3.3- Please note that by letter dated August 17, 1998, from Jeanne M. Fox, Regional Administrator EPA Region 2 to Colonel William H. Pearce, District Engineer, USEPA recommended denial of a USACE permit for the Phase 2 Kearny Brown field remediation (Seaboard). EPA will continue to work with the USACE regarding our concerns with this option.

5. Section 2.7 - See above general comments on Ocean Placement. Additionally, earlier in the document, it is stated that the expected lifespan of the HARS is "the next decade or so" while this section estimate approximately 25 years. EPA believes, based on USACE volume estimates, that the former is correct as illustrated in Table 3-2, which indicates the HARS will be fully remediated in 2018. F2-11

DRAFT PEIS

General Comments

1. The DMMP designates Island CDFs in the Lower Bay of New York Harbor and the New York Bight Apex as a "non-preferred" option no longer under consideration as feasible. In our June 4, 1998 letter to M. John Sassi commenting on the draft report of the DMMP, we stated that "existing laws and regulations do not prohibit the location of a CAD-pit in the ocean. However, consistent with current laws and regulations, CAD pits in the ocean would have to be formally designated as ocean disposal sites by EPA pursuant to 40 CFR §228.4. Morever, these sites could only accept dredged material that meets the requirements of the ocean dumping regulations." EPA Region 2 believes that CDFs (e.g., ocean islands) are subject to the same legal and regulatory requirements as CAD pits. EPA'S position on this alternative has not been revised, and USACE should ensure that this position is properly reflected in all future DMMP documents. EPA strongly suggests that USACE focus their available resources on options such as land remediation or Upper/Lower Bay Complex CAD pits/CDFs. F2-12

2. By letter dated April 15, 1998, EPA submitted comments on the outline for the PEIS and stated that the PEIS should include a discussion on the effect that the Inland Testing Manual (ITM) will have on dredged material disposal in the NY Harbor Complex. The ITM is a USACE/EPA manual developed to provide guidance regarding technical protocols under Section 404 of the CWA for evaluating proposed discharges of dredged material associated with navigational dredging projects in the waters of the U.S.. The ITM will be phased in over the next 18 months and mandates that EPA and the USACE develop a regional testing manual based on it. EPA believes that the PEIS fails to evaluate the potential effect the ITM may have on dredging projects, and dredged material disposal in the New York Harbor Complex. F2-13

3. A better description of potential beneficial use wetland creation sites should be provided, in an appropriate level of detail in the final PEIS (with correspondingly more detail in later site-specific NEPA documents). Potential areas should be characterized in terms of proposed vegetation and salinity requirements. Additionally, information pertaining to particle size, proportion of organic constituents, and chemical parameters such as nutrients and oxygen demand are also important in accessing the appropriateness of sediment to be deposited. F2-14

The PEIS and DMMP should establish, or at least discuss, specific environmental thresholds for contaminants in sediments proposed for wetland creation or near shore disposal.

Please note that in selecting areas to be used for beneficial use wetland creation, special attention should be focused on establishing sites which would augment and/or protect existing wetland areas.

4. Near shore disposal options must be carefully evaluated in terms of their impacts to the aquatic environment to ensure the least possible impact to these areas. Because of the aquatic resources typically impacted by such activities, EPA has often been reluctant in the past to recommend a permit for this type of disposal. F2-15

5. "Upland" disposal or treatment areas should be evaluated to determine the extent and value, if any, of existing wetlands. In some cases, EPA may recommend the exclusion of disposal in or adjacent to an existing dredge disposal site, if such a site has been inactive for a sufficient period of time to allow for the establishment of a functioning wetland. F2-16

6. While the PEIS commits to future site specific NEPA analyses for the implementation of specific options, EPA recommends that the final PEIS include a detailed checklist of the requirements, and supporting evaluations needed, for the air analyses for of each site-specific NEPA document. We recommend that the checklist include the following air related items:

- air permits to be issued by the USEPA, New York, or New Jersey;
- supporting air emissions and air quality impact evaluations for dredged material, and onroad and nonroad mobile sources, including marine vessels and locomotives;
- supporting analyses to assess conformity of actions with the New York and New Jersey State Implementation Plans (SIPS);
- evaluation by local metropolitan transportation planning organizations such as the New York Metropolitan Transportation Council and the North Jersey Transportation Planning Authority where a transportation project is involved in the disposal.
- identification of indirect emissions associated with specific options.

F2-17

7. We recommend that Chapter 5, Impact Assessment, contain an air quality subsection when referring to the use/disposal/treatment of dredged material. Currently, some sections of the document have separate Air Quality sections, while others have air grouped into "Other Impact Issues". Using parallel structure for all of the resources described within the PEIS would dispel the appearance that the USACE has overlooked impacts to specific resources for some of the discussed options. F2-18

8. EPA's nationwide Urban Air Toxics Strategy (UATS), which became final in September 1999, includes polychlorinated biphenyls (PCBs), polycyclic organic matter (POM), 2,3,7,8-tetrachlorodibenzodioxins (and congeners and tetrachlorodibenzofuran congeners), and certain heavy metals in its list of hazardous air pollutants (HAPs) to be addressed in urban areas nationwide (urban HAPs). The list of urban HAPs can be found at the following web address: http://www.epa.gov/ttn/uatw/urban/urbanpg.html. The UATS includes a prominent environmental justice component. In the context of the UATS, the public in EPA Region 2 expressed concern about impacts of PCBs from upland disposal of dredged material. In response, EPA Region 2 made commitments to consider, or have the appropriate agencies consider the future air quality impacts of such disposal. We also committed to providing EPA's Office of Air Quality Planning and Standards with updates on this source of HAPs emissions. We are therefore interested in whether or not the upland disposal of dredged material is a significant source of urban HAPs. Accordingly, the final EIS should include the results of the research and pilot projects mentioned in the document that address volitization or any other form of transfers of HAPs from the dredged material to the air (aerosolization). **F2-19**

SPECIFIC COMMENTS

CHAPTER 2 - PURPOSE AND NEED FOR THE ACTION

Page 2-1- The statement "the presence of measurable amounts of contaminants has resulted in requirements for special sites and handling to dispose of dredged material to protect the marine and estuarine environment and biota" is incorrect. The presence of a contaminant of concern does not, in and of itself, mean the dredged material is "contaminated" with respect to dredged material disposed under the authorities of the CWA and MPRSA. CWA and MPRSA have as their criteria, effects based testing. In addition, in most instances, the results of TCLP testing demonstrate that the upland disposal of dredged material rarely requires special handling. **F2-20**

Page 2-3- Section 2.5 distinguishes management of "Other Related Port Projects" from the DMMP, but states that they influence the DMMP. The PEIS should include the proposed Comprehensive Port Improvement Plan (CPIP) as a project which could influence the DMMP. **F2-21**

CHAPTER 3 - OPTIONS (ALTERNATIVES)

Page 3-2- Actions by Others- It is important to note that although Howland Hook dredged material was placed in a RCRA TSDF in Utah, the material was RCRA tested and determined not to be a RCRA waste. **F2-22**

CHAPTER 4 - AFFECTED ENVIRONMENT

Page 4-2- A description of the Harbor's wetlands should be included in this chapter of the document. The Harbor's wetlands have the potential to be affected by the various disposal options described in the document, including future beneficial use projects. Therefore, a thorough description of these habitats should be included in this section of the document. F2-23

CHAPTER 5 - IMPACT ASSESSMENT

Environmental Impact of No-Action Alternative

Page 5-1- ¶ 4 The USACE should include a detailed discussion of the impacts of lightering on the Port. EPA believes that this practice, on a large scale basis, may have the potential to adversely impact the NY/NJ Harbor. F2-24

Environmental Impacts of Contaminant Reduction

Page 5-5- As previously stated, the PEIS and DMMP should strongly note that the implementation of measures necessary to reduce contaminant levels are under the authorities of the States. EPA views programs targeted toward pollution prevention and contaminant reduction as essential to the NY/NJ Harbor and the DMMP. Without such programs, the problems associated with the disposal of sediments will persist indefinitely. F2-25

Environmental Impacts of Sediment Reduction

¶ 5 EPA recommends that the USACE investigate which areas of the harbor are contributing the largest sediment loads and address these areas in the context of the DMMP. USACE should also investigate which wetlands, if restored, would contribute the most to sediment reduction. F2-26

Environmental Impacts of Beneficial Uses

Ocean Remediation

Page 5-10- See all previous comments on Ocean Remediation. Please note that the criteria for dredged materials being placed at the HARS is specific to that site. F2-27

Page 5-11- EPA would disagree with the generic statement that "there are other waste dumping sites in the Bight Apex that could be remediated in a manner similar to HARS. The monitoring at HARS would contribute to the evaluation of these other ocean remediation sites...". Firstly, this statement assumes that the former disposal F2-28 sites require remediation. Secondly, waste disposal sites in the Bight vary greatly both in physical, chemical and biological characteristics and each would need to be assessed on its' own merits as an ocean remediation site. In addition, a comprehensive alternatives analysis to the ocean placement would be required.

Habitat Creation, Enhancement, and Restoration

Page5-11- Twelve habitat applications were examined under the category of habitat creation, enhancement and restoration. These included borrow pit restoration, landfill cover, leachate control, wetlands creation for water treatment, wetlands, mudflats, oyster habitat, shellfish habitat, submerged aquatic vegetation habitat, fish reefs, bird habitat, and filling dead-end basins.
EPA supports the concept of using dredged material in ways that support habitat creation, enhancement, and restoration in areas that are currently degraded or where there would be a demonstrated benefit exceeding any potential adverse impacts, particularly to existing benthic communities. EPA would support the use of materials containing contaminants of concern provided they could be effectively isolated, throughout the project, from the surrounding biota, to a degree which ensures no trophic transfer. F2-29

Environmental Impact of CAD Pits (existing, new, sub-channel)

Existing Pits

As in the past, EPA expresses a preference for the use of new pits over that of existing pits. EPA still desires to develop an MOA for management of pits. EPA has requested, in writing (letter dated 3/26/91), that USACE/EPA develop a MOA on management control that would give EPA management oversite and permit concurrence abilities. EPA feels this is beneficial and necessary because of the nature of the sediments that would be disposed, and the need to manage them protectively. F2-30

New Pits

Page 5-34- As stated in EPA's March 26, 1991 letter, EPA expressed a preference for the use of new pits over existing pits. EPA still supports this approach because it allows for optimal environmental design and operational efficiency. In addition, EPA supports the approach, where practicable, of localized pits with a specific draw area. By letter dated March 3, 1997, EPA comments on the draft EIS for the Newark Bay Confined Disposal Facility, generic concerns for new pits included the project alternatives, compliance with 404(b)(1) guidelines, and the adequacy of any monitoring program. Of particular concern was that the USACE condition any permits to require the applicant to undertake specific corrective measures to F2-31 minimize potential adverse impacts if monitoring indicates that material has dispersed beyond the target disposal site. Without a specific project to comment on, EPA would still have these generic concerns.

In discussing socio-economic conditions, the PEIS should note that the cost of the new pits is high, and Port users may not be willing to pay for it. This seems to be the case at present with the existing Newark Bay Pit, it is too costly for many private entities to use. F2-32

Sub-Channel Pits

Page 5-37- In discussing socio-economic conditions, the PEIS should note that the cost of the new pits is high and Port users may not be willing to pay for it. This seems to be the case at present with the existing Newark Bay Pit -- it is too costly for many private entities to use.

Environmental Impact of CDFs (ocean island, bay island, near shore CDFs, upland)

Of all of the alternatives proposed, CDFs may potentially cause the most serious adverse environmental impacts because of the permanent loss of water column and benthic habitats with affects to finfish and shellfish, algal and phytoplankton primary production, and icthyoplankton. The loss of productivity from algae and phytoplankton in the water column would be unmitigated. In addition, this loss of primary production might result in lost productivity at higher trophic levels, and would need to be addressed in any subsequent NEPA documents. F2-33

Near Shore CDFs

Page 5-42- EPA would like to note that the CWA and its implementing regulations discourages the placement of dredged or fill material into Waters of the United States. The PEIS indicates that a peninsula CDF in the Upper Bay could be located in a number of sites. Atlantic Basin in Brooklyn has been identified as a candidate site, though others are being sought for port expansion which generally includes areas adjacent to current facilities. While this is true, USACE must discuss the differences between water dependent and non-water dependent uses such as disposal sites and port expansion. It appears that this disposal option may have adverse impacts to wetlands and shallow water communities. As such, this disposal option could only be supported it were sited in highly degraded estuarine areas where no practicable alternative existed. F2-34

Risk Assessment of Potential Alternatives

Page 5-51- EPA would like to reiterate our previous requested to review these reports when they become available. F2-35

DRAFT DMMP TECHNICAL APPENDIX

Specific Comments

Page 16- It should be noted that the approach used for prediction method "A" is not a regulatory method for determining placement of dredged material at the HARS. In addition, an assessment of all contaminants would need to be performed prior to determining suitability for HARS placement. F2-36

Page 17- (Potential Impacts) In the discussion concerning surficial sediments toxicity to amphipods, it states the material is unsuitable for "beneficial use". If this is meant to apply only to the HARS, this should be clearly stated. Amphipod toxicity would not seem to be a limiting factor for beneficial use in an upland setting. If it is, this should be explained. F2-37

Page 50- (Cost Estimates for Land Remediation) It is stated that the cost for disposing of material at Jersey Gardens and Seaboard was \$40 - \$50/cy. The text should explain why these costs are greater than disposal in the Pennsylvania mines or the benchmark of \$29/cy put forth by NJMR. Is the \$29 benchmark operationally possible? F2-38

Table A-6-1- We do not believe three years is a realistic time frame for implementing a near-shore CDF. Please provide supporting information to substantiate the conclusion drawn in the document. F2-39

Based on our review and in accordance with EPA policy, we have rated this draft PEIS as EC-2, indicating that we have environmental concerns (EC) with specific management options discussed in the draft PEIS, and request that additional information, as discussed above, be included in the final PEIS, DMMP, and technical appendices to address our concerns. F2-40

Thank you for the opportunity to comment. Should you have any questions concerning this letter, please contact Mark Westrate of my staff at (212) 637-3789.

Sincerely yours,

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

RESPONSE TO COMMENTS

F2 United States Environmental Protection Agency

F2-1

As described in your letter, our staffs have worked together to try to address your concerns. It is our hope that those few concerns that do remain can be addressed successfully in the responses that follow and the subsequent revision of the final report.

F2-2

The DMMP reflects information available as of the beginning of 2000. Future changes in permitting status will be addressed in the annual updates. The Corps is also concerned with regard to the number of permitted sites. We are aware that both states, the Port Authority and private entities, are actively pursuing other options. They will be identified in the annual updates. Further development of primary (*i.e.*, recommended) and contingency options will continue through the next several years in close coordination with and support of the regional stakeholders (including the EPA). During this time, the Corps will prepare yearly DMMP update reports to track the progress both of dredging projects and the development and implementation of needed placement options. While outyear options may not now be permitted, sufficient time is programmed such that either they or a fallback option can be brought online so that no placement shortfall occurs. So long as no involved stakeholder agency retreats from their own responsibility in implementing the necessary environmentally protective, cost effective options identified within this plan, there should be no uncertainty or concern for managing future dredging projects.

F2-3

It is certainly the intention of the Corps, as spelled out by the flexibility of the DMMP and its on-going yearly update, to work closely with stakeholders to bring the recommended options on line to meet Port needs. Also note, that contingency options exist in the Implementation Plan to meet any short falls that may occur throughout the DMMP project life.

F2-4

It should be emphasized that the contingency is for ocean remediation, not ocean disposal. Placing dredged material that has been thoroughly evaluated and determined by the EPA to be suitable for placement at the HARS is both a cost effective and environmentally beneficial use of this material. However, the use of an ocean disposal (or remediation) site for dredged material can legally only be used when no other practicable alternative exists. Our investigation of alternatives to ocean disposal over the past 20+ years illustrates well the Corps commitment to evaluate and implement all practicable alternatives to ocean disposal (or remediation) of dredged material. Over this time, we have found no alternative option that is practicable for much of the material deemed suitable for ocean disposal (or remediation). Nevertheless, we will continue to pursue now and in the future any alternative that may be preferable to ocean disposal.

F2-5 Noted. The DMMP text has been revised.

The Corps respects the right of USEPA to comment on the need for caps at CAD pits. The site-specific NEPA documents, with associated management plans will provide you that opportunity.

F2-6 Noted. The DMMP text has been revised

Please note that the DMMP currently only recognizes filling of one pit, with HARS suitable material, as a means of investigating agency and public concerns regarding placement and containment of material. If deemed a success, the Corps will consider, with NYSDEC support, moving to the next phase that may utilize non-HARS material, leaving more HARS suitable material available for the remediation of the HARS.

The testing sequence for evaluating the potential effects of filling pits in Jamaica Bay would utilize HARS suitable material initially, followed by a test with HARS unsuitable material. A decision to fill other pits, particularly Grassy Bay, is several years away and dependent upon the testing results. The availability and capacity of disposal options is expected to change over time, with the annual status reports providing updates for the harbor stakeholders. The type of dredged material to be used for pit enhancement, assuming this option moves forward, would depend upon the relative amounts of dredged material available and the status of other options which may be operational at the time.

F2-7 Noted. The DMMP-IR text has been revised.

F2-8 Noted. The sentence has been clarified in the DMMP-IR.

F2-9 Noted. The sentence has been clarified in the DMMP-IR.

F2-10

Regarding targets for future sediment contaminant reduction, the goal that the DMMP sets is to achieve less than 0.5 MCY/YR by 2040, not 2050. Further, as the DMMP also allows well over a decade for further sediment contaminant reduction studies and actions to be implemented such that their effect will be reflected in dredged material. We believe them to be reasonable and achievable goals. This view is further bolstered by Corps' view, which is based on the currently available data showing that the sediments within the harbor are currently recovering, without any additional source reductions or clean-up actions. However, if the EPA has other data that indicates that these targets are inaccurate or overly optimistic, the Corps would welcome it and would include it in future DMMP updates.

F2-11

Several factors can effect the ultimate life span of the HARS (*e.g.*, full remediation capacity of the site, availability of practicable alternatives, etc.). Consequently, the exact life span of the HARS can only be estimated based on a variety of assumptions. The text has been clarified to reflect this point. Additionally, 2018 is the year that the draft DMMP Implementation Report estimated that the HARS would reach its minimum remediation capacity of 40 MCY. Based on communications with EPA staff during the development of the report, the full remediation capacity for the site may be more, which would allow for an even longer life span for the site.

F2-12

We recognize that our agency's have different interpretations of applicable regulation and statutes regarding island CDFs sited in ocean waters. However, as island CDFs are a preference 5 option in the DMMP and are no longer under consideration in this region, the issue is moot.

F2-13

The DMMP does not assess dredging impacts, which are each evaluated on a case-by-case basis. Until the ITM is finalized and the regional implementation criteria established, it is impossible to assess how it may effect any of the recommended or contingency options. When the ITM and its implementation document have been completed and implemented it will then be possible to assess their effect on the DMMP. Any necessary adjustments to the DMMP will than be identified during the appropriate yearly update.

F2-14

The information requested by USEPA regarding beneficial use/wetland creation is site specific. We concur that information on particle size, organic content etc. is important, but these cannot be appropriately generalized without site specific data on dredge material and the proposed disposal site. The Technical Appendix and the Beneficial Use Report, on which the options are based, does provide some more general information such as the need for fine-grained material. However, the general criteria (e.g., a range of suitable parameters or conditions for implementation of this option) have not been developed for the DMMP. The need for such generalities is not critical at this time, nor is it necessarily appropriate. There is a broad range of potential wetland applications for dredged material.

This plan included the use of HARS suitable materials. Any application of non-HARS suitable material would include a mechanism to isolate the material from contact with organisms. The most likely approach would be to use non-HARS material as a sub-base followed by capping with HARS material or other clean material on which the wetland would be developed. Under this scenario there may not be a need for a critical threshold other than below HTRW criteria, which has never been reached by any navigational dredging.

F2-15

As stated on numerous occasions each option will be evaluated in detail in site-specific NEPA documents to include the types of concerns identified by EPA in this comment.

F2-16

Impacts to any wetlands as a result of upland disposal, would be addressed on a site by site analysis in individual NEPA documents.

F2-17

The items identified in the comment have been added to the PEIS in Section 4.3.1.13. These items will be addressed in site specific evaluations, along with other potential considerations.

F2-18

The grouping of some subject areas into "Other Impact Issues" for some of the options was done to condense the document to improve its readability. A preliminary draft version which contained a parallel construction for every option (and suboption) was considered unnecessarily long and tedious for readers. Where there was clearly a potential impact in a given subject area, it was afforded individual treatment for that option. We will include clarification of this approach in the final PEIS stressing that only areas of potential impact have been highlighted by separate sections. See section 5.3.e.

F2-19

The studies proposed or underway related to PCB volatilization are summarized in Chapter 5 (Section 5.3.3.4.5). No new results are available for inclusion in the FEIS. Individual project specific EIS's for upland disposal options would address this issue with the most current information. .

F2-20

The statement on page 2-1 is incorrect. The text has been revised.

F2-21

Inclusion of the CPIP as a project that could influence the DMMP will be added to this section.

F2-22

The sentence in Section 3.2 (Actions by Others) has been revised.

F2-23

We disagree, not all disposal options will have impacts on wetlands. For those where there are potential impacts to wetlands, there will be site specific evaluations as part of the permitting process.

F2-24

Section 5.6.1 has been revised to address lightering.

F2-25

The end of Section 5.3.1.a has been revised to state that contaminant reduction is primarily under authority of the states.

F2-26

The programs for contaminant reduction are under authority of the states, but because the harbor is shared waters, contaminant reduction is being approached as a regionally based initiative. For example, the Harbor Estuary Program's Contaminant Assessment and Reduction Program is a bi-state monitoring and source track-down program which will have benefits for sediment reduction.

F2-27

The Corps is aware that the criteria for sites other than the HARS may be different and site specific. The text has been revised.

F2-28

Section 5.3.3.1c has been revised.

F2-29

Noted. Depending on site(s) the use of effectively isolated non-HARS material may be appropriate.

F2-30

The Corps acknowledges the preference of the EPA. The Corps also recognizes the permit process and the review authority of USEPA. Hence the Corps is unclear why there is a desire or need for a MOA on this matter, since USEPA already has the regulatory authority.

F2-31

We have noted EPA's preference for new pits and point out that DMMP utilizes existing pits only for restoration of a degraded condition. New pits have been identified as preferred contingency options if beneficial use is not available. These pits would be located in areas intended to accept dredged material only from that limited area in accordance with your agency and many other stakeholders suggestions for avoiding impacts outside of the waterbody being dredged.

F2-32

The costs of new CAD pits can be expected to vary widely. The cost of new inshore pits are comparable to land remediation. The costs of many options in the DMMP are relatively high which may be limiting to their use.

F2-33

In-water CDF (nearshore and islands) impacts were addressed in Sections 5.3.6.2 and 5.3.6.3, which included recognition of the loss of the water column to the confining structure. Planktonic organisms (phytoplankton, zooplankton, ichthyoplankton) would be displaced by the structure, but the effect on overall productivity and food web relationships would be expected to be small. Nearshore CDFs are generally designated "not preferred", which means there would be substantial impact investigations prior to any possible development. Island CDFs are no longer under consideration (Option preference 5). Consequently, CDF options are not part of the Recommended Plan, there is no need for more in-depth assessment of potential impacts.

F2-34

Evaluation of water dependency would be handled on a project by project basis. It would be covered by the individual NEPA documents for any given project. Potential sites for nearshore CDF's, which support water dependent functions (are adjacent to existing Port facilities), would be preferred, as would sites with a degraded existing habitat. Sites that were determined to be productive habitats would be used only if no practical alternative existed, and then suitable mitigation for filling at these sites would be needed.

F2-35

The site-specific risk assessment documents will be made available to EPA and the public.

F2-36

Text has been added noting this point.

F2-37

Text has been clarified.

F2-38

Text has been modified regarding the costs of Jersey Gardens and Seaboard sites. The placement cost estimates provided for additional mine reclamation are based on a sizeable economy-of-scale over several years of usage. As for the $29/CY placement cost provided by NJMR for land remediation, the Corps has been assured by NJMR that this "benchmark" will be established (or that NJMR will subsidize all placement costs beyond this figure).

F2-39

While the Corps is unclear as to why the EPA disputes the stated timeframe, the text has been revised to clarify the timeframe. The timeframe shown in Table B-6-1 represents the minimal time necessary to perform the required tasks for constructing a nearshore CDF, assuming no substantial issues arise during the various steps (*e.g.*, NEPA documentation, permitting, etc.).

F2-40

The Corps notes the EPA rating as EC2. The final document will have additional information in it to address EPA concerns.. However, the nature of a programmatic EIS is to keep the public and agencies informed parallel to the development of the plan. At the current stage of development (not site specific) the impacts of the plan are reviewed in a general way. Further note that additional site specific data will be needed and addressed in future NEPA documents. The Corps notes that the nature of a programmatic EIS may lead to a rating stating that more information is required, if the document is compared to a site specific EIS.

United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
408 Atlantic Avenue - Room 142
Boston, Massachusetts 02210-3334

ER-99/811

October 25, 1999

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

Dear Colonel Pearce:

The Department of the Interior (Department) has reviewed the Draft Programmatic Environmental Impact Statement (DPEIS) entitled, *Dredged Material Management Plan for the Port of New York and New Jersey* and is providing the following comments. Per a phone conversation with Mr. Robert Kurtz on October 22, 1999, we were told that the comment period has been extended to December 3, 1999, but we are submitting our comments earlier to provide you with additional time to review and consider them. We note that the document was well written and organized and we compliment you and your staff for its timely completion.

GENERAL COMMENTS

Transportation Impacts

Although the U.S. Army Corps of Engineers (Corps) addresses impacts associated with potential dredged material disposal options, it does not appear that potential impacts to the human environment associated with the transportation of dredged material from dredge sites to disposal sites is addressed within the DPEIS. Potential impacts associated with the transportation of dredged material must be evaluated, as associated adverse impacts could significantly affect fish and wildlife resources. Additionally, the transportation of dredged material could have other effects related to the quality of the human environment, such as noise and adverse impacts on aesthetics, safety, and marine traffic. F3-1

Reference Material

It is the view of the Department that the DPEIS relies too heavily on information contained in previous Corps' documents, such as the often-mentioned Dredged Material Management Plan (DMMP). To provide the reader with a better understanding of the project, the DPEIS needs to be more of a "stand alone" document; rather than summarize and reference other material, the DPEIS refers the reader entirely to other documents to obtain information needed to understand the proposed project. For example, page 3-2 states that the four alternatives developed for F3-2

Consideration"...are described in detail in chapter 3 of the DMMP." In addition, page 3-62 refers the reader to Table 2-2 of the DMMP. The DMMP should be cited each time it is mentioned, as it is unclear if the reader is to refer to the DMMP Implementation Report, which is attached to the DPEIS, the DMMP Interim report of 1996, or the DMMP Progress Report of 1997.

Historic Area Remediation Site

The final programmatic EIS (FPEIS) should discuss the relative amounts of material suitable for the Historic Area Remediation Site (HARS) and HARS-unsuitable material that would be generated over the life of the DMMP. Amounts of material suitable or unsuitable for the HARS should be thoroughly discussed in the DPEIS since relative availability of clean material is critical to the implementation of various dredged material disposal options. It appears the selected plan was chosen based on the assumption of a substantial, long-term reduction in the amount of contaminated material that would be generated from the New York/New Jersey harbor estuary (harbor estuary). This may be an overly optimistic assumption and it may be more prudent to plan for the worst caste scenario. **F3-3**

The HARS disposal option for suitable (clean) material, is also addressed in the DPEIS. The Department recommends that the Corps evaluate the stability of the dredged material proposed for disposal at the site, which is intended to form a protective cap. The cap, in theory, would isolate contaminated sediments already in place and reduce the likelihood of bioaccumulation. However, the Department notes that the stability of the cap is dependent upon the composition and grain size, among other properties, of the sediment. The DEPEIS should contain an evaluation of the long-term stability of dredged material to be placed at the HARS with regard to sediment properties. **F3-4**

With regard to future disposal sites within the New York Bight for HARS-suitable dredged material, the Department notes that the US Geological Survey is currently mapping the surficial sediment distribution and subsurface stratigraphy of the sea floor and characterizing the distribution of contaminants in this area. The Corps may find this information useful for planning and can obtain the information from the US Geological Survey at the following address:

US Geological Survey
Geologic Division
Coastal and Marine Geology Team
384 Woods Hole Road
Woods Hole, Massachusetts 02543
(508) 548-8700

Sediment Reduction

The Corps has identified four strategies to reduce sediment into the harbor estuary: Watershed Sediment Reduction Controls. Channel Design Optimization, Advanced Maintenance Dredging, and Structural Modifications. The Department recommends that the Corps also evaluate opportunities to restrict land-use practices that could contribute sediment to the harbor estuary or reduce the sediment storage and retention capacity of the watershed. Such a strategy could include identification of areas within the harbor estuary watershed that have highly erosive soils as well as areas that currently serve or could serve to retain sediments (typically wetlands). Such critical areas (uplands and wetlands) that are under threat of development could then be purchased and preserved. Such a sediment prevention strategy would complement watershed sediment reduction control efforts. This strategy was recommended by the U.S. Fish and Wildlife Service in its Fish and Wildlife Coordination Act, Section 2(b) report dated August 1998 and entitled, *Assessment of the Dredged Material Management Plan for the Port of New York and New Jersey.* F3-5

The Department views Watershed Sediment Reduction Controls as having potentially significant long-term benefits by reducing the need for dredging and by improving water quality within the harbor estuary. The Department recommends that the Watershed Sediment Reduction Controls option should be more thoroughly discussed and a strategic plan for implementation developed and included in the FPEIS. F3-6

Finally with regard to Sediment Reduction, the technique referred to as Advanced Maintenance Dredging would not appear to reduce the total amount of material dredged from the harbor estuary over time. As described. Advanced Maintenance Dredging appears to reduce the frequency of dredging. The Department notes that reducing the frequency of dredging would also reduce the frequency of contaminant removal from the harbor estuary. Contaminated sediments could remain in channels for longer periods of time, increasing their exposure to marine organisms. While a reduction in the frequency of dredging could have benefits to fish and wildlife resources (e.g., decreased periods of disturbance), the frequent removal of contaminants from the harbor estuary could also benefit fish and wildlife resources. We feel that this issue should be discussed in the Impact Assessment section of the FPEIS. F3-7

SPECIFIC COMMENTS

The DPEIS cites the Sediment Contaminant Reduction program as a "keystone" of the DMMP (page 3-3). Also on page 3-3, paragraph (d) notes that the first phase of the long-term control effort is to implement a "comprehensive data gathering effort to identify and track down sources of pollution." However, additional phases of this program do not appear to be identified in this section of the DPEIS. Since sediment contaminant reduction is a critical component of any long-term management plan for material dredged from the harbor estuary the Department recommends addressing this DMMP component more thoroughly in the FPEIS. Additionally, we note that Section 5.6.2 of the DPEIS (Recommended Course of Action) does not discuss Sediment Contaminant Reduction. F3-8

The Department notes inconsistent use of headings with regard to federally listed species. For example on page 4-73, the heading at section 4.3.4.7.2 reads "Fauna"; the following paragraph discusses short-nosed sturgeon (*Acipenser brevirostrum*). The heading at the next section 4.3.4.7.3 reads "Amphibians." This section is followed by sections on "Sea Turtles" and "Birds." Since amphibians, sea turtles, and birds are all "fauna," their discussions should be included as subsections under the heading of "fauna." We recommend changing the heading "Sea Turtles" throughout the document to "Reptiles" to be consistent with the taxonomic style used for other headings. F3-9

On page 5-63 the Corps states that the ". . . availability of the HARS [for disposal of suitable dredged material] could diminish rapidly after 2011, especially as contaminant reduction becomes effective . . . ." We feel that the projected benefit of contaminant reduction may be overly optimistic and should not be relied on heavily in evaluating disposal alternatives. For the contaminant reduction program to be effective within the next 11 years, it must be aggressively implemented as soon as possible. Therefore, we recommend including contaminant reduction on the list (pages 5-62, 63) of recommended courses of action for the next 10 years. F3-10

On page 5-68 "Marsh creation in NJ" is identified as one dredged material disposal option under Section 5.6.4 (Base Plan (Economically Preferred Alternative)). This disposal option does not appear to have been discussed previously in the DPEIS. Such a discussion should be included. F3-11

The Department recommends that the Corps discuss the shortnose sturgeon at Section 4.3.2.7.1 on page 4-37 for consistency with other sections in the document. F3-12

The Department recommends that the Corps cite the U.S. Fish and Wildlife Service document discussed on page 4-53. F3-13

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

Sincerely,

Andrew L. Raddant
Regional Environmental Officer

RESPONSE TO COMMENTS

F3 **US Department of Interior**

F3-1

The transportation of dredged material from dredging site to processing/disposal site is an option specific potential impact, which would be addressed during the permitting of each option. The transportation of raw dredged material would be by barge for either in-water placement (generally by bottom dump scow) or for off-loading at a shoreline facility for processing. The transport of dredged material occurs commonly in the Harbor with minimal impacts on natural and human resources. Where dredged material is transported overland by truck or rail, the material will generally be in a processed state which would minimize the potential for the loss of material. The transportation of dredged material would involve conventional methods of transportation along existing road, rail, and water routes. This movement of material would not introduce any new potential adverse impacts.

F3-2

The specific purpose of the PEIS is to evaluate the DMMP-Implementation Report (IR). The DMMP IR is the document promulgated for consideration for Federal action. The PEIS is contained within the DMMP IR so it is appropriate to use referencing in this context. The use of referencing is in keeping with CFR 1500.4 subsection (j), incorporation by reference, and subsection (o), combining environmental documents with other documents.

F3-3

Table 2–1 of the DMMP IR defines the amount of HARS suitable, HARS unsuitable, and rock material that is projected to be dredged over the DMMP planning period. The DMMP IR applies this volume projection to the potential options and plans evaluated within the PEIS. As currently understood, based on the data presently available, sediments within the Harbor estuary are generally recovering from past contamination. Further, programs currently underway give credence that further contaminant reduction in future dredged materials is most likely. Consequently, the DMMP volume projections assume a reasonable level of future contaminant reduction efforts take place, allowing sufficient time for current studies to be completed and additional actions to be taken (e.g., source controls, existing contamination remediation, etc.). For example, contaminant reduction is included for the years 2016 through 2040. To be prudent, the DMMP IR also recommends the concurrent development of contingency options should the desired and planned for options (e.g., additional contaminant reduction) not be implemented as currently anticipated.

F3-4

Site specific evaluations for material suitability for HARS use were evaluated as part of the SEIS prepared for the site in 1997 by the U.S. Environmental Protection Agency, Region 2. As this evaluation has been performed and a Site Management and Monitoring Plan for the HARS prepared, the reader will be referred to these documents for further information on cap stability analysis and sediment suitability for placement at the HARS.

F3-5

Further evaluation of restrictions of land-use practices is underway by the appropriate Federal and, primarily, state agencies with necessary jurisdiction and authority to implement these measures. The Corps of Engineers fully supports these actions to the limits of our agency authority and is coordinating with the states on this matter as part off the DMMP process.

F3-6

See response to F3-E. That response holds for this comment also.

F3-7

Generally, the Corps concurs with this position. However, the stated position implies a correlation of contaminant removal with contaminant exposure, which may not be true. Contaminant exposure to organisms is generally defined as the area of contaminated sediments exposed. Because contaminated sediments are buried in the Advanced Maintenance Dredging option, the exposure of the contaminants to biota generally remains unchanged as accumulating sediments are buried and removed from exposure. Additional text on these different environmental effects will be included within the FPEIS.

A new paragraph (b) was added to Section 5.3.2.6 in response to this comment.

F3-8

Since future tasks to further implement sediment contaminant reduction measures are, in large part, going to be the result of the ongoing comprehensive data gathering effort, little additional information on these tasks is now available. As the trackdown effort and associated modeling is completed and input sources identified control measures can then be recommended. These will be reflected in future DMMP updates (to be prepared annually). The PEIS mentions sediment contaminant reduction in paragraph b. The option is not listed within paragraph a, as it is not assumed to be implemented and have an effect on sediment contaminant levels within the 2010 timeframe.

The final PEIS will include a list of options in paragraph b. similar to paragraph a. to avoid the apparent confusion and will include greater discussion of the option.

Section 5.6.2 was modified to include Sediment Contaminant Reduction.

F3-9

The headings throughout Section 4 have been revised for consistency.

F3-10

The Corps agrees that sediment contaminant reduction should be aggressively implemented as soon as possible. However, sufficient time must be scheduled to complete trackdown and modeling to identify the contaminant sources, to develop recommended control methods and to implement the control measures. For this, the DMMP establishes a target date of 2015 for these additional contaminant reduction efforts to be reflected in future dredged material. That is, their evaluation and development is currently underway and the DMMP and FPEIS text will be modified to better reflect this. To clarify the point of future reductions, the DMMP does not predict future reductions; currently available data are too limited for this. Rather, the DMMP establishes a goal (or target) of reducing the amount of non-HARS material to less than an average annual amount of 500,000 CY by the end of the planning period (*i.e.*, 2040). The partners in the preparation of the DMMP concur with this goal, and will work to achieve this goal. As the Corps believes that sufficient time is programmed and that the responsible agencies are genuinely committed to meeting or exceeding these goals, the DMMP assumes them within the recommended plan.

Section 5.6.2 was modified to include Sediment Contaminant Reduction.

F3-11

Marsh creation utilizing dredged material is discussed under the Beneficial Uses-Habitat Creation Section 5.3.3.2 and in detail in the Technical Appendix (Section B3.2) and the referenced Beneficial Uses report. Actual sites have not yet been identified for initial application in either state.

F3-12

Concur, a statement on this species has been added.

F3-13

A citation has been added to the reference list. Data used included information gathered by USFWS, but not specifically included in the Reference section.

United States Department of the Interior

NATIONAL PARK SERVICE
Gateway National Recreation Area
Headquarters Building 69
Floyd Bennett Field
Brooklyn, N.Y. 11234

IN REPLY REFER TO:
N22(GATE-NRM)

November 12, 1999

Colonel William H. Pearce
U.S. Army Corps of Engineers
New York District, District Engineer
Jacob K. Javits Federal Building
New York, NY 10278-0090

Dear Colonel Pearce:

This is in response to the August 30, 1999 "Dredge Material Management Plan", submitted for review and comment to the National Park Service,(NPS), Gateway National Recreation Area (Gateway). I appreciate the opportunity to comment on this important proposal. Detailed comments with specific text reference are attached to this letter. I also enclose our May 4, 1999 correspondence to Mr. Frank Santomauro, P.E., U.S. Army Corps of Engineers, New York District regarding the impacts and concerns of the overall proposed action, which was not recognized in the present document.

We note that the DMMP keeps open the consideration of both Norton Basin and Grassy Bays, both within Jamaica Bay, for subaqueous borrow pit disposal use. We are on record against, and continue to oppose, the introduction of any new contaminants into Jamaica Bay as a whole. We applaud your recent decision to deny a permit requesting the disposal of dredge material into Norton Basin with preference for the HARS ocean site. These subaqueous borrow pits should similarly be removed from consideration, as they were in the 1980's in the Corps' original dredged material disposal plan. F4-1

The NPS has in the past proposed alternatives to Jamaica Bay for dredged material disposal. Material of the proper grain size and appropriate quality could be utilized to close inactive sanitary landfill sites throughout the city including those within the boundaries of Gateway. For a National Recreation Area such as Gateway, with erosion-prone beachfronts, clean dredged materials can also be used for beach nourishment. We have a need for 4 million cubic yards at the Sandy Hook Unit alone. Beach nourishment at Gateway has for over 25 years benefited the public by repairing storm damages and maintaining public access to the coastline. F4-2

As a unit of the National Park system, Gateway has special mandates for the protection and improvement of the resources under our stewardship. Among our natural resources, Jamaica Bay is accorded special attention in our enabling legislation. Our view of the bay differs markedly from that characterized in the referenced document.

Based on our research and monitoring efforts, we find that the waters and sediments of Jamaica Bay are far less degraded and more productive than the descriptions contained in the DMMP. In addition, we do not believe that the DMMP makes a sufficient case for use of uncontaminated dredge material to promote improvement of the bay, nor does the plan sufficiently assess the negative effects that might result from such interventions. F4-3

Until these specific issues are addressed to our satisfaction, we must withhold our support for any proposal to place dredge material in Jamaica Bay. We remain, however, open to an on-going dialogue to find appropriate solutions to the wide range of problems facing Jamaica Bay.

Thank you for your consideration. Please include these comments in your Final Environmental Impact Statement. I look forward to the revised plan and to continue productive relationships between our two agencies.

Sincerely,

Terry W. Savage for
Acting General Superintendent

Attachments (2) Comments and concerns on EIS
May 4, 1999 Letter from NPS to Corps of Engineers

cc:
Superintendent, JBU
Superintendent, SHU
Superintendent, SIU
Assistant Supt., JBU
Directorate, Cultural/Natural Resources
Chief, Division of Natural Resources
F. Santomauro, P.E., Corps. of Engineers

Part I

September 1999, Dredged Material Management Plan for the Port of NY/NJ Draft Implementation Report

Page 7 Notes, The preferred, "options that beneficially use dredged material, often with a positive impact on the estuary", are options that NPS/Gateway has strived for and worked cooperatively on since its original participation on the HEP Management Committee. Beach and marsh restoration are high on our needs.

Page 9 Notes, "Implementation of the DMMP thus focuses attention on new or innovative techniques, partnerships, or policies to meet the ambitious goals of increased beneficial use of dredged material, while also assuring needed placement capacity is available through 2010 and beyond." The use of dredged materials for landfill cover has been repeatedly advocated by NPS/Gateway especially on PAL/FAL landfills in Jamaica Bay. This option has not been explored adequately in this document. F4-4

Page 11 Notes that, "currently, there is insufficient data to accurately quantify contamination trends in the sediments of the entire harbor area." This is especially true for Jamaica Bay except that 25 years of water quality and species diversity data collection for the Jamaica Bay Wildlife Refuge, has revealed a measurable improvement in surface sediment quality and species diversity levels of this urban ecosystem. Lack of dredging has prevented re-suspension of contaminants. No mention of the NPS data is included. F4-5

Page 16 Notes that several potential sites have been identified, such as Jamaica Bay, for "recontouring and disposal into degraded borrow pits." The NPS has repeatedly identified this option as untenable with NPS/Gateway mandates and policy.

The NPS does not consider Grassy Bay (an area once utilized as a sand borrow site) as a "degraded borrow pit". The benthic region in this portion of Jamaica Bay has exhibited considerable improvement in biodiversity, production and physiochemical characteristics, which F4-6 shows that this term is not applicable. In addition, we note that as early as 1984 no subaqueous borrow pits within the Jamaica Bay Wildlife Refuge proper, or those in Jamaica Bay immediately adjacent NPS boundaries, were to be considered by the Army Corps of Engineers as disposal sites for contaminated dredge spoils. This remains the position of the National Park Service and Gateway National Recreation Area. (See copy of NPS correspondence dated May 4, 1999).

Page 17 Notes "Norton Basin and Little Bay" within Jamaica Bay remain as sites for "continued examination and development". Demonstration projects, in an attempt to justify future disposal of contaminated materials, are unacceptable. Preliminary surveys by the NPS, and long term monitoring activities of the NPS within the boundaries of Jamaica Bay reveal an extensive biological diversity with complex invertebrate assemblages where mussel species carpet the Bay floor. Species richness values, collectively, do not indicate that this habitat is as "degraded" as may have been the case 10 years ago. Water circulation plays a critical role. However, the source of contamination is the main factor here, since circulation can do little to reverse pollutional trends, even if dramatically altered, with wastewater discharge levels and exceedences continuing from the NYCDEP 4 major WWTP emptying 320 million gallons of wastewater daily into Jamaica Bay. It should be noted that a monitoring network established by the NPS presently monitors some 30 sites Parkwide; 15 in Jamaica Bay alone. F4-7

Page 20 Notes, "the use of dredged materials, with appropriate technological applicability built in, for landfill capping and eventual closure", is a high priority for the NPS/Gateway.

Page 25 Notes the CAD (contained aquatic disposal) facility, a depression excavated into the bottom of a body of water for the purposes of disposal of dredged materials, is an option "with a slight variation in NY Harbor." The slight variation is to use existing pits. However, use of existing pits solely as a containment/disposal option is no longer under consideration unless the pits have a "demonstrable degraded habitat". If disposal of contaminated materials goes into these pits, since they are supposedly less contaminated or degraded that the pits themselves, the dredged materials may serve to remediate the existing conditions. This would be fine if the site (i.e. Grassy Bay, Norton Basin, Little Bay, etc., in Jamaica Bay) were degraded. Those areas F4-8 within the Park boundaries, based upon 15 years of NPS data, do not fit the "degraded" Category, and have exhibited increasing recovery over the past 7-10 years.

Page 29 notes, "Use of dredged material for bathing beach stabilization, especially Sandy Hook in New Jersey, Riis Park and Plum Beach in Bklyn/Queens and beaches on Staten Island would be very important to maintaining the recreation resources of Gateway NRA." This option should actively be pursued.

Page 38 Table 3.1 Still has the use of Norton Basic, a subaqueous borrow pit within Jamaica Bay, in its listing for a demonstration project in 2001". These sites should be removed from consideration, whether for "demonstration" or ultimate use sites for reasons discussed alone.

Page 43 notes that the filling in of "degraded pits in Jamaica Bay should proceed only if the data collected from the Norton Basin restoration projects illustrates the environmental benefit of the project." This information must be sufficiently documented to convince involved agencies, "that it should occur." The use of Jamaica Bay Wildlife Refuge and its contiguous waters as a contaminant disposal site, is counter to the mandates of the National Park Service for protection of its natural resources. Capping technology is not sufficiently proven, nor is it forever. However, without such disposal situations within Jamaica Bay, we can guarantee that such impacts from contaminated dredged materials will not occur. F4-9

It is also noted that "restoration of Jamaica Bay pits could save over $850 million…over the course of 400 years". This number is not born out in the cost/benefit analysis prepared in the Technical Appendix. There is also no analysis or indication of the economic analysis considering the costs of reversing the pollution loads to Jamaica Bay and its overall protection. The economic benefit of cleaning up Jamaica Bay from 1972 to date (projected estimates of $4 billion committed to environmental improvements) would far outstrip the $850 million projected to be F4-10 saved by dumping contaminated materials into Jamaica Bay. The economic analysis is flawed and must include recreational fishing lost due to contaminants released from the subaqueous borrow pits by upwelling and disposal, not to mention the potential for increased flooding by dramatically altering the Bay bottom topography which has stabilized over the 65 years since the development of JFK Airport.

Page 44 Notes that by 2001-2003 the "decontamination option" would be available for consideration. Decontaminated materials should be actively considered for use on landfills (the Staten Island Great Kills landfill will be closed by then) as capping materials, not for disposition into the fish habitat of the Jamaica Bay Wildlife Refuge.

It is noted that, "Based upon preliminary studies, the Jamaica Bay borrow pits are believed to have limited habitat value due to poor flushing and impacted surficial sediments". There are absolutely no substantive data, scientific research or environmental studies that bear this statement out. The NPS has studied Jamaica Bay/Grassy Bay for 25 years and there is a definitive resurgence in biological habitat suitability as well as a stabilized benthic invertebrate populations that support a winter founder nursery and over 80 other finfish species in the Jamaica Bay region. F4-11

The NPS/Gateway continues to support the HARS (Historic Area Remediation Site or MUD Dump Site) as a temporary disposal site, or until landfill and decontamination options can be justified, for ocean disposal of dredged materials.

Part II

Draft Programmatic Environmental Impact Statement, Sept. 1999

Page 3-14 is a map, Figure 3-2, which notes the Jamaica Bay Potential Restoration sites. This map does not reflect those 52 "restoration" areas noted by the Army Corps of Engineers in the Jamaica Bay Restoration Program. **F4-12**

Page 4-35 the significance of the Jamaica Bay finfish work is that it revealed Jamaica Bay to be a nursery ground for the majority of the 81 finfish species identified in this ecosystem. Food web dynamics and the overall importance of the Jamaica Bay ecosystem should be emphasized. **F4-13**

Page 4-43 Notes that chemical and biological properties - nutrients and chlorophyll-a work conducted in 1977 - is being utilized to characterize the borrow pits today! This is inappropriate since water quality values have markedly improved since that time period. **F4-14**

Page 5-67 Section f states that "filling and capping degraded pits such as those in Jamaica Bay is expected to improve water quality and restore the area to ones that can support fish and other organisms". This is conjecture. First, this statement assumes that the borrow pits in Jamaica Bay are degraded, which NPS research has shown they are not. Secondly, computer models run for Jamaica Bay do not exhibit a marked increase in water quality <u>after</u> filling in borrow pits. **F4-15** Water quality presently has made a fantastic rebound, especially in Grassy Bay where top and bottom DO levels have made significant recoveries. Thirdly, it has already been stated (page 4/35) that Jamaica Bay is a nursery for over 80 species of finfish. Filling in these borrow pits would cause massive loss of these finfish nursery grounds, exacerbate flooding and increase loss of tidal wetlands as a result not of increasing flushing action of the bay but rather of increasing local flooding of adjacent lands. To assist in the preservation and enhancement of bay bottoms as well as water quality we must increase marsh creation along the periphery of the bay and the harbor in general. Collectively, this would provide the most benefit for overall habitat functioning. **F4-16**

Part III

DRAFT Technical Appendix (September 1999)

Page 7. The "Economic Analysis" does not consider the recreational potential loss due to disposal of contaminated materials nor the effect of placement on PAL/FAL as a closure technology for closed/capped hazardous waste disposal sites. **F4-17**

Page 39. The GrassyBay/Norton Basin/Little Bay old subaqueous borrow pits are described as necessitating dredged materials because (a) they are large and therefore can take large volumes of materials, (b) the pits are degraded therefore dredged material will restore them. All work done in pits (Clarke, 1998 and Wilber, 9194-1997) are "in preparation", therefore not peer reviewed nor analyzed. It then makes the a leap of faith with the statement that based upon these extremely preliminary results, recontouring "could improve water quality of the bay." This is drastically overstated and over simplified, and absent peer review, inconclusive as to "improving" the bay. **F4-18**

Page 40. Were Grassy Bay to be utilized for contaminated dredged materials it would constitute a 21-year program of dumping inside the Jamaica Bay Wildlife Refuge proper, which is counter to our preservation mandates as a unit of the National Park system.

RESPONSE TO COMMENTS

F4 US Department of Interior, National Park Service (NPS)

General Response. The Corps notes that several of the comments provided by the National Park Service have sections of text in quotes. Many of these quoted sections do not accurately represent the text of the draft PEIS, which the comments are addressing. The Corps suggests that quotes only be used when verbatim sections of text from the document are being referenced.

F4-1

The DMMP includes only one pit (Norton Basin) for restoration. All other borrow pits in Jamaica Bay, are preference 3 options. Their use is uncertain as issues (*e.g.*, technical) remain regarding their potential feasibility for using dredged material. Their inclusion in the DMMP is a result of two recent events. First, preliminary data collected by Corps and NOAA researchers indicate that the sediments currently existing at the bottom of the Jamaica Bay borrow pits are degraded. The USFWS also found this to be the case (1997). Hence, these pits may benefit from filling actions that would restore their historic, natural bathymetry. Second, based on this information and the potential for these borrow pits to utilize dredged material in both an environmentally beneficial and cost effective manner, the State of New York has requested (by letter dated August 30, 1999) that the Corps further investigate the potential of habitat restoration of existing degraded borrow pits in Jamaica Bay (Norton Basin initially) utilizing dredged material. NYSDEC requested a series of carefully planned and executed initiatives to address concerns such as raised in your letter.

F4-2

A relatively substantial volume of sandy dredged material (included in the DMMP) is scheduled to be dredged as part of the NY/NJ Harbor Navigation Study. While this material may be possible to be placed on the identified beaches, the Corps analysis of this sand suggests that it may quickly erode due to the sands' physical characteristics. Also, the sponsors for the project have identified an upland remediation site as the preferred placement option for this material. Should a project arise that may have suitable material for placement on the Gateway beaches and that does not have a designated placement site, we will contact your agency. We are also working NYCDEP(lead agency) under grant from and in cooperation with NYSDEC to undertake a project to cap a portion of the landfills you have identified.

F4-3

While data available to the National Park Service may indicate that the habitat value of Jamaica Bay (overall) is improving, preliminary data collected by Corps and NOAA researchers indicate that the localized benthic habitat in the selected existing pits is degraded. This view is corroborated by data published by the USFWS report of 1997. Because the condition of habitat within the existing pits is controversial, a scientifically valid, sequential evaluation and development of the Norton Basin/Little Bay habitat restoration project is supported by New York State (August 30, 1999) and recommended in the DMMP. The first determination to be made as part of this project is to further characterize the habitat value within the proposed pit locations in comparison with nearby reference sites, which do not have the limited flushing of the pits. Only if involved regulatory agencies, in coordination with a Technical Advisory Group (to be formed) determine that the habitat at the Norton Basin pit is degraded and may benefit from recontouring (using only HARS suitable sediments) will the project proceed. During the potential filling/recontouring of Norton Basin, monitoring is planned to evaluate placement of dredged material into the pit and subsequent recolonization of the filled pit. Should positive placement of dredged material and increased habitat value be shown at Norton Basin, then the involved regulatory agencies may decide to proceed with the potential recontouring/filling of Little Bay, a project currently with undetermined preference in the DMMP. Should the Little Bay project be recommended, Little Bay may be recontoured/filled with either HARS suitable sediments or HARS unsuitable sediments (subfill) capped with HARS suitable sediments. Should monitoring from Little Bay show that this action is environmentally beneficial and economically feasible, then investigations of other existing pits in other areas of the estuary may be initiated by the Corps and/or other agencies for further potential habitat restoration.

F4-4

Using dredged material to remediate abandoned landfills is a major component of the Recommended Plan. Demonstration projects for both Penn and Fountain Avenue landfills are included within the recommended plan. Should these projects prove successful, these two sites could utilize a substantial volume of dredged material.

F4-5

We concur that there is insufficient data to accurately quantify the contamination trends in sediments of the harbor, including Jamaica Bay, as well as much of the Harbor. However, water quality has not improved equally in all harbor areas. Localized areas in Jamaica Bay that are poorly flushed and act as traps for fine organic sediments (existing pits and dead-end basins) have not improved to the same extent as open water areas of the bay.

The NPS has stated that 25 years of data support the trend of improving water quality and species diversity, but current data specific to the borrow pits has not been provided to the USACE. Recent USACE sampling data and observations by NOAA and USFWS support the position that the borrow pits have existing degraded sediment and water quality conditions.

Note, the quoted text is not from the referenced page of the draft PEIS.

F4-6

We are aware of NPS' current position regarding habitat improvement in the Grassy Bay area of Jamaica Bay. However, years of water quality data collection and modeling analyses by the NYCDEP, suggest that a circulation problem generally exists in the area. Additionally, recent preliminary data (e.g., bottom grabs, sediment profile imagery, etc.) collected by Corps and NOAA researchers supports this view. As noted in response F4-C above, the DMMP recommends a sequential, intensive investigation of habitat restoration at Norton Basin/Little Bay.

F4-7

See response F4-C and E above. Note, the quoted text is not from the referenced page of the draft PEIS. Comment noted and non-concur. Preliminary data and state sponsor support warrant further investigation of the Norton Basin habitat restoration project.

F4-8

See response F4-C and E. The testing and evaluation of Norton Basin will provide information on the stability of a cap in an enhanced pit in Jamaica Bay.

F4-9

We agree that additional data needs to be provided that demonstrates that a pit is degraded, and that it can be safely filled, and that the filled pit functions better as habitat. That is the purpose behind the carefully laid-out proposal associated with the Norton Basin. Unless the need to restore a site is well established, the pit would not be filled simply to provide storage capacity.

F4-10

The benefit analysis in the Technical Appendix relates to the navigational benefits of maintaining the current array of Federal channels in the Port of New York and New Jersey. It does not compare (by ratio) these benefits to the costs of maintaining the channels as this is quite variable, depending on the selected option, waterborne transport distances, etc. The $850 million cost difference is born out when comparing options used between the recommended plan and the base plan (Tables D–2–1 and D–2–2, respectively). Analysis of benefits derived from pollution prevention efforts are beyond the scope of the DMMP (although, the DMMP fully supports such efforts). Economic benefits from restoration of degraded pits or from the remediation of impacted upland sites is specific to each option site and will be evaluated by option on a case-by-base basis. Consequently, option specific benefits are not included in Section A of the DMMP Technical Appendix. The text of Section B of the Technical Appendix has been modified to reflect this.

The upwelling of contaminants existing in the pits from the restoration action (as implied in the comment) would be thoroughly evaluated prior to placement of any dredged material into the pits. We would also thoroughly evaluate the environmental and fishing benefits derived from confinement of existing contamination at the pit locations through the habitat restoration project. Due to increased resistance provided by shallower depths, shoreline flooding would likely decrease (not increase) from the restoration of bathymetry in the existing pit locations. This would also likely attenuate the current erosion of shoreline in and around existing pit locations.

F4-11

See preceding responses. The Norton Basin Project would first establish a need to restore the site before any material is placed in the existing pit.

F4-12

The initial 52 suggested sites have been screened to the 13 sites now proposed for restoration. A map showing these sites has been added to the EIS.

F4-13

There is a long-term benefit to the food web because current contaminants would be covered. Sites would have a cap of sand as the final cover, whether or not non-HARS dredged material were placed in the pit.

F4-14

This is incorrect, though the 1997 data were used, it has been supplemented by an extensive data collection and modeling effort in the 1990's and site-specific data on fish and benthos from sampling in 1996-1998. The significance of Jamaica Bay as a nursery for fish is well recognized by the team that developed the DMMP. The remediation of degraded pits will contribute to the overall enhancement of the ecology of Jamaica Bay.

F4-15

The NYCDEP has simulated that filling Grassy Bay would generally increase dissolved oxygen levels at the bottom of Grassy Bay by about 1 mg/1. Since the average in warm months is below 3 mg/1, a one-third increase of DO level at the bottom of Grassy Bay to about 4 mg/1 would be, in our opinion, a marked increase. This would increase DO levels from borderline hypoxic conditions to more healthy DO conditions, above hypoxic levels, and thus promote fish nursery function and the recovery of the bethos, not to mention greater light penetration and hence higher primary productivity in the bethos because of the shallower depths. By removing a source of pollutants and improving DO the habitat would become more conducive to functioning as a productive nursery.

F4-16

The effects of filling existing degraded pits would be evaluated in the previously described testing program. At this time the data available does not seem to warrant the conclusion "massive loss of finfish nursery grounds..." or "increase in loss of tidal wetlands...". This program would include all of the aspects of potential physical/chemical/biological effects, including flooding and potential to expand wetland areas as part of the habitat enhancement work.

Dredged material deposition, such as at Grassy Bay, cannot increase flood levels because this is to an extent controlled by the tidal prism. Because the tidal prism does not adequately penetrate these areas, is part of the reason they are de facto settling basins. Filling the pits would not increase the height of high tide, so would not flood the adjacent wetlands. Sea level rise, which is already flooding and reducing the size of coastal wetlands throughout the low-lying east coast, is also a likely cause, among other causes, for existing wetland losses in Jamaica Bay, which are occurring in the presence of pits.

F4-17

The economic analyses will be addressed in the site specific NEPA documents.

F4-18

See Response to F4-E above. The studies you describe were intended to provide a preliminary look at the need for restoration, and as such, were designed specifically for that task. These data have been analyzed, though the reports have not been finalized. Before any specific action would be undertaken these reports would be made available for peer review by an advisory group assembled to guide and review the development of site-specific sampling and operational plans. Your agency is invited to participate in the "peer review". The studies identified in the EIS were not intended to provide a level of detail needed to justify or plan a pit restoration. They were the first phase of a multi phase approach. The study results suggest a possible problem/need and provide baseline data for the more detailed work to follow. If the investigation reveals that your agency's opinion on the pit condition is correct, no further action would be undertaken to fill them. They would not be filled, because they are not proposed as a disposal option. They would be used for dredged material for placement only if they provide a demonstrable restoration benefit for the pit and surroundings

Also, the DMMP only recommends filling a small pit with HARS suitable material in order to evaluate the need and safe execution of the action. The process would provide the site-specific information that, is needed before undertaking any use of contaminated material, and only under very controlled conditions at an equally small and confined pit.

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

December 3, 1999

Mr. Frank Santomauro, P.E.
Chief, Planning Division
Department of the Army
New York District, Corps of Engineers
26 Federal Plaza
New York, NY 10278-0900

ATTN: Robert Kurtz

Dear Mr. Santomauro:

We have reviewed the draft Programmatic Environmental Impact Statement (PEIS) for the Dredged Material Management Plan for the Port of New York and New Jersey (DMMP). Although the PEIS appears to meet the objectives of the National Environmental Policy Act (NEPA) regarding Generic or Programmatic evaluations, the issues and potential environmental impacts associated with the specific disposal options are simply too complex to be evaluated adequately in PEIS format. We understand that the Army Corps of Engineers (ACOE) plans to develop individual NEPA documents to address the specific impacts of those disposal options in the DMMP which are likely to be used. We will evaluate these documents as they become available, and will continue to work with the Corps to ensure that the requirements of the Magnuson-Stevens Fisheries Management and Conservation Act (MSFMCA) and the Endangered Species Act are met. However, we oppose the permanent loss of aquatic habitat that would result from the construction of several of the alternatives described in the PDEIS (*e.g.* CDFs either in the bay or other biologically productive habitats). **F5-1** **F5-2**

At this time, we offer only a general comment on the essential fish habitat (EFH) requirements of the MSFMCA. The hypothesis offered in Section 5.3.2; Sediment/Dredging Reduction, that the EFH impacts are very limited because of prior disturbance of the environment where the actions are to be undertaken is incorrect. Numerous studies, including some conducted for ACOE projects, have shown that a wide variety of fishery resources rely on specific areas of the harbor regardless of the consequences of those actions throughout the year. Depending on the specific location and dredged material disposal option, there can be severe and unacceptable consequences associated with disposal alternative implementation. While contaminant levels in portions of the Harbor may pose a hazard to some species, it still provides valuable habitat for a wide variety of aquatic species, including seventeen federally managed species of fish for which EFH has been designated. The final PEIS should address, generically, the biological needs of these species in **F5-3** terms of salinity, temperature, sediments, and food availability for a general assessment of potential impacts to EFH. Focused EFH assessments of direct, indirect and cumulative impacts associated with specific action implementation at specific sites must be completed and coordinated with NMFS as the need arises. The process can be incorporated into the NEPA documents for specific DMMP actions or a composite EFH consultation based on area or habitat specific issues. This latter option is presently being explored by members of the New York District and NMFS Staff.

Thank you for the opportunity to comment on the draft PEIS for the DMMP. If you have any questions or would like to discuss this matter further, please contact Mr. Mike Ludwig at (203) 597-7094 or Ms. Karen Greene at (732) 872-3023. We look forward to continued coordination on this and the many other issues affecting the New York/New Jersey harbor area.

Sincerely,

Stanley W. Gorski
Field Offices Supervisor

kmg:dmmppies.com
cc: F/NER4 - Milford, RO
NOAA - Policy Coordination
NOAA/NOS- H. Farr
MAFMC

RESPONSE TO COMMENTS

F5 US Department of Commerce, National Marine Fisheries Service

F5-1

Though there is every intention to prepare detailed site-specific impacts of different options as they are proposed for Implementation these may not all be prepared by the Corps. The DMMP, as summarized in the Implementation Report Sections
1.4-1.14, would be implemented by many different parties, both government and private. Table 2-2 of the DMMP-IR indicates, at this stage of the process, who may be the lead for the different options. It is anticipated that the lead organization will prepare the site-specific NEPA documents and permit applications.

F5-2

We acknowledge your opposition to CDF's in the ocean and bay. This reflects the general overall position of many agencies and the public and is one of the prime reasons these options have been designated as preference status 5, no longer under consideration.

F5-3

Concur. A text change to the document will be implemented to make it clear that certain techniques such as channel straightening has the potential to adversely affect aquatic organism. The section on Sediment/Dredging Reductions techniques addressed several sediment/dredging options that can be used. Some techniques, such as watershed sediment reduction would be expected to have limited adverse impacts. However, the use of channel modifications could indeed adversely effect some of the EFH species. Since implementation of these techniques under the DMMP has not been finally selected, much less implemented, impacts would be linked to site specific actions, these actions would be addressed in site specific/NEPA documents.

HELENE E. WEINSTEIN
Assemblywoman 41st District
Kings County

THE ASSEMBLY
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JUDICIARY COMMITTEE

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Ways and Means

Court Facilities Capital Review Board

FILE

December 03, 1999

Colonel William Pearce
United State Army Corps of Engineers
26 Federal Plaza
New York, NY 10278-0900

VIA FAX and MAIL

Dear Colonel Pearce,

I am writing with concern regarding the Army Corps of Engineers plans to dredge and deepen the shipping channels of the Port of New York and New Jersey. My main concern involves the disposal of the millions of tons of dredged materials.

I am concerned about the negative health impact of the contaminated dredged material. I am also extremely distressed that I was not notified directly by the Army Corp of Engineers of your Dredged Material Management Plan since I represent parts of the Sheepshead Bay community. **S1-1**

As you are aware, shorefront communities are especially dependent on a clean and healthy ocean for safety and economic reasons. Past storms have brought seawater unto the streets of neighboring communities. A future major hurricane or storm would unquestionably flood communities and public beaches, shifting materials that were on the sea floor, including "caps" that were placed over contaminated sentiments. **S1-2**

I am troubled by some of the proposed disposal techniques for contaminate mud outlined in the DMMP. The current plan is to dump into underwater pits that are located between Brooklyn and Staten Island, and in Jamaica Bay. When the poisonous mud is dumped, it can spread into the surrounding water where it can enter the food chain. After the pits are filled, the plan is to "cap" or cover the foul material with a few feet of clean sand. The caps must be continuously monitored because they can shift or fall apart in storms. **S1-3**

I believe that there are better ways of dealing with the contaminated dredged materials. For example, it can be rendered inactive and mixed with concrete. While this or other options may be more costly, it is my understanding that funds are available for this purpose. The Army Corps of Engineers should revise their DMMP plan instead of taking the easy way out-continued ocean dumping and the continued destruction of the marine environment, our health, and our communities. **S1-4**

I would appreciate your review of the DMMP Plan, taking into consideration the very important health needs of the community.

Please feel free to contact me at any time to discuss this matter in further detail.

Sincerely,

Helene E. Weinstein

Helene E. Weinstein
Assemblywoman, 41st A.D.

HW/kis

WRITTEN COMMENT FORM

Public Information Meeting for the
Draft Programmatic Environmental Impact Statement for the Dredged Material Management Plan for the Port of New York and New Jersey

Please provide your written comments on the scope of work for the Draft Programmatic Environmental Impact Statement below. Your comments will be used to finalize the topics and subjects included in the evaluation of potential impacts from the Dredged Material Management Plan. This form can be copied and used by multiple individuals, or a letter containing your comments can be substituted. **Comments will be accepted through December 3, 1999,** and should be addressed to:

Mr. Robert J. Kurtz, PEIS Coordinator
New York District, Corps of Engineers
Planning Division
26 Federal Plaza, 21st Floor
New York, NY 10278-0090
(212) 264-2230

NAME: Assemblywoman Helene E. Weinstein

ADDRESS: 3520 Nostrand Avenue
Brooklyn, NY 11229

PHONE: 718-648-4700

AFFILIATION:
(if any)

COMMENTS

(continue on back of this form or append additional pages as needed)

See attached letter. Thank you.

SIGNATURE: Helene Weinstein

RESPONSE TO COMMENTS

S1 Assemblywoman Helene E. Weinstein

General Response. The Corps is concerned that you did not receive your copy. Our records show that a copy of the document was sent to 3520 Nostrand Ave., Brooklyn, NY 11229. This address was also indicated on the Written Comment Form from the November 23rd 1999 public meeting. To date we've had no other instance of this unfortunate occurrence. Of the 800+ copies of the report sent out, several were returned by the Post Office as undeliverable for various reasons. We did not receive your copy of the report back from the post office, thus we were under the impression that you received it.

S1-1

Protecting human health and the environment are of paramount concern in the management of dredged material, especially dredged material that has elevated levels of contamination. Each of the management options evaluated and under consideration in the DMMP was investigated to ensure that these potential impacts would not be harmful to the public or the affected environment.

S1-2

The stability of caps placed on dredged material have been thoroughly investigated and demonstrated through the past several decades. Prior to the construction of an aquatic containment facility, factors such as storm erosion are evaluated and are factored into the design of the cap for the site along with safety factors to provide an extra margin of protection.

S1-3

Your description of the proposed DMMP is inaccurate in many respects. First, the only pit option recommended for implementation in the DMMP is the restoration of habitat in Norton Basin, NY using only material that is suitable for placement at the HARS. Prior to placement of this material in this pit, it will have been thoroughly tested and found to have no harmful effects on marine organisms (either through toxicity or bioaccumulation). Also prior to this project proceeding, further data will be collected from the pit that exists at Norton Basin to conclusively show that the existing habitat in the pit is degraded in nature (as our preliminary data now indicates). If this cannot be conclusively shown, the project will not be implemented. As all the material to be placed within the pit will be HARS suitable, capping will not be necessary for isolation purposes. Cap material may be selected, though, to optimize the sediment substrate for recolonization once the project is completed and the natural bathymetry of the site restored. Monitoring during filling of the project will be performed to collect sufficient data to establish that material placed within the pit does not spread or leave the project boundaries. Also after completion of the project, additional monitoring will be performed primarily to ensure recolonization of the site by the desired marine organisms.

S1-4

Land remediation and decontamination are the recommended options for more than 95% of the non-HARS dredged material.

Your coast, your future

NYSCoasts

DEPARTMENT OF STATE

George E. Pataki
Governor
Alexander F. Treadwell
Secretary of State

Division of
Coastal Resources
41 State Street
Albany, NY 12231-0001

November 1, 1999

Mr. Robert J. Kurtz
DMMP PEIS Coordinator
Department of the Army
New York District Corps of Engineers
Jacob K. Javits Federal Building
New York, New York 10278-0090

Re: Dredged Material Management Plan
Draft Programmatic Environmental Impact Statement

Dear Mr. Kurtz:

The Department of State has reviewed the Draft Programmatic Environmental Impact Statement (DPEIS) for the New York/New Jersey Harbor Dredged Material Management Plan (DMMP). We would like to offer the following comments.

Appendix B of the DPEIS contains the Coastal Zone Management Report for the DMMP and identifies the State and City of New York policies which the New York District has determined are applicable to the DMMP. However, Appendix B should also include a discussion of the identified policies and their applicability to the DMMP, together with an assessment of the consistency of the strategies identified in the DMMP with the identified applicable policies of the New York State Coastal Management Program and the New York City Local Waterfront Revitalization Program. **S2-1**

When the New York District is prepared to submit a general consistency determination for the DMMP to the Department of State pursuant to 15 CFR Part 930.37 and 15 CFR Part 930.39, the New York District's consistency determination should refer to the discussions of the applicability of the relevant coastal policies in Appendix B, as well as to discussions within the body of the PDEIS which offer data and information that supports the New York District's determination that the DMMP is consistent with the NYS CMP to the maximum extent practicable and that the strategies for managing dredged material identified in the DMMP will be conducted in a manner consistent with the NYS CMP.

In November, 1996, the Department of State and the Maritime Association of the Port of New York and New Jersey cosponsored a series of presentations by private remediation technology vendors, held at the Maritime Association's Third Annual Dredging Conference. The conference presentations included technologies both funded and not funded as demonstration technologies under the Water Resources Development Act of 1992. Those remediation technologies not funded by WRDA 1992 remain viable options, available for dredged material decontamination in New York/New Jersey Harbor, and warrant analysis in the DMMP. A copy of the presentation summaries made at the Third Annual Dredging Conference of November, 1996 is included for your information. **S2-2**

Voice: (518) 474-6000 Fax: (518) 473-2464 E-mail coastal@dos.state.ny.us
www.dos.state.ny.us/cstl/cstlwww.html

Where subsequent site designations, or other implementation components of the DMMP, are anticipated to be undertaken by the New York District, the Department shall review each of those proposed actions affecting the land and water uses or the natural resources of New York State's coastal area for their consistency with the New York State Coastal Management Program. S2-3

Thank you for the opportunity to provide these comments on the Draft Programmatic Environmental Impact Statement for the Dredged Material Management Plan for the Port of New York/New Jersey. If you have any questions, please telephone me at (518) 402-3399.

Sincerely,

Vance A. Barr
Coastal Resources Specialist

VAB/jma
Enclosure

RESPONSE TO COMMENTS

S2 **New York State Department of State**

S2-1

Appendix B was not written as the CZM Consistency Determination, but rather as a document for review to determine if all applicable policies were identified and addressed. The NEPA documents for specific option/sites will include a CZM Consistency Determination.

S2-2

The decontamination technologies funded and evaluated were selected by the resource agencies (EPA, NJMR, PA and the District) following a review of available technologies and a review of proposals from private entities. The resource agencies will evaluate the results of the testing programs and make recommendations for incorporation in the DMMP. We would be happy to consider it in the future DMMP updates, as appropriate and available.

S2-3

Noted. As indicated above, it is the intent of the DMMP-IR to have site-specific NEPA documents prepared for the proposed options. Each NEPA document would include a detailed assessment of its consistency with New York State policies for your review.

New York State Department of Environmental Conservation
Division of Environmental Permits, Room 538
50 Wolf Road, Albany, New York 12233-1750
Phone: (518) 457-2224 • **FAX:** (518) 457-7759
Website: www.dec.state.ny.us

John P. Cahill
Commissioner

8 December 1999

Robert J. Kurtz
Department of the Army
New York District, Corps of Engineers
Jacob K. Javits Federal Building
New York, NY 10278-0090

Re: Draft Dredged Material Management Plan for the Port of New York and New Jersey
Draft Programmatic Environmental Impact Statement and Technical Appendix

Dear Mr. Kurtz:

Thank you for the opportunity to comment on the Corps' Dredged Material Management Plan (DMMP) for NY/NJ Harbor and the accompanying draft Programmatic Environmental Impact Statement (PEIS).

Overall, the DMMP presents a reasonable and balanced discussion and analysis for dredged material management in the Harbor. We support the emphasis on beneficial uses for the sediment as preferred alternatives over straight disposal options. The Department also supports the annual or periodic review of the DMMP. We view the DMMP as a dynamic document which must be able to incorporate new management options for dredged material as they are developed. A formal procedure for review will allow the Corps, other federal agencies and the States of New York and New Jersey to adopt these options in a timely and efficient manner.

The PEIS appropriately recognizes that additional documentation and environmental assessment will be necessary before any specific option can be considered for implementation. DEC will conduct a full environmental review of all project specific applications. As stated above, we encourage the development of dredged material management options that use sediments beneficially for environmental restoration. However, because it is critical that we make informed and supportable decisions on the efficacy of these projects, DEC will require that all future disposal projects be subject to a rigorous environmental review. Good information on existing environmental conditions and impacts; habitat characterization; and studies of the placement and containment of sediments, are important in addressing potentially controversial management options. It must be clearly demonstrated that no significant environmental degradation will result from the use of any option. **S3-1**

On this latest version of the DMMP and PEIS the Department offers the following comments:

1. PEIS - Page 1-6, section 1.4 includes a statement suggesting that out-of-kind mitigation is "required" for some options. This is not accurate. The resource agencies agreed that **S3-2**

where in-kind alternatives were found to be infeasible for a project impact, out-of-kind alternatives would be considered.

2. PEIS - Page 4-23, section 4.3.1.11.2.4 still states that only the chlorinated pesticides dieldrin and DDT are commonly found in biota and sediments in the Bight apex. The studies referenced in the HARS site designation, and the 1990 SAIC report of the first Mud Dump chemistry survey, found additional pesticides in numerous samples including Bight Apex samples. S3-3

3. PEIS - Page 4-40, section 4.3.2.11 (d) indicates that the salinity in both after flood and after ebb conditions is higher at the surface than at the bottom. This statement appears to be inaccurate since it is contrary to established physics of estuaries. S3-4

4. PEIS - Pages 5-18 and 5-19, section 5.3.3.3, Habitat Restoration at Existing Pits (and DMMP p.17 - 18). DEC will require additional environmental analysis before the use of pits can be implemented. This will be accomplished first by documentation of degraded habitat, then through demonstrations using HARS suitable material in confined areas as first steps. S3-5

5. PEIS - Table 5-71, under the Decontamination method, should indicate that surface water quality would improve as the contaminated surface sediments are removed from the probable resuspended sediment load in the Harbor. S3-6

6. F&WS Section 2(b) Report - The Department has repeatedly noted the omission of shellfish and finfish distribution information for the New York side. On page 4-39 (section 4.3.2.10.2) of the DMMP the Corps states that the value of commercial fishing (for shellfish, crustaceans & finfish) is unavailable. This information is available for the Hard Clam fishery in Raritan Bay from the Shellfish Unit. The contact for this information is Byron Young, at 205 N. Belle Mead Road, East Setauket, New York 11733. Telephone number 631/444-0430. S3-7

Again, thank you for the opportunity to comment on these important documents. The Corps is to be commended on the good work it has done in incorporating the concerns of stakeholders in the harbor in developing the DMMP and PEIS; we encourage you continue this effort and welcome the opportunity to participate in the future.

Very truly yours,

John J. Ferguson
Environmental Analyst 3

RESPONSE TO COMMENTS

S3 New York State Department of Environmental Conservation

S3-1

We concur. It is our intention to subject each option proposed for implementation by the Corps to that detailed evaluation that you describe, and we will provide the appropriate additional information to support these assessments.

S3-2

The word 'required' was not implying the proper way to mitigate, but rather that circumstances surrounding the nature of the impact would not allow 'in kind' mitigation and would therefore necessitate 'out of kind' mitigation. Text will be revised to reflect this.

S3-3

Concur, text has been revised.

S3-4

Concur, text has been revised.

S3-5

Additional environmental analyses would be conducted before the use of pits would be implemented. See proposed testing and evaluation sequence in Section 5.3.3.3.

S3-6

Table 5-1 was revised to include water quality improvement related to the decontamination option.

S3-7

Text has been revised to include information on shellfish.

MARSHA RAPAPORT
601-B Surf Avenue
Brooklyn, New York 11224

November 24,1999

Mr. Robert J. Kurtz, PEIS Coordinator
New York District,Corps of Engineers
Planning Division
26 Federal Plaza, 21st Floor
New York, New York 10278-0090

Dear Mr. Kurtz:

My name is Marsha Rapaport and I am the State Committeewoman of the 46th A.D. This district covers a major portion of our Brooklyn waterfront. On November 23, 1999, I attended a public hearing, at Kingsborough Community College, regarding the proposed dredging of our waterways to allow for increased shipping into New York Harbor.

The Corps proposal calls for the dumping of millions of cubic yards of material containing elevated levels of dioxin, PBC's, heavy metal and arsenic into borrow pits located within 3 miles of Coney Island and Staten Island, and into Jamaica Bay. There is no guarantee that the dredged material will safely remain in the borrow pits. Adverse weather conditions may disturb the deposited material causing it to shift into our local waters; further increasing the levels of contaminants found therein. The disposal of toxic dredged materials into our waters is detrimental to our health and marine ecosystem. Our waters are cleaner now than in past years. We have begun to see the return of marine life, wildlife, vegetation etc. Let us not take a step backward. **S4-1**

I am well aware that shipping is an important economic industry for New York but my concern for the health and well being of all has caused me to question the feasibility of the project. My questions to you are:

1. The Corps conducted a study of the pathogen level of the dredged material to determine whether such levels would endanger human health and that of fish, shellfish and wildlife. From what area(s) was the sample material taken? When was the test conducted? What were the test results and may we have a copy of the report? **S4-2**

2. Do you have a scheduled date to start dredging? Will this dredging be an ongoing project? If so, for how long? S4-3
3. Will the many objections raised to the dredging project at the public hearing be reviewed? Who will review these objections? S4-4
4. Based on your February 1999 report which discusses the Beneficial Uses of Dredged Material, how many alternative projects have been started and what is the status of these projects? S4-5
5. According to Governor Pataki's "Clean Water Projects".. the priority is for the restoration, the reduction of contaminants and waterfront revitalization. The Governor has allocated between 45 - 50 million dollars to fund research into decontamination and disposal alternatives. What about pollution prevention, sediment suspension, sediment reduction? Is this money being applied to any of the possible options to dumping such as using decontaminated material as construction material or reef formation? S4-6

Thank you for this opportunity to express my concerns. I look forward to your prompt response to my questions.

Respectfully,

Marsha Rapaport

Marsha Rapaport

RESPONSE TO COMMENTS

S4 Marsha Rapaport New York State Committeewoman 46th A.D.

S4-1

The DMMP does NOT propose (or recommend) the placement of non-HARS material into any of the existing pits of the Lower Bay or Jamaica Bay. Placement of approximately 1.8 million cubic yards of material, which is suitable for HARS placement, is recommended only for the Norton Basin pit located in Jamaica Bay, NY, contingent on further studies to conclusively document the existing degraded nature of the pit. See Section 5.3.3.3, items a. through e.

S4-2

[INSERT NEEDED]

S4-3

Given the large geographic coverage of the Port and the amount of sedimentation that occurs within it, dredging of various projects has been and continues to occur in the Port on a nearly continuous basis. For each specific dredging project, Pubic Notices are released to notify the public of specific dredging projects that are pending. As the DMMP is a generic document, which covers all dredging projects planned in the Port, it identifies the general management options and timeframes which dredging and dredged material will utilize.

S4-4

The Corps will review and respond to the main comments aired at the public meeting on the DMMP report. In doing so, the DMMP will be revised, as appropriate, to take into account the issues raised.

S4-5

Several beneficial use management options are either underway or under continued development currently in the region. These include contaminant reduction, ocean and land remediation, decontamination technologies, and habitat creation and restoration (several applications). The DMMP describes the status of development for each existing management option or those under consideration for the Port.

S4-6

As stated in the DMMP-IR in the sections describing contaminant reduction, land remediation, and decontamination options, New York is cooperating and funding the implementation of a number of these options. New York has recently awarded new grants for two landfill closure demonstrations adjacent to Jamaica Bay and has fully funded, with New Jersey, the contaminants track-down program as a first step in controlling pollution inputs to the Harbor.

State of New Jersey
Department of Environmental Protection

Christine Todd Whitman
Governor

Robert C. Shinn, Jr.
Commissioner

October 28, 1999

Robert J Kurtz
Department of the Army
New York District, Corps of Engineers
Jacob K. Javits Federal Building
New York, NY 10278-0090

RE: Dredged Material Management Plan for the Port of New York and New Jersey

Dear Mr. Kurtz:

The Office of Coastal Planning and Program Coordination and the Office of Dredging and Sediment Technology of the New Jersey Department of Environmental Protection has completed its review of the Draft Dredged Material Management Plan for the Port of New York and New Jersey (DMMP; September 1999). This draft document consists of an Implementation Report, Technical Appendix, and associated Draft Programmatic Environmental Impact Statement (DPEIS). This review was conducted pursuant to the requirements of the National Environmental Policy Act (NEPA). Please note the following comments and concerns with the draft DMMP and DPEIS.

The Department fully supports the strategy for dredged material management advanced by the draft DMMP: to use dredged material beneficially whenever possible, and to dispose of dredged material only when beneficial use options are not available.

The DPEIS provides a limited, general overview of the potential impacts associated with the various dredged material management options presented in the draft DMMP. The PEIS should also include a separate section which identifies and summarizes the additional types of information that will be required to complete the "Tier 2"/site-specific NEPA evaluations for these options. Specific areas of concern include surface and groundwater quality, air quality (including SIP/TIP conformity), cultural and historic resources, wetlands, and finfish and shellfish resources (together with associated commercial, recreational, and subsistence fishing activities). These additional "Tier 2"/site-specific NEPA and regulatory reviews should also be coordinated with the Annual Report process (see DPEIS Section 4.4, page 47), and identified as potential "Federal Actions Resulting from the DMMP" (see DPEIS Section 4.5, page 48). **S5-1**

In its evaluation of the DMMP "No Action Alternative" (PDEIS Section 5.6.1-b, page 5-61), it is stated that "[w]ithout navigation improvements existing commerce and facilities would decline..." This is inconsistent with the Without-Project Condition in the Draft Feasibility Report for New York and New Jersey Harbor Navigation Study EIS (September 1999), which states that commerce in the harbor will increase regardless of any navigation channel improvements. The **S5-2** conclusions of the DMMP DPEIS and the Harbor Navigation Study DEIS must corroborate one another.

Section 5.3.5.1.2-a (page 5-36) of the DPEIS concludes that Zone 2 in the Lower Bay "has been identified as the most likely area for new [CAD] pits." Please be advised that the State of New Jersey will not support the construction of CAD facilities in Raritan Bay. In addition, the draft DMMP assigns new CAD facilities in Zone 2 an option preference of "4-5"; i.e. they are non-preferred options. The DPEIS must be consistent with the draft DMMP and reflect this status. S5-3

Appendix B of the DPEIS appears to intend to be a consistency determination with New Jersey's federally approved coastal zone management program for the draft DMMP. The appendix includes an appropriate listing of the Rules on Coastal Zone Management (N.J.A.C. 7:7E) that would apply to the DMMP. However, a federal consistency determination must include a brief analysis of the proposed federal action in terms of the State's enforceable coastal zone management policies; the appendix lacks such a specific analysis of compliance with the Rules. Based on the strategy toward beneficial uses of dredged material advanced by the draft DMMP, the Department is confident that the DMMP can be found to be consistent with New Jersey's coastal zone management program. However, this does not obviate the need for a Rule specific analysis to facilitate that consistency determination. S5-4

The PEIS needs to discuss the presence/use of the NY-NJ Harbor estuary by State-listed threatened and endangered plants and animals. Potential impacts to these species must also be evaluated. S5-5

Section 5.6.2-h (page 5-64) of the DPEIS states "[o]f all the options in the recommended course-of-action, treatment of dredged material at the NJ processing facility and decontamination are two options that are associated with the potential for adverse impacts." Thus, it appears that a conclusion of the DPEIS is that the decontamination and the NJ Processing facilities are the only two management options that have a potential for adverse impacts. **The Department strongly disagrees with this conclusion.** The impacts associated with these dredged material management options are not significantly different than other dredged material processing facilities already in operation, proposed land remediation options, or any of the other options. Further, each dredged material management option included in the recommended course-of-action has some potential to produce adverse impacts in an environmental medium (be it soil/substrate, habitat, water quality, or air quality). For example, the placement of dredged material in sub-channel cells by dropping it through 50 feet of water has a far greater risk of impact to water quality than any of the upland beneficial use options. This section needs to be rewritten. S5-6

Additional technical comments on the Implementation Report, DPEIS, and technical Appendix are included in Attachments #1-3.

Attachment #1

NJDEP Technical Comments on the Draft DMMP Implementation Report

(1) Section 1.4, page 4: the draft DMMP includes estimates of the amount of material to be dredged over the 40-year life of the plan. These quantities have been estimated using the best available information, including maintenance dredging of existing channels and berthing areas, and ongoing and proposed channel deepening projects. However, given plans to deepen many of the channels in the New York Harbor area, it is probable that some berthing areas will also be deepened. The draft DMMP does not appear to account for this additional dredged material, or increased maintenance dredging requirements resulting from potential changes in sedimentation rates in deeper berths. **S5-7**

(2) Section 1.6, page 9, para. #1: discusses the cost of dredged material management rising substantially "over the past few years." This statement needs to be placed in context. Dredged material management is more expensive now than it was in 1992, before the ocean disposal criteria changed. However, the cost of alternative upland management has decreased substantially from over the $100 per cubic yard cost for the Howland Hook maintenance dredging project in 1994, to $29 in 1999. This progress should also be reflected in any discussions concerning costs in the DMMP. **S5-8**

(3) Section 2.1, page 12: please note that most of the money for the CARP has been provided to the two states by the Port Authority of New York and New Jersey. Also, the CARP model will be "developed" (and possibly "calibrated") by using the data to be collected by the two states. **S5-9**

(4) Section 2.3.2, page 16: filling dead-end basins is included in the DMMP as a "Habitat Creation, Enhancement and Restoration" beneficial use of dredged material. While the Department does not object to the inclusion of these types of projects in the DMMP, its policy with regard to these areas needs to be clearly articulated. Dead-end basins are included in the draft DMMP as a restoration measure because they often have poor flushing and high biological oxygen demand due to sources of pollution such as combined sewer outfalls (CSOs). As a result, water exchanged out of these basins often degrades the water quality of the adjacent water body. New Jersey's solution to poor surface water quality is not to eliminate the affected water body, but rather to remedy the causes of the water quality problem (for example by upgrading the CSO to eliminate dry weather flow and trap oxygen demanding sediments). To fill a dead-end basin and extend the CSO to the adjacent water body merely moves the problem to deeper water, and eliminates the assimilative capacity of the dead-end basin itself. Where filling a dead-end basin is required for another purpose that is consistent with New Jersey's coastal zone management program, the Department may encourage the beneficial use of dredged material as a structural fill in that application. **S5-10**

(5) Section 2.3.3, page 20, "Brownfields", Bullet #4: the reference to a "tipping fee" is incorrect. The Department does not consider dredged material to be a solid waste. The per cubic yard cost of the beneficial uses of dredged material reflect processing and placement costs. Please eliminate references to "tipping fees" associated with beneficial use projects in New Jersey. S5-11

(6) Section 2.5, pages 26-27: this discussion appears to overstate the potential benefits associated with confined aquatic disposal (CAD) facilities. While it is true that the potential CAD areas may already be covered with contaminated sediments, without dredging these sediments would be buried by cleaner sediments over time. Consequently, placing these sediments in a CAD facility, where they will also be covered over time by cleaner sediments has minimal added benefit. Thus, the CAD option does not appear to have *significant* potential restoration opportunities for aquatic biota. There may be some benefits in that contaminated sediments from maintenance dredging are now isolated from the aquatic environment. However, this benefit is not unique to CAD facilities. Any dredged material management technique that removes or isolates contaminated material from the aquatic environment bears this benefit. If claimed as a benefit here, then it should also be noted under many of the beneficial use alternatives as well. S5-12

(7) Table 3-2: the cost for the Hunterdon Quarry reclamation is listed at $0 per cubic yard. However, page 21 of the draft DMMP lists the cost for this option at $7 per cubic yard. Table 3-2 should be revised to reflect the $7 per cubic yard cost of this option. S5-13

Attachment #2

NJDEP Technical Comments on the Draft PEIS

(1) Page 1-3, Table 1-1: lists the applicable laws of the State of New Jersey. The Waterfront Development Law and the Waterfront and Harbors Facilities Act of 1914 are one and the same. Please eliminate the reference to the Waterfront Development Law and include the N.J.S.A. 12:5-3 citation after the Waterfront and Harbor Facilities Law. The Coastal Zone Management Act is a federal law, not a State law and is already listed under the Federal Environmental Laws and Executive Orders section. To be consistent with the New York section, it is recommended changing this to, or adding, "Coastal Zone Consistency." S5-14

(2) The Department has previously provided comments to the U.S. Army Corps of Engineers on its development and use of siting criteria (particularly for island CDFs and constructed CAD pits) in the DMMP. However, the Draft PEIS does not discuss (nor reference) these criteria and whether/how they were used to select the various "zones" identified in the estuary and NY Bight Apex. This is a major omission; a detailed discussion of the siting criteria and the results of their application should be included in the PEIS. S5-15

(3) Section 3.3.3.3-d, page 3-8: this paragraph should also refer to the Pennsylvania mine reclamation project. S5-16

(4) Section 3.3.6.2-b, page 3-11: the OENJ Phase Two project should be included as a Nearshore CDF, with an impact area of approximately 300 acres and a capacity of 10 MCY (this potential project is incorrectly identified in Section 2.3.3, page 17 of the DMMP as a "Landfill" project). S5-17

(5) Section 4.2.4-a, page 4-2: revise to read as follows: "The potential for additional permits to be issued by the appropriate regulatory agencies could greatly increase the volume of material beneficially used in this way." S5-18

(6) Section 4.3.2.5, page 4-36 and Section 4.3.3.4, page 4-56: a more detailed and comprehensive discussion of birds is needed, particularly concerning the Harbor Herons Complex. S5-19

(7) Section 4.3.3.9-d, page 4-61: it is not clear what surface water bodies are referred to in the first sentence of this paragraph. In general, it appears this paragraph needs to be rewritten. S5-20

(8) Section 4.3.3.11-a, page 4-64: the air quality data for Hudson County was not discussed in Section 4.3.2.11. S5-21

(9) Section 4.3.4-e, page 4-71: states that the New Jersey dredging technical manual "sets forth the requirements for New Jersey site-specific NEPA documents..." However, compliance with NEPA is a federal requirement, not a State regulatory requirement. S5-22

(10) Section 5.3.2-e, page 5-7: move this paragraph to Section 5.3.1. S5-23

(11) Section 5.3.3.2-a, page 5-11: the referenced "BUA 1999, draft" study should be summarized in this section of the PEIS, particularly regarding the potential impacts and benefits of the various option types. S5-24

(12) Please note that the Belford, Monmouth County N61 site is both a CDF site and a landfill closure site; numerous sections of the PDEIS should be revised accordingly. S5-25

(13) Section 5.3.5.1.1-c, page 5-35: discusses the possible use of State permitted CAD facilities 2S and 2N. Based on draft correspondence received from the Port Authority on September 30, 1999, it is the Department's understanding that the Port Authority of NY-NJ has abandoned the use of these facilities due to the depth of surficial contamination, and the increased cost of constructing these facilities due to that depth. This should be confirmed with the Port Authority, and the DMMP and DPEIS should be revised accordingly. S5-26

(14) Section 5.3.6.2, page 5-42: should identify the locations for near shore confined disposal facilities (CDFs) which were considered, the acreage of littoral and sublittoral habitat which would be eliminated, and the option preference of each location. Five potential sites were identified in the draft DMMP, and preliminary information is available for each site in terms of acreage of aquatic habitat that would be filled. Also, the option preference assigned differs among the identified sites. A discussion of why the option preference is different is warranted here in the DPEIS. For example, projects which advance a legitimate public purpose or water dependent use for which there is no alternative site received a higher option preference because there is a likelihood that those fills might occur anyway. In these cases using dredged material as a substitute for fill obtained from upland sources would be considered a beneficial use. However, fills proposed for non-water dependent uses for which there are presumably alternative upland sites, are not likely to advance in the absence of the need for dredged material capacity. The purpose of such projects can only be considered dredged material disposal, accordingly are not preferred options, and thus are only considered under the DMMP when beneficial uses for that dredged material are not available. S5-27

(15) Section 5.6.2-i, page 5-65: should specify that while significant long-term impacts are not anticipated, these contingency disposal options also yield fewer long-term benefits than the preferred beneficial use options. S5-28

(16) Please note the following observations/suggested revisions to Table 5-1:

(a) Sediment Reduction: under Physical Conditions, Surface Water Quality, Benthos, Fish and Megainvertebrates, and Other Living Resources, revise to state "variable impacts, beneficial and adverse, depending on particular site and methods used". S5-29

(b) Decontamination: should be summarizing potential impacts resulting from the construction and operation of decontamination facilities, not the "general" removal of contaminants from the environment (which are already evaluated in the Contaminant Reduction option). S5-30

(17) Please note the following observations/suggested revisions to Table 5-2, Land and Mine Remediation: under Benthos, Fish and Megainvertebrates, revise to read the same as for Other Living Resources. S5-31

Attachment #3

NJDEP Technical Comments on the Draft Technical Appendix

(1) Section B.3.3, page 44, para. # 4: states that dredged material, being generally fine-grained, is acceptable for use as cover/capping material at landfills. Fine-grained material is generally well suited to use as a cap for landfills, but generally will have to be blended with coarse grained material before use as cover **S5-32**

(2) Section B.3.3, page 44, para. #6: states that dewatering and manufactured soil production can make dredged material acceptable for land remediation. It should be noted that this would be entirely dependent on the chemical composition and physical characteristics of the dredged material and the proposed beneficial use for that material. **S5-33**

(3) Section B.3.3, page 47, "Brownfield Remediation", para. #2: is somewhat confusing as written. The total capacity of the Koppers site is 4.5 million cubic yards (MCY) if the Corps issues Section 404 permits needed for the remediation of the site; all 4.5 MCY would be used in the remediation of the site if the Corps issues its approval. If those permits are not issued, the site has a capacity of only 2.1 MCY. As presently written, the paragraph leads one to believe that the Corps permit and additional 2.4 MCY of dredged material capacity are not associated with remediation of the site. **S5-34**

(4) Section B.3.3, "Potential Impacts", page 49, para. #3: identifies groundwater and surface water as being potentially impacted by the use of dredged material in land remediation. Dredged material used in these applications is typically amended with stabilizing agents that bind any contaminants to the soil matrix. In New Jersey, dredged material used in these applications is subjected to a multiple extraction leaching procedure to ensure that contaminants will not leach out of the dredged material at concentrations of concern. In addition, the sites being remediated typically already have groundwater or surface contamination. Engineering solutions, including barriers and leachate collection, are already incorporated into the remediation design; these features reduce further the potential for groundwater contamination. Similarly, capping of the dredged material with impervious surfaces or clean fill minimizes any concern for surface water coming in contact with the dredged material over the long term. During placement, stormwater is managed on these sites to allow particulates to settle out prior to discharge from the site to a receiving surface water body. This management reduces the concern for surface water impacts from the placement of dredged material. **S5-35**

(5) Section B.3.3, "Potential Impacts", page 49, para. #5: identifies air quality and volatilization of PCBs and dioxins as areas of concern. This section also questions the applicability of laboratory experiments to large scale dredged material handling facilities. However, the paragraph fails to note that application of current state of the art models indicates that volatilization is not significant; in addition, field studies are being performed by NJMR to **S5-36**

validate the conclusions of these models. Also where particulates are of concern, best management practices can be employed, such as wetting the dredged material as needed, to reduce the possibility of particulates becoming airborne.

(6) Section B.3.3, "Potential Impacts", page 49, para. #6: briefly discusses human exposure to the dredged material and the potential risks associated with that exposure, particularly as applied to workers at the sites accepting dredged material. As written, the draft Technical Appendix implies that risk assessments have not been performed. However, this paragraph should note that site-specific health-based risk assessments have been performed by OENJ Cherokee Corporation, and that the levels of contaminants in dredged material accepted at their sites have been limited based on those risk assessments. The risk assessments were based on 10 to 15 years exposure and ingestion of particulates. Given that the dredged material placed on these sites is being capped with impervious surfaces (buildings and parking lots) or clean fill, a 10 to 15 year exposure scenario is extremely conservative. These conditions notwithstanding, as an added precaution, the resulting contaminant concentrations were further reduced by a factor of ten. Acceptance criteria for processed dredged material at the Koppers site in Kearny are even lower than the criteria used by OENJ. Generally, the concentrations of contaminants in dredged material from the New York Harbor area do not exceed those reduced health based criteria. S5-37

(7) Section B.3.3, "Rehandling/Processing Facilities", page 50, para. #2: states that the SHIP facility and the CTI facility on the Claremont Channel have applied for NJPDES permits and should be available by 2002. Please be advised that CTI has already received its NJPDES permit and is fully permitted, with the exception of an air quality permit (currently pending). The SHIP facility NJDPES permit has already been published in draft and public hearings have already been held concerning the draft permit. It is expected that both facilities should be available to accept and process dredged material in year 2000. S5-38

RESPONSE TO COMMENTS

S5 State of New Jersey, Department of Environmental Protection

S5-1

A new paragraph has been added to Section 5.3 to summarize the types of studies that may be conducted as part of site specific NEPA evaluations for the implementation of selected options.

S5-2

Sections 5.6.1.b through 5.6.1.e have been modified to make the DMMP consistent with the Harbor Navigation Study.

S5-3

The paragraph following the one identified in the NJDEP comment (5.3.5.1.2a) states that CADs in Lower Bay are relegated to a least preferred option status.

S5-4

The Appendix B of this document is not a consistency determination, hence the use of the term "report". It was included to show that the Corps is aware of the need to file a consistency determination when the NEPA documents for the individual options/sites are promulgated. Further this CZM report was included for review by the states for their comment on any possible oversight of regulations that need to be addressed.

S5-5

In Chapter II, each major subsection (geographic area) identifies the occurrence of endangered and threatened species. A revised Table 4-4 lists these species by Federal designation and for each state (NY and NJ). Each major option type is evaluated in Chapter V. These evaluations include a discussion of potential impacts on Federally listed species. State listed species would be evaluated in site-specific EIS's, as necessary.

S5-6

Section 5.6.2.h has been rewritten.

S5-7

Concur. The volume projections have been revised to include for increased construction and maintenance material dredging in the non-Federal channel areas resulting from the Harbor Navigation Study.

S5-8

Text has been revised.

S5-9

Noted

S5-10

Noted.

S5-11

Text has been revised.

S5-12

Concur. Text has been revised.

S5-13

Table has been revised.

S5-14

Table 1-1 has been revised in accordance with the comment.

S5-15

Concur, text has been revised.

S5-16

Section 3.3.3.3 (Landfill, Brownfield and Mine Reclamation) discusses mine reclamation in subsection b. A specific reference of the Pennsylvania mined lands has been added to subsection a. of Section 3.3.3.3.

S5-17

The OENJ Phase Two was added to Section 3.3.6.2

S5-18

Section 4.2.4.a has been revised to include the requested statement

S5-19

An expanded section on Harbors Herons has been added to the EIS.

S5-20

Text has been revised.

S5-21

Text has been revised.

S5-22

Section 4.3.4.e. The text has been revised to identify NEPA as a Federal requirement.

S5-23

Section 5.3.2.e. has been moved to Section 5.3.1. It is now subsection f.

S5-24

See Technical Appendix, Section B3.

S5-25

The text of the PEIS will be changed to refer to the Belford, Monmouth County N61 Site as both a CDF and a landfill closure site throughout the document.

S5-26

The text of Sections 5.3.5.1.1.a and c. will eliminate references to areas 2S and 2N in accordance with the Port Authority's decision not to develop these sites.

S5-27

A map of the five nearshore CDF's has been included in the technical appendix. The acreage has been added to EIS Section 5.3.6.2; In accordance with your comments, these options are no longer among the preferred options, with the exception of Long Slip Canal. The nearshore CDF's are not discussed because they are not part of the DMMP-IR. These facilities are part of the Comprehensive Port Improvement Project. Their evaluation would be conducted under CPIP.

S5-28

The text of Section 5.6.2.i. has been revised to incorporate the comment.

S5-29

Table 5-1 has been revised as per the comment.

S5-30

The need for the assessment of effects of siting and operation of decontamination facilities has been added to Table 5-1, but the effects of these facilities cannot be addressed until sites are selected.

S5-31

The comment has been incorporated in Table 5-2.

S5-32

Text has been revised.

S5-33

Text has been revised.

S5-34

Text has been revised.

S5-35

Text has been revised.

S5-36

Text has been revised.

S5-37

Text has been revised.

S5-38

Text has been revised.

STATE OF NEW JERSEY
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December 1, 1999

Mr. Raimo Liias, Director
Port Programs, New York District Corps of Engineers
Department of the Army
26 Federal Plaza
New York, New York 10278

Dear Mr. Liias:

New Jersey Maritime Resources has completed its review of the final public draft of the Dredged Material Management Plan for the Port of New York and New Jersey, Implementation Report, Programmatic Environmental Impact Statement, and Technical Appendix (hereinafter DMMP). This version of the DMMP did not address all of NJMR's comments submitted in August 3 and 17, 1999 memoranda. Please incorporate the attached comments into the final public document.

New Jersey's consistent position is that beneficial use of contaminated, and even uncontaminated, dredged material is and will be the methodology for dredged materials management. These goals and policies are reflected in Section 1.5 which includes:

"In identifying options to include in the DMMP, those that best manage dredged material as a resource would take preference as follows:

1) Reduce the level of contaminants and the volume of material dredged in the future (contaminant and sediment reduction),
2) Reduce the level or bioavailability of contaminants in dredged material (decontamination and hot spot dredging and remediation),
3) Use dredged material in a beneficial manner (environmental restoration/remediation and construction/transportation projects), and
4) Dispose only material that cannot feasibly be used beneficially."

Specific Comments on Technical Appendix

- The pneumatic sediment suspension system (Air Guard) being demonstrated by NJMR is expected to significantly reduce, but not eliminate the need for maintenance dredging. The suspension reduces the settling of suspended sediments being carried by the rivers and tides. The active hydrodynamics of NY/NJ Harbor also result in the movement of sediment along the bottom of the rivers and bays (bed load). The pneumatic systems are not expected to alter bed load transport. S6-1

- The SCOUR system, unlike the Air Guard system, actually resuspends recently deposited sediment. While it is true that we have discussed demonstrating SCOUR at CITGO in Linden, this system is considerably more expensive than pneumatic suspension and has more serious environmental concerns including entrainment and resuspension. Please clearly separate the discussions of the two systems.

- Please note that much of the dredged materials removed currently from the Harbor actually meets residential clean up standards for many contaminants.

- Please note that the geotechnical/structural properties required of capping material are different than the properties required of fill, cover, and manufactured soil. A cap must be impermeable; fill and cover may, and in some cases must, be permeable.

- While we understand the Corps' reasoning for considering stabilization a decontamination technology, we feel that this may confuse the public. While some stabilized material may in fact become less toxic with time, decontaminated material is clean at the start, and therefore does not require ANY special management or handling. S6-2

- In order to avoid the confusion that may occur in the public's mind regarding dredged material and its relationship to solid waste, we would prefer that you avoid using the phrase "tipping fee". The fee to the dredging entity to provide dredged material for an upland facility is better termed a "processing cost". S6-3

- Redevelopment of a brownfield, by definition, can be complicated by "real or actual" contamination.

- The processing cost at the Port Liberté site is $20/cyd. S6-4

- The often referred to price of $29/cyd is exclusive of dredging and transportation to the off-loading site only. Cost of transport to a final placement site by the processing facility, as in the case of Pennsylvania Mines, would be included in the $29 processing cost. S6-5

- The NJ Department of Environmental Protection has a signed Memorandum of Understanding with the PA Department of Environmental Protection to assist in the closure of abandoned mines with dredged material. We feel that NJDEP should be acknowledged for this effort in the section on abandoned mines. S6-6

- In the section on Pennsylvania Mines, a potential cost of $20-26/cyd is referenced. Please be advised that the current permit holder in PA, Consolidated Technologies, Inc., has stated that the lowest achievable price is $26-29 per yard. Any further reduction in cost to the user would have to be subsidized. S6-7

- The CTI off-loading and processing facility will be fully permitted by December 1999 (including NJDPES permits). S6-8
- Under section B-4, decontamination, the CARP should be identified as the body responsible for the identification and prioritization of "hot-spots" for remediation. 6-9S
- Note that while the current demonstration of decontamination processes has targeted $35/cyd as a user cost, it is likely that the technologies will need to meet $29/cyd in order to remain competitive. We have been given indications that this is achievable given the correct economies of scale. S6-10
- The entire subaqueous disposal section is still written in a way that leads the reader to question why such an apparently good idea has been classified as option 5. S6-11

Specific Comments on PEIS

- Throughout: The scientific name of each species should be provided in parentheses following the common name. The common name (only) can then be used in subsequent discussions of the document. The use of common and scientific names is inconsistent throughout the document. S6-12
- Throughout: The use of acronyms and their initial use should be checked.
- Page 4-55/56: Dioxin, Hg, and DDT are contaminants of concern for dredged materials in the Newark Bay complex. A major source of these contaminants is the historic discharge from the Passaic River. Please include a parallel discussion on the Passaic River to that provided on the Hudson River. S6-13
- Page 4-70: Section 4.3.4 should be entitled "Upland CDF" rather than "Upland" to avoid confusion with land remediation options in the recommended plan. Correct language elsewhere in this section for consistency with this important distinction. S6-14
- Pages 5-54/55: Sites for dredged material processing and handling are currently permitted at Jersey City, Elizabeth, Bayonne, and Kearny. S6-15
- Table 5-3 (Nearshore Fills/CDFs): Groundwater quality text should be modified "Effects can be controlled by lining ~~pit or cell~~ *fill area* with impermeable material." S6-16

Editorial Modifications:

- Page 3-9 (d-5th line): Move "(30,000-150,000 CY)" to after the word "demonstration". This volume is more representative of a demonstration project.
- Page 4-9 (a-Humpback Whale-6th line): .."small schooling fish such "*as*" *Sand Lance* .."
- Page 4-9 (a-EFH-6th line): Delete apostrophe, .."England, Mid-Atlantic and South Atlantic *FMC's*".
- Page 4-23 (a,b): Delete apostrophe in *PCB's*.

S6-17

- Page 4-23 (b): Insert "historic" in the following sentence- "Inputs of PCBs to the New York Bight Apex result primarily from sewage sludge and "***historic***" dredged-material dumping,..."
- Page 4-34 (j): "..generally showed as stronger..."
- Page 4-35 (a): italicize "*Malaclemys terrapin*"
- Page 4-48 (b): Delete apostrophe in *CSO's*
- Page 5-23 (b- 2nd line): "While there is the ~~possibly~~ *possibility* of food web.."
- Page 5-27 (b): Add acronym to "The Waterways Experiment Station *(WES)*.."

Deviations from this policy will not be supported by the State.

Sincerely,

Frank M. McDonough
Executive Director, NJ Maritime Resources

FMM/lab

Cc: Robert C. Shinn, Jr., Commissioner, NJDEP
Richard Gimello, Assistant Commissioner, NJDEP
Beverly Fedorko, Special Assistant to the Commissioner, NJDEP

RESPONSE TO COMMENTS

S6 New Jersey Department of Transportation, NJ Maritime Resources

S6-1

The two sediment reduction methods were further separated and clarified.

S6-2

In an attempt to avoid possible confusion, the text has been revised to distinguish these two options as low technology (stabilization) and high technology (decontamination).

S6-3

Text has been revised.

S6-4

Processing and placement cost has been changed.

S6-5

Concur. Text has been clarified, where appropriate.

S6-6

Text has been revised.

S6-7

Text has been revised.

S6-8

Noted.

S6-9

As the CARP is not the only body that may identify sediment "hot-spots" and be responsible for their remediation, the text has not been altered.

S6-10

Noted. Should this cost be considered by the involved agencies to be achievable, it will be reflected in future DMMP updates.

S6-11

Subaqueous disposal options have preferences that range from 1 to 5. While this option does not have the remediation benefits associated with many of the upland options, it is a proven technique that can be cost-effective and provide many years of placement capacity.

S6-12

The use of scientific names will be reviewed and revised in accordance with standard rules for nomenclature. The use of acronyms has been checked.

S6-13

A paragraph has been added to Section 4.3.3.9 in response to this comment.

S6-14

The title of Section 4.3.4 has been changed from "Upland" to "Upland CDF", and usage in the text revised to be consistent with new title.

S6-15

Section 5.5.3.2.2 has been revised to include the identified sites.

S6-16

Table 5-3 contains the requested wording.

S6-17

The suggested editorial changes will be incorporated into the text.

THE PORT AUTHORITY OF NY & NJ

MEMORANDUM

TO: R.Barrios/E.Knoesel
FROM: P.Dunlop
DATE: December 2, 1999

SUBJECT: DMMP and PEIS Comments

CC: R.Sandiford, S.Leifer

I have reviewed the Draft DMMP and PEIS again and have the following comments.

1.) I can understand why the public may be confused on certain issues. The document does not clearly and consistently define what is contaminated and what is not and does not carry the distinction through the text. Examples are: **S7-1**

a. Page 2 Section 1.3 defines "dredged material is sediment (or existing rock)". This is too simplistic. Dredged material is anything removed from the channels and berths and may consist of; sediment (defined as recent fine grained soil particles deposited through the water column – generally post anthropogenic and often contaminated – ie fails HARS placement criteria), insitu or parent soils of preanthropogenic origin and generally not contaminated (passes HARS placement criteria), rock materials (excavated or blasted from bedrock), and possibly debris (debris would be removed from further discussion in the document as it would be handled separately).

b. Page 3 the 3rd line states " much of the dredged material is contaminated". As initially defined in the text (a. above) this is incorrect. As recommended above it is acceptable. A large portion of new channel construction material would pass HARS placement criteria because it is preanthropogenic and not contaminated as found in the recent KVK/NB amphipod testing. Sediment is generally post antropogenic and often contaminated.

c. The PEIS suffers the same problem of clarity of definitions and consistency. At page 2-1 section 2.2b "contamination of dredged material is caused by anthropogenic " This statement could lead the public to associate contamination with all "dredged material" or worse yet with the contamination occurring during the dredging process. The sediment is contaminated by .. then we dredge the contaminated sediment.

d. Also at PEIS page 5-31 section e " decontamination facilities .... process raw material (dredged material) into marketable product ". This implies raw dredged material is contaminated.

e. Also at page 5-64 section h " treatment of dredged material at the NJ processing facility and decontamination.....". This should state "treatment of contaminated dredged materials".

There must be a clear distinction between **contaminated dredged material (sediment) and "clean" dredged material** or the document will continue to be misunderstood by the public. In addition we could be accused trying to confuse and continue in our old ways.

2.) Page 6 Section 1.5 the 3rd sentence seems to imply that MPRSA would preferentially take dredged material upland rather than use it to remediate the HARS. Is this the intent? S7-2

3.) Page 14 Section 2.3.1 line 3 The MDS was not designated as the HARS. It is only a portion of the HARS site. Section 3.3.3.1.1 of the PEIS states it much more clearly. S7-3

4.) PEIS Page 5-37 Section 5.3.5.2c. The surface of the CAD could be lower than the adjacent channel as a 3rd way to control the potential impact of ship propwash. S7-4

5.) PEIS Page 5-48 section 5.3.6.3.4c the 4th sentence beginning with "this presents .." seems to state that the CDF presents a problem of potential contamination of birds. While this appears true, is it not also true of many conditions elsewhere in the harbor and might not the CDF reduce the overall potential to birds? On the basis of this statement the public could construe the CDF to be bad ie worse than current conditions. S7-5

6.) PEIS Page 5-2 and 5-3. Sections g and m. The document could more forcefully state here, and possibly elsewhere, that site specific applications (NEPA documents EIS or EA) must be made for each site **before** any of the options discussed in the DMMP can proceed. S7-6

7.) PEIS Page 5-64 section g seems to state that borrow pits will be filled with sand. Is that the intent? S7-7

RESPONSE TO COMMENTS

S7 **The Port Authority of New York and New Jersey**

S7-1

Potential confusion regarding the use of the term contamination in relation to Harbor sediments has been revised. Text changes have been made, where appropriate.

S7-2 The HARS was designated under MPRSA as an ocean disposal site, thus HARS suitable material cannot be placed there if a practicable alternative exists.

S7-3 Noted. Text has been revised

S7-4 Text has been revised to include this alternative to control the potential impact of ship propwash.

S7-5 The purpose of the PEIS is to identify potential impacts and assess their effects on resources and the likelihood of their occurrence. The assessment includes mitigation measures to reduce potential impacts. Your comment demonstrates that the placement of such a facility could be an "attractive nuisance" to certain species of birds. The contaminated material would become available in a way that some species could come in direct contact with this material. The following paragraph **d.** identifies the precautions which could be taken to offset this potential problem.

S7-6 Text has been revised.

S7-7 Text has been revised.

CLAIRE SHULMAN
PRESIDENT

(718) 286-3000
TDD (718) 286-2656
TELECOPIER (718) 286-2885

CITY OF NEW YORK
OFFICE OF THE
PRESIDENT OF THE BOROUGH OF QUEENS
120-55 QUEENS BOULEVARD
KEW GARDENS, NEW YORK 11424-1015

December 1, 1999

Mr. Robert J. Kurtz
PEIS Coordinator
Department of the Army
New York District
Corps of Engineers
Jacob K. Javits Federal Building
New York, New York 10278-0090

M1 **FILE**

RE: Dredged Material
Management Plan

Dear Mr. Kurtz:

Thank you for this opportunity to comment on the Corps of Engineers Dredged Material Management Plan (DMMP) draft report. Although the report provides a number of options for sediment reduction and potential sediment disposal, there appears to be an emphasis on the use of Jamaica Bay as a dredging material disposal site in the early phases of the plan. I am specifically referring to the following segments of the management options contained in the draft report;

- Pg.17 "A sequence of small-scale, localized and comprehensively monitored projects could be employed to prove the feasibility of pit restoration, initially using only HARS suitable dredged material. <u>Norton Basin and Little Bay, located within a sheltered area of Jamaica Bay along its southeast shore contain adjacent borrow pits where this type of project might best be undertaken."</u>

- "The Norton Basin Pit could then be filled with up to <u>1.8 million cubic yards</u> of fine-grained, but HARS suitable material, and systematically monitored."

- "<u>Once the monitoring established that the material could be placed without significant loss</u>, the adjacent Little Bay borrow pit could be filled with <u>700,000 cubic yards</u> of HARS unsuitable material..."

M1-1

- "Only after the monitoring results (of Norton and Little Bay) are fully evaluated and can substantiate that the operation can be accomplished in an environmentally safe and beneficial manner, would proposals for expansion into the other larger pits in Jamaica Bay (e.g. Grassy Bay) be considered."

- Pg.18 "If placement of dredged material into degraded areas of Jamaica Bay results in a net environmental benefit, borrow pits in the waters of Lower Bay could be considered for a similar approach..."

A number of years ago, the City of New York adopted a policy of "fair share." Simply put, it means one borough will not be singled out to disproportionally shoulder the burden of unattractive citywide initiatives and programs. On its face, your draft plan fails to satisfy the "fair share" criteria, since it targets Jamaica Bay as the testing grounds for the dredged material disposal options.

A great deal of time, effort and money has been expended in recent years to rejuvenate the Rockaways and Jamaica Bay. For decades, the Rockaways became a dumping ground for problems and issues the City was unable to resolve in a comprehensive fashion. We are beginning to see an emerging renaissance in the Rockaways, therefore, the last thing we need is another ill-advised program being targeted for the Rockaways and Jamaica Bay.

The idea of using the Jamaica Bay for the dumping of dredged materials is simply unacceptable.

Sincerely,

Claire Shulman

CLAIRE SHULMAN
President
Borough of Queens

CS:db

cc: Congressman Anthony Weiner
Jonathan Gaska, District Manager, CB#14
Rose Pepe, District Manager, CB#10

CLAIRE SHULMAN
PRESIDENT

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CITY OF NEW YORK
OFFICE OF THE
PRESIDENT OF THE BOROUGH OF QUEENS
120-55 QUEENS BOULEVARD
KEW GARDENS, NEW YORK 11424

FACSIMILE TRANSMISSION

TO: Robert J. Kurtz
AGENCY Department of the Army, N.Y. District - Corps of Engineers
FAX: (212) 264-6040 TELEPHONE: (212) 264-2230

FROM: Queens Borough President Claire Shulman

TELEPHONE: (718) 286-2870

NUMBER OF PAGES INCLUDING COVER: 3

ADDITIONAL MESSAGE:

RESPONSE TO COMMENTS

M1 **President of the Borough of Queens – Claire Shulman**

M1-1

The use of the pit in Norton Basin of the Jamaica Bay complex represents an opportunity to restore habitat with HARS suitable material. The opportunity is to show that the material can be beneficially used to fill existing man-made pits. The pit has been shown, by sampling, to be degraded i.e., low/no oxygen and not supportive of fish and invertebrates that would normally be expected in the bay. By filling the pit and allowing increased circulation a high probability exists that restoration of viable habitat will occur. The plan is a step by step process to insure success of any future efforts. The implementation of the next site, Little Bay (adjacent to Norton Basin), would depend on the success of the Norton Basin site. The use of non-HARS material at Little Bay would be fully monitored. This site would provide information for the potential use of non-HARS material at other sites that would then be capped, providing the potential benefits of habitat restoration and the placement of non-HARS material. Thus, this initiative represents an opportunity to improve Jamaica Bay and as such would not seem to fall under the "Fair Share" policy, that is set up to more equitably distribute programs that would be considered a detriment.

Wisemiller, Bryce W NAN02

From: Dan E. Kelly [DK7@aol.com]
Sent: Tuesday, November 30, 1999 3:24 PM
To: DMMP-StudyMgr
Subject: Bulking & Tiering Wetland Systems

Dear Sir/Madam, 9-8-99

I am writing on behalf of the Town of Harrison in New Jersey. I am a town council member and very involved with the planning and restoration efforts on our two-mile stretch of waterfront. I have been following the US Army Corps of Engineers (USACE) waterfront planning projects in Newark with great interest, as the City of Newark is just across the Passaic River from Harrison. It is in attending these planning meetings and reading the various reports which have been generated by both the EPA and USACE surrounding the Joseph G. Minish Waterfront Park & Historic Area project that I first saw the idea of "Bulking & Tiering Wetland Systems" developed by The Bionautics Group. I am interested in pursuing their prototype system for Harrison's waterfront for the following reasons. 1) I understand that the USACE plans to dredge part of the riverbank and construct a steel bulkhead behind which they plan to deposit the dredged material. I am deeply concerned by this. I do no!
t believe dredging the river is necessary or safe, considering the level of toxins which will be re-suspended in the River from the mud flats and deposited upland if put behind a new bulkhead. "Bulking & Tiering" promises the least disturbance of contaminated sediment while safely containing and cutting off this material from the food chain and human exposure. M2-
2) I have seen the performance of steel bulkheads in salt water and believe it to be inferior and costly compared with "Bulking & Tiering Wetland Systems" (B&T). B&T promises to cost 2/3 what the USACE has proposed to construct for Newark's Minish Park and last twice as long. Furthermore, the material specified in the B&T system is made from post consumer recycled plastic and is impervious to marine borers, salt water, and the elements, unlike steel. M2-

3) The USACE plans to construct a bulkhead along much of the waterfront "park" effectively creating a wall were no plant or marine life can flourish along that stretch of the River. B&T promises to restore wetlands along its entire stretch by providing a platform to plant spartina alterniflora, a native aquatic plant, and thereby promote the safe restoration of the Rivers ecosystem while containing the existing sediment and stabilizing the riverbank. This keeps within the preexisting River's ecosystem as a salt marsh, brackish river estuary. The USACE proposed flood wall would create a sterile unnatural environment. M2-
4) Finally, B&T creates the unique opportunity to utilize the beneficial material to be generated by the EPA/USACE sediment decontamination program as a "clean" cap on the existing "hot" mudflats along the banks of the Passaic River. I find this possibility worth exploring, as much of the contaminated material being dredged from the channels in Newark Bay comes directly from the Passaic River. I do not agree with the philosophy of shipping our dredged material to landfills, other states, or out to the ocean. For all the good reasons listed above, I am interested in pursuing the design and construction of a "Bulking & Tiering Wetland System" on Harrison's waterfront in lieu of, or in conjunction with, the USACE Dredge Material Management Plan (DMMP). What I need your help on is the process through which I must go through to accomplish this on the state & federal level (assuming the Harrison zoning & planning board approve the proposed design) and funding availabil! M2-4
ity from any and all sources. As the design is still a prototypical design not yet constructed anywhere and the environmental, social, and economic benefits are potentially tremendous, I believe both the USACE, EPA, and other federal, state, and local agencies should have funding available for the town of Harrison to construct this as a prototype for other waterfront communities. Please call me at (973) 350-0241 to discuss this matter at your earliest convenience.
Respectfully Yours,

Dan E. Kelly
Harrison Town Councilman

referer -> http://www.nan.usace.army.mil/business/prjlinks/dmmp/

RESPONSE TO COMMENTS

M2 **Harrison Town Councilman – Dan E. Kelly**

M2-1

A narrow strip of contaminated sediments along the City of Newark section of the river bank will be dredged. The New Jersey Department of Environmental Protection recommendations will be followed to prevent resuspension of sediment in the river. The dredged material will be brought to BioGenesis for treatment, as part of the sediment decontamination program, in cooperation with USEPA.

M2-2

The nature of the site (close proximity to a navigation channel) where the bulkhead is to be placed, precluded the use of recycled plastic because it lacks the necessary strength. The steel will be protected from the environment with a cap of concrete that will prevent erosion.

M2-3

Sections of the Minish Park are not conductive to the establishment of wetlands because of the deep water, navigation and small area of the mudflats. However, other sections from Jackson Street to Brill Street will be restored to a natural riverbank setting and wetlands will be created. It is possible that the Bulking and Tiering Method you mention may have application in the Harrison area. Funding of restoration in Harrison would be contingent upon receipt of a letter of support from NJDEP.

M2-4

The use of bulking and tiering with dredged material to form a wetland can be investigated as a beneficial use in subsequent studies when the opportunity arises.

The City of New York

BROOKLYN COMMUNITY BOARD 13

2900 West 8th Street, Brooklyn, NY 11224
(718) 266-3001 FAX (718) 266-3920

HOWARD GOLDEN
Borough President

MARTIN LEVINE
Chairperson

CHUCK REICHENTHAL
District Manager

November 29, 1999

Mr. Robert J. Kurtz, PEIS Coordinator
New York District Corps. Of Engineers
Planning Division
26 Federal Plaza, 21st Floor
New York, N.Y. 10278-0090

Dear Mr. Kurtz,

I wish to thank the Army Corps. of Engineers for arranging the DMMP public hearing at Kingsborough Community College. I also wish to thank the members and representatives of the Army Corps. for their concern over the dredging and deepening of our harbor, and for their plans for economic development and expansion into the next century.

Community Board #13 absolutely and unequivocally opposes any ocean dumping, any bay dumping, HARS dumping (please see attached C.B. #13 resolution), dumping into any body of water, or the use of borrow pits, to dispose of **any** dredged material from the site.

We do not doubt the sincerity of the Corps.' past efforts in the Brighton Beach/Coney Island/Sea Gate area, but we do have misgivings about their effectiveness. The beach nourishment project resulted in the following consequences: the majority of comfort stations were buried and the cost of rebuilding is placed at $23 million; sand was plowed into direct contact with the underside of the boardwalk causing moisture retention, increased swelling and rotting of the structure and the boardwalk planks. The construction of a "groin" on the westerly end of Coney Island has resulted in the following conditions: erosion and a riptide making the last two bays of Coney island permanently unusable for swimming, making the Sea Gate beach permanently unusable for swimming, and creating a condition which has allowed the sand to circumnavigate the point and to "create" a new beach on the bay side. Homeowners now have an unwanted beach where their backyards used to be. Property values have been adversely affected and sand is spewing onto the streets of Bayview creating hazards to traffic, clogging sewers, and infiltrating the homes.

M3-

We know that had you foreseen the consequences of your plans, you might have revised them. So it is also true with the technology, yet to be discovered, in testing hazardous substances. We have no guarantee, nor are you able to offer one, which presupposes that new methods of testing will not expose additional chemicals contained within the dredged material, which are unknown to us now, and which may prove carcinogenic or in any other way harmful to us in the future.

We are not willing to accept any excuse based upon a lack of financial resources. In addition to dredging the navigable waterways, the Corps. is also empowered to perform environmental dredging. Two of the upriver sites which are major causes of pollution (G.E. on the Hudson River - PCB's, and Diamond Alkali on the Passaic River - Dioxin) have already been designated by the E.P.A. as Superfund Sites. The E.P.A. is empowered to fine or to force offenders to pay for the cost of the cleanups. Whether this avenue is pursued now or later, is not our concern. We have no interest in bathing in, eating, or drinking their waste. M3-2 M3-3

Since alternatives are available, and since it has been proven that both the Corps. and E.P.A. have legal remedies, we are in complete support of the Pennsylvania mine option. We feel that this best serves the interests of the shipping companies, marine enthusiasts, conservationists, and the economy and populace in general. Make those who polluted pay for the cleanup. You are empowered to do so. M3-4

Very truly,

Martin L. Levine
Chairman

c.c.: Hon. Howard Golden
Hon. Howard L. Lasher
Hon. Michael C. Nelson
Hon. Herbert Berman
Hon. Charles Schumer
Hon. Jerrold Nadler
Hon. Anthony Weiner
Hon. Carl Kruger
Hon. Seymour Lachman
Hon. Vincent Gentile
Hon. Adele Cohen
Hon. Lena Cymbrowitz
Community Board # 11
Community Board # 15
Community Board # 18

Fold at line over top of envelope to the right of the return address

COMMUNITY BOARD #13
2900 WEST 8TH STREET
BROOKLYN, NEW YORK 11224

CERTIFIED

Z 156 041 291

MAIL

RESPONSE TO COMMENTS

M3 Brooklyn Community Board 13

M3-1

For practical reasons, a decision on where to place dredged material has to be based upon testing criteria and technology that are available at the time of decision-making.

M3-2

The Corps is required to consider the cost of disposal options. This is necessary because the Federal payment comes from the US Treasury and represents funds from citizens in all 50 states. This does not mean that the least cost, environmentally acceptable plan has to be followed. In the case of the DMMP the recommended plan is not the least costly option, but one that stresses safe beneficial use for dredged material. It includes extensive treatment of non-HARS material to destroy or immobilize contaminants before the material is used anywhere.

M3-3

The two sites mentioned are Superfund sites, and as such under the control of the USEPA. The USEPA has not yet determined the recommended method of managing those sites and is currently seeking compensation through the Superfund law to help implement the preferred control method, when it is established. The Corps cannot use its environmental dredging authority on such a site before the USEPA has completed its action.

M3-4

The Corps, along with its Port planning partners, is actively pursuing this option for full-scale use, subject to successful completion at demonstration projects and approval by Pennsylvania.

The City of New York
Community Board No. 15

November 23, 1999

Testimony given before U. S. Army Corps. Of Engineers New York District on the Draft Programmatic Environmental Impact Statement for the Dredged Material Management Program for the Port of NY/NJ at Kingsborough Community College, November 23, 1999.

My name is Gloria Wittels, Environmental Chairperson of Community Board 15 in Brooklyn, which covers Gerritsen Beach, Manhattan Beach, Sheepshead Bay, Plumb Beach and much more.

Well, here we are again, appearing before you for about the fourth time, demanding once again, that you take the option of dumping contaminated dredged material into our waters off the table once and for all. Whether you try to place the toxic material in Borrow Pits, Confined Aquatic Disposal facilities in our waters – whatever you call it – **eliminate that option from your Plan!!** We are unalterably opposed to the resultant pollution of our local waters and beaches, the contamination of the fish, wildlife and the possible increased risk of cancer and birth defects to humans. M4-1

Let us concentrate on environmentally safe and sound alternatives – for example – abandoned mine reclamation and landfill remediation. In your Plan you speak of "decontamination technologies to remove contaminants from dredged material via chemical, thermal biological and/or physical treatment. These technologies include both low and high-end processes. The low-end processes typically include solidification/stabilization and manufactured topsoil production. High end processes include solvent extraction, sediment washing and thermal processing." I'm quoting from your Plan -- Impact Statement section 5.5.3.3 page 5-57. M4-2

How much of the $65 million allocated to the Port Authority of NY is being used to develop environmentally safe ways of converting and disposing of the toxic material dredged from the harbor? Well, I'll tell you! First of all there no longer is $65 million available for this purpose. M4-3

November 23, 1999

Testimony given before U. S. Army Corps. Of Engineers (continued).

$18 million has been spent on tracking down the sources of contaminants coming down the Hudson River.

We approve of locating and stopping new and continuing sources of contamination. It's about time that the big industrial corporations and upstate towns who dump their contaminated waste materials and sewage into our rivers were stopped! But not by diverting the funds meant to develop **environmentally safe ways** to convert and dispose of dredged toxic material from the harbor. M4-4

The news about GE this past week is an indication of where pollutants in our harbor have come from. We understand GE will be required to pay for the dredging. But what happens to the toxic dredged material? Will NY State, absent plans for environmentally sound disposal alternatives, propose dumping it into the pits in our waters off Coney Island, Staten Island and Jamaica Bay?

The NY State Director of Port Authority Affairs has informed us that other than a "small pilot test project" – a strip mine in PA – none of the $47 million balance is being spent to develop alternatives to convert the contaminants in dredged material.

New Jersey on the other hand also given an equal $65 million to deal with contaminated dredged material is spending it on a multitude of environmentally safe alternatives. When presented with this information, the NY Director of Port Authority Affairs said that we have no dredged material at this point – that it is not happening today or tomorrow – maybe in five years...

So, Army Corp. of Engineers. I see you have no alternative but to stick to the only choice you're left with – Borrow Pits – well forget that – no way will we let you poison our waters, fish, or wild life and endanger the lives and welfare of the people. M4-5

You and the Port Authority have much to workout – the safe alternatives are there and the technologies to attain them are available.

GLORIA WITTELS
N.Y. CITY - COMMUNITY BOARD NO. 15
C/O KINGSBOROUGH COMMUNITY COLLEGE
2001 ORIENTAL BOULEVARD
BROOKLYN, NEW YORK 11235 ROOM C124

RESPONSE TO COMMENTS

M4 **Community Board No. 15**

M4-1

Placement of dredged material into inshore existing pits has been eliminated in the DMMP from further consideration, except when the pit habitat is degraded. In pits where the existing habitat is degraded, restoring the habitat by the careful and safe placement of dredged material is being pursued. Currently, the Norton Basin/Little Bay pits are being evaluated for this method of habitat restoration based on our preliminary data which shows that these pits have degraded habitat, and that the State of New York has requested our further investigation of the restoration option (Empire State Development Corp. Letter dated August 30, 1999). In this option, only the Norton Basin pit is recommended for implementation in the DMMP (using only HARS suitable material).

M4-2

The DMMP stresses the use of environmentally safe and sound alternatives as the recommended course of action (see Table 2-2). Other alternatives that include aquatic placement have to be examined and considered in case some of the recommended options fail to meet goals (e.g. time targets).

M4-3

This funding is not in the Corps purview, it is New York State funds for research and development of dealing with dredged material.

M4-4

The control of contaminant impacts is critical to the long-term success of the Port and the health of the estuary. This control must first start with a process to identify the main sources, so a control strategy can be developed and implemented. This effort is not only complementary to implementing short-term options, but a key component to preventing this problem from continuing to plague the Port and making and keeping the port waters environmentally safe. In this respect such an effort should bot be viewed as competing with or detracting from options to treat or otherwise safely contain those sediments still effected by contaminant inputs.

M4-5

The Recommended Plan contained in the DMMP-IR, prepared by the USACE with its Port partners (NYS, NJS, PANY/NJ, USEPA), has a host of options to place dredged material, many of which are not aquatic. These options can be found in Table 2-2 and include beneficial uses such as landfill closures, mine reclamation, and decontamination technologies to reuse dredged material that contains contaminants.

Aquatic placement as a possible option is under consideration for several reasons. A substantial amount of material is sand and not contaminated and needs to be removed from the channels; removal to an aquatic site such as the HARS should not pose a concern. Other options considered include the use of existing pits, new pits, and sub-channel placement. These aquatic options have been considered, in part, because they are technically feasible, and therefore, the Corps is required to address them as part of the planning process and discuss them as part of this document. Some of these options such as new pits in Lower Bay or islands are either preference category four or five, which means they are not preferred, and not part of the plan recommended in the DMMP-IR. Others, such as new pits in Upper Bay, are contingencies, designed to fill in specific short-term gaps in the plan. Only one pit, as discussed in our response to your comment, is recommended for fill in using HARS suitable material to help restore an already adversely impacted habitat.

The Monmouth County Board of Health

Robert Peters
President

3435 HIGHWAY 9
P.O. BOX 1255
FREEHOLD, NEW JERSEY 07728-1255

TELEPHONE (732) 431-7456

Lester W. Jargowsky, M.P.H.
Public Health Coordinator
and
Health Officer

November 30, 1999

Department of the Army
New York District, Corps of Engineers
PEIS Coordinator, Robert J. Kurtz
Jacob K. Javits Federal Building
New York, NY 10278-0090

Re: Draft Dredge Materials Management Plan

Dear Mr. Kurtz:

The Monmouth County Health Department objects to the draft Dredge Materials Management Plan (dDMMP). The proposal to re-open the Historic Area Remediation Site (HARS) , previously known as the "Mud dump" appears to be a fundamental portion of the Plan. This disposal area was closed on Labor Day of 1997, after a bitter battle between dredging interests, the Army Corps, and New Jersey environmental, residential, tourism and fishing interests. The HARS was previously known, and still is, as the "toxic stain". M5-1

To set the precedent of capping the Mud Dump with dredged material more contaminated than what is already in place is tantamount to re-opening the site to further contaminated material dumping. This is not in keeping with the 1997 agreement and is not acceptable. Monmouth County has re-opened acres of shellfish beds. Contaminated dredged materials off the coast won't further efforts to return barren grounds to commerce. M5-2

Dredge spoils in the HARS are a mere 3.5 miles off NJ beaches. They are lightweight sediments and nothing in the DDMMP indicates they will not deteriorate the water quality necessary for our tourism, fishing and shell fishing industries. Has the impact on our bathing beacbes and fisberies been studied? M5-3

The dDMMP states that funds are available for dredge material management. Preferred disposal options in the Plan include beneficial land based use, not ocean dumping. Ocean dumping is listed in your document as being the disposal option of last resort. Although these preferred management uses are stated repeatedly in the dDMMP, they do not appear to be given any significant consideration. M5-4

In fact, a look at the dDMMP shows approximately 100 MCY tons of HARS "suitable" material has been given no consideration for disposal other than dumping at the HARS. That is considerably more that the quantity necessary for capping the HARS, and there is no guarantee the dredged material is actually suitable for capping. That is certainly true in the case of Castle Astoria's dredged material. M5-5

Is the Army Corps planning on expanding the HARS? How else can 100 MCY of dredged material off our shore be explained? This ocean dumping is unacceptable and is considerably more than is needed to cap the "toxic stain". Is the corps capping the Mud Dump or are they just attempting to re-open a dump site off the New Jersey shore? Perhaps instead, thought should be given to using the spoils to cap Fresh Kills landfill or find another suitable land-based beneficial use, as stated in the Plan. M5-6

The DDMMP proposal requires revisiting after other impacted agencies, such as National Marine Fisheries, commerce, the fishing industry, and other concerned groups give further input. The impact on the New Jersey shore from the sheer quantity of dredged material to be managed, and the forty year duration of the proposal, requires further study to be seriously considered as a solution for the Port of New York and New Jersey. M5-7

Sincerely,

Lester W. Jargowsky, M.P.H.
Public Health Coordinator

RESPONSE TO COMMENTS

M5 The Monmouth County Board of Health

M5-1

The HARS site was never closed. It was, in fact, designated (opened) by USEPA to receive dredged material that is suitable for placement in the ocean and is compatible with the goals of remediating the site. Its purpose is to isolate benthic organisms from exposure to existing contaminants from dredged material disposed of in the past by providing a cap. The material for the HARS must pass ocean disposal criteria and criteria associated with compatibility for the HARS site. For instance fine grained material found to pass ocean standards regarding contaminants would be useable, but large rocks, while they would not contain contaminants may not be useful because of their size.

M5-2

The material that would be placed at the HARS must meet criteria for placement at the HARS. The material used would help cap the site and further isolate previously placed contaminants.

M5-3

The material that would be placed varies in size, and hence any dispersal would vary. Since the material would have to pass criteria for use in the ocean, adverse effects on fish would be obviated. Further, even the finer material, settles quickly as shown by tests done by the Corps Waterways Experiment Station.

M5-4

Ocean disposal of HARS suitable material is a preferred option (Table 2-2, 1st page). New ocean disposal sites are no longer under consideration (Table 2-2, 3rd page). Actually, full weight was given to the preferred placement options as reflected in Table 2-2 of the DMMP, and these options comprise the majority of the recommended management options for material that cannot be used to remediate the HARS.

M5-5

The DMMP recognized the amount to be placed at the HARS as 39.1 MCY. The cap can be increased beyond this to further increase protection, but the 39.1 MCY represents the current amount identified for use there. This site was identified and designated by the USEPA as in need of remediation and diversion of suitable material for this purpose is environmentally preferable.

M5-6

Once again, the DMMP only identifies just over 39 mcy for placement at the HARS to remediate past disposal actions. The use of the HARS is managed by USEPA that has designated the site for remediation. Only material that passes ocean criteria would be allowed to be placed at the HARS, and only they can determine if additional material would be warranted.

M5-7

The agencies you list have already been fully coordinated with and support the DMMP and its goals and recommendations. We agree that the 40-year time-frame is too long for any plan to remain static. Thus, periodic updates of the DMMP-IR will be undertaken because the DMMP is a "living document". Need for dredging, changes in criteria, and technology may all affect the DMMP hence the updates, which can lead to implementation of new strategies and the revision of what material goes where in order to best handle the volumes in question.

COMMUNITY BOARD 10

CITY OF NEW YORK ◆ BOROUGH OF QUEENS
115-01 LEFFERTS BOULEVARD
SOUTH OZONE PARK, N.Y. 11420
(718) 843-4488
FAX: (718) 738-1184

ELIZABETH BRATON
Chairperson

ROSE PEPE
District Manager

January 13, 2000

Mr. Robert J. Kurtz
PEIS Coordinator
Department of the Army
New York District
Corps. Of Engineers
Jacob K. Javits Federal Building
New York, New York 10278-0090

Dear Mr. Kurtz:

Community Board 10 concurs with and supports the sentiment set forth in the enclosed letter from Borough President Shulman on the Corps of Engineers Dredged Material Management Plan (DMMP) draft report. **M6-1**

Very truly yours,

Elizabeth Braton

Elizabeth Braton
Chairperson

EB:hcw
Encl:

RESPONSE TO COMMENTS

M6 Community Board 10

M6-1

See response to comments on M1

CITGO

CITGO Petroleum Corporation

4801 South Wood Avenue
Linden, New Jersey 07036

November 16, 1999

Mr. Robert J. Kurtz
PEIS Coordinator
Department of the Army
Corps of Engineers, NY District
Jacob K. Javits Federal Building
New York, NY 10278-0090

Subject : USACE Dredged Material Management Plan

Dear Mr. Kurtz:

CITGO Petroleum Corporation offers this letter as a statement of support for the draft Programmatic Environmental Impact Statement (draft PEIS) for the Dredged Materials Management Plan (DMMP) for the Port of New York & New Jersey as published in the Federal Register on September 10, 1999. OI1-1

CITGO concurs with the DMMP conclusion, that a great economic need exists to maintain and deepen the navigation channels of the Port of New York & New Jersey.

The CITGO terminal, located on the Arthur Kill River in Linden, NJ, is one of the largest storage terminals in New York Harbor and maintenance dredging of these navigation channels is a critical need for marine receipts of petroleum products - yearly shipments from Linden Terminal exceed one billion gallons. Obviously, the economic viability of the terminal and the continued employment of the 32 terminal employees are directly dependent upon continued maintenance dredging of the Arthur Kill River and other harbor channels.

Linden Terminal has storage capacity for 147 million gallons of products, including 17 grades of gasoline's and various petroleum distillates, and is the 'hub' of CITGO operations for the Northeast-marketing region. Marine shipments are vital to meet our customer's needs, which includes our supply of jet fuels to the major airlines operating from Newark and JFK airports.

CITGO urges implementation of the DMMP to yield the planned channel deepening projects and to assure continued waterborne commerce for the Port of New York & New Jersey.

Sincerely,

George H. Gangloff

George H. Gangloff
Linden Terminal Manager

RESPONSE TO COMMENTS

OI1 **Citgo Petroleum Co.**

OI1-1 Thank You for your support

THE SEA GATE ASSOCIATION

81 KP

3700 SURF AVE., BROOKLYN, NY 11224 • OFFICE:(718) 449-4700 • POLICE (718) 449-4400 • FAX (718) 449-4713

November 24, 1999

Colonel William Pearce
U.S. Army Corps of Engineers
26 Federal Plaza
New York, NY 10278-0900

Re: Programmatic Environmental Impact Statement
Dredge Material Management Plan

Dear Colonel Pearce:

I strongly urge the Army Corps of Engineers to force New York State to accelerate the timetable for toxic sediment reduction through pollution prevention and enforcement. I also strongly urge the Corps to pursue beneficial re-use of decontaminated dredge spoils. OI2-

The residents of Sea Gate are unanimous in their commitment to protect the environment and are very upset over this toxic dumping plan.

I would appreciate the courtesy of a written reply.

Sincerely,

Lucille Katz

Lucille Katz, President
Sea Gate Association

DEC 10 1999

RESPONSE TO COMMENTS

OI2 **The SeaGate Association**

OI2-1

The US Army Corps is currently coordinating with the State of New York on this matter. The Federal agency responsible for enforcement issues regarding pollution prevention is the USEPA. New York has recently awarded new grants for two landfill closures demonstrations adjacent to Jamaica Bay and has pledged to continue to support other technologies as they develop and has fully funded, with New Jersey, the contaminants track-down program as a first step in controlling pollution inputs to the Harbor.

Mr. Kerry Sullivan

New York State, Marine Resources Advisory Council - Columnist, Staten Island Register

390 Maryland Avenue #1A Staten Island New York, 10305

Mr. Robert J. Kurtz, PEIS Coordinator
NY District, Corp of Engineers
Planning Division
26 Federal Plaza, 21st Floor
New York, NY 10278-0090

December 1st, 1999

RE: DEIS DMMP
Comment

Dear Mr. Kurtz,

After thorough reading of the DEIS for the Dredge Material Management Plan for the Port of New York and New Jersey (DMMP) I have come to the conclusion that a few of the options in it are not viable options for the health and well being of the people, and the marine ecosystem of Lower New York Harbor, Jamaica Bay, and the New York Bight region of the Atlantic ocean. I am therefor requesting that certain options be removed from consideration as recipient areas for category F dredge spoils from this project. Any disposal of this material into the existing subaqueous pits and/or the future use of such pits as a contingency option and/or new pits for site specific must not be an option in the Final Environmental Impact Statement. OB-1

Raritan Bay/Lower New Harbor sits at the doorstep to the Hudson River estuary system, home to the second largest spawning stock of Striped Bass (Morone saxatilis) on the Atlantic Coast. Millions of striped bass pass thru the Verrazano Narrows twice a year, entering the Hudson River's freshwater system to winter in the Fall months, then once again in the Spring of the year as they head back into saltwater after spawning in the early Spring.
Other species that frequent the area are Shad, Atlantic Herring, Spot, Tautog (Blackfish), Atlantic Sturgeon (an endangered species), Bluefish, Mackerel, Flounder, Fluke, Menhaden (Bunker), Porgy, Tommy Cod, Weakfish. Whitefish, Cod, Ling, Skate, and a variety of Shark. Lobster, Blue claw crab, Stone crab, clam, oyster, and a host of other marine species are found in Raritan Bay/Lower NY Bay. Offshore are species of Pelagic Shark, Tuna. Marlin, Swordfish, etc. Pelagic means "wide roaming" so these species are just passing thru the area.

Striped Bass, Bluefish, Winter Flounder, Fluke, Blackfish, Weakfish (Sea Trout), Porgies, Whiting, and Ling. Cod and Crab.......... Raritan Bay/Lower NY Harbor is one of the most productive areas of the North Atlantic. A bight is a general term for a bend or curve in the shoreline of an open coast. In the New York region it refers to the great expanse of shallow ocean between Long Island (to the north and east) and the New Jersey Coast (to the south and west). Because Long Island trends generally east to west in relation to mainland of New Jersey it creates a great right angle in the general geometry of the Atlantic coastline. The Hudson River's outer harbor and the Raritan Bay/Lower NY Bay constitute only a fraction of the greater New York Bight region.

As you can see the area is an essential habitat for multiple species of marine finfish and crustacean . The options listed in the DEIS for the disposal of type F (Category III) materials into this habitat will create the possibility that OB-2

Phone: (718) 720-5951 *Fax: (718) 720-5951* *kerrysull@aol.com*

the PCB's, heavy metals, arsenic's and other toxic materials in the sediments excavated from the dredging of Newark Bay, NJ will find its way into the fat tissue of the marine species of the Bight and the pelagic species passing thru the area on migratory runs. Some of these species being protected by International Treaties such as the ICCAT Agreement. The fact that this material are too contaminated for ocean disposal give credence to the assumption that they are also too dangerous to be disposed of in prime fishery habitat.

New York State, and the States of Connecticut, Rhode Island and Maine are being confronted with the largest kill of marine crustacean in the recorded history of Long Island Sound. An unidentified (*December 1999*) parasite or bacteria has killed what is estimated at up to 90% of the crustaceans in the Sound. Under investigation during the writing of this DEIS Comment is the dredging project conducted by the city of Mamaroneck, NY and the area of placement of the dredge spoils from this project. This area is where the kill-off began, and moved westward thru the Sound from there, causing loss of income to thousands of fishermen in this most important fishery in the States of New York and Connecticut. The total loss in dollars will be in the hundreds of millions of dollars before this crisis is identified and remedied. OI3-

There are viable options in the DEIS that are quite good options and should take priority over all options of aquatic disposal and having the possibility of having these toxic materials enter the food chain and causing irreparable damage to the peoples of the United States of America and the peoples of foreign countries that local seafood is exported to. The most positive option is the shipping of this material to the abandoned coal mines of central and western Pennsylvania where this material is a welcome solution to acidic water entering the aquifer of this state, another potential use of this same material by the state of Pennsylvania is the use of the dredge spoils as a fire block to help bring fires that have been burning underground for past 30 years under control. The decontamination of this material should also be an option high on the list of the Final EIS. OI3-4

In the past 40 years the research into the beneficial uses of petrochemicals and heavy metals for the use in consumer products in the area of Newark Bay that is to be dredged has been allowed to flourish almost unregulated. The most inexpensive way to dispose of industrial waste from these chemical corporations has been direct pipelines into Newark Bay, a practice that still exist today with Federal Pollution Permits and/or SPEDES Permits. Some of the existing toxins in this dredge spoil are known carcinogens. These chemicals *MUST* be treated and decontaminated before any other option other then the Pennsylvania options are utilized by the Corps in the disposal of these dredged materials. The health of the people living in the areas of disposal relies on your final treatment of this material. OI3-5

I would at this time like to thank you for consideration of my comments in the Final EIS. I would also respectfully ask you to heed my warning on the environmental catastrophe that might be the outcome of the disposal of this material into the waters of the New York Bight should they be released in to the inter-tidal waters of Lower New York Bay/Raritan Bay and/or, Jamaica Bay untreated and/or uncontaminated.

Sincerely,

Mr. Kerry Sullivan

Mr. Kerry Sullivan

RESPONSE TO COMMENTS

OI3 **Mr. Kerry Sullivan – New York State Marine Resources Advisory Council**

OI3-1

The Corps is required to examine and consider all technologies and feasible options and report the results in the DMMP and the draft PEIS. The use of new pits in Lower Bay is characterized as preference/status option 4/5 which means they are least preferred and no longer under consideration. They would only be reconsidered if other options fail to meet goals. Existing pits are only under construction if their habitats can be demonstrated to be degraded and then only if the Norton Basin/Little Bay habitat restoration projects prove that the techniques employed are successful.

OI3-2

We disagree. The evidence so far has shown that with proper control methods, caps can be used successfully to contain contaminants, thus isolating contaminants from benthic invertebrates and fish.

OI3-3

Periodic die-off of crustaceans have occurred in the LI Sound and other areas when no dredging or dredged material activity was occurring. The cause for the recent die-off has not been determined, and many theories exist, ranging from the malathion spraying for the Culex mosquito to control the spread of the West Nile virus, to a parasite outbreak. The theory regarding the suspected parasite involves blue crab. If the population of blue crab and American lobster are both high, the hypothesis is that the lobster may become infected with the parasite. If a parasite is responsible, then it apparently produces high mortality rate in lobster.

OI3-4

As Indicated in Table 2-2 of the DMMP-IR, both these options are preference status 1, which means they are preferred and are actively being pursued.

OI3-5

The processing or decontamination of dredged material before its use to cap landfills and brownfields is an element of several disposal options. With regard to discharge of pollutants, they are regulated by the USEPA and the individual states. A joint NY/NJ pollution track-down program is looking into identifying areas where pollution inputs to Harbor areas including Newark Bay may still be a problem.

NEW JERSEY PETROLEUM COUNCIL
A DIVISION OF THE AMERICAN PETROLEUM INSTITUTE
150 WEST STATE STREET TRENTON, NEW JERSEY 08608
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J.E. BENTON, Executive Director
J.A. MAXWELL, Associate Director

December 2, 1999

Mr. Robert J. Kurtz
PEIS Coordinator
Department of the Army
Corps of Engineers
Jacob K. Javits Federal Building
New York, NY 10278-0090

Subject: USACE Dredged Material Management Plan

Dear Mr. Kurtz:

The New Jersey Petroleum Council (NJPC) offers this letter as a statement of support for the Draft Programmatic Environmental Impact Statement (draft dPEIS) for the Dredged Materials Management Plan (DMMP) for the Port of New York/New Jersey, as published in the Federal Register on September 10, 1999. The petroleum council and its members are committed to the protection of human health and the environment while meeting the energy needs of the region. OI4-1

The NJPC concurs with the DMMP conclusion, that a great economic need exists to maintain and deepen the navigation channels of the Port of New York/New Jersey, as well as to safely dispose of dredged materials in the most cost-effective manner possible.

The NJPC represents a variety of petroleum terminals and businesses in the harbor area. These include world-class facilities that have made significant capital investments to protect the environment. These facilities include the largest storage terminals in New York Harbor which serves as a distribution point for New England and Mid-Atlantic States making this Port the largest petroleum port in the United States. The maintenance dredging of its navigation channels is a critical need for marine receipts of the billions of gallons of petroleum products that annually enter the harbor area. Obviously, the economic viability of the areas terminals and the continued employment of the many terminal employees are directly dependent upon continued maintenance dredging of the Arthur Kill River and other harbor channels.

The areas terminals have storage capacity for hundreds of millions of product gallons, including multiple grades of gasoline and various petroleum distillates. It is the 'hub' of operations for the Northeast-marketing region. Marine shipments are vital to meet customers' needs, which also includes supply of jet fuels to the major airlines operating from Newark and JFK airports.

The NJPC urges speedy implementation of the DMMP to yield the planned channel deepening projects and to assure continued waterborne commerce for the Port of New York/New Jersey.

Sincerely,

John A. Maxwell.

John A. Maxwell, Associate Director

cc: Thomas Shea, III, Project Planner
Jenine Gallo, Project Biologist
Drew Cobbs, API
Creg Smith, API

RESPONSE TO COMMENTS

OI4	**New Jersey Petroleum Council**
OI4-1	Thank You for your support

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Transmitted via Federal Express

December 2, 1999

Mr. Robert J. Kurtz
Department of the Army
New York District
Corp of Engineers
Jacob Javits, Federal Building
New York, NY 10278-0090

Re: Comments on ACOE Dredged Material Management Plan
Project #: 09994.032

Dear Mr. Kurtz:

On behalf of Chemical Land Holdings, Inc. (CLH), Blasland, Bouck & Lee, Inc. (BBL) has completed its review of the U.S. Army Corps of Engineers (ACOE) Draft Dredged Material Management Plan for the Port of New York and New Jersey (the Plan), dated September 1999. Overall, it is our opinion that the Plan is well-written, and reflects the cumulative effort of a number of regulatory agencies in developing a sound, long-term management plan for dredged material in the Harbor. During our review of the Plan, however, several issues were identified that we felt deserved closer attention.

In an effort to bring these issues to light, BBL has developed a series of comments on the Plan; comments that consider both the engineering and scientific aspects of the proposed work. Our comments are grouped under two categories: General and Specific. Where appropriate, references to specific pages are provided.

GENERAL COMMENTS

1. While BBL recognizes the significant economic benefits associated with continued dredging in the Harbor, it is important for the stakeholders to consider the limitations associated with this removal technology; limitations that may affect at least one of the Plan's recommended options (i.e., contaminant reduction).

   First and foremost, regardless of the type of equipment employed, dredging operations are extremely intrusive, and will resuspend sediments into the surrounding water column. Depending upon the characteristics of the targeted material, this resuspended sediment will transport chemical constituents away from the work zone and towards previously unaffected areas. In addition, when in suspension, these sediments and associated constituents will become more available for uptake by fish and macroinvertebrate species. OI5-1

   Transport of resuspended sediments is typically managed by the use of engineering controls (e.g., silt curtains, operational modifications) which, depending upon the physical setting, can be extremely expensive. Even when implemented, it is unlikely that such controls will completely mitigate the escape of constituents from the work zone.

In addition, due to the inherent nature of this technology, dredging often times leaves behind residual constituent concentrations within the work area. Not only does a portion of the resuspended material ultimately resettle in the same area (and in adjacent areas previously unaffected), but higher concentrations that once were buried can become exposed. Based upon data collected from various dredging sites throughout the country, it has been shown that, regardless of the setting, post-dredging residual constituent concentrations remain, sometimes at levels greater than pre-dredging conditions.

The potential limitations of dredging described above would certainly affect the ability of the ACOE to meet at least one of the recommended options in the Plan: to lower contaminant levels in the sediment and biota of the Harbor.

2. The same issues raised in General Comment No. 1 apply to any dredging activity that may be considered in the tributaries to the Harbor. As discussed in the Plan, the objective of lowering contaminant levels in the Harbor sediment over time is of critical importance. However, any active dredging that may be planned at the upstream tributaries under a contaminant reduction program could deter from this objective for the reasons stated earlier.

3. The Plan states that sediment constituent levels within certain areas of the Harbor have dramatically decreased since the 1960s. These reductions indicate that natural attenuating processes are at work, serving to reduce risks associated with these materials. It is important to recognize the delicate balance of this natural attenuation process, one that can easily be upset via intrusive technologies such as dredging. OI5-2

4. A critical component of this plan includes estimating the volume of material suitable for disposal at the Historic Area Remediation Site (HARS), along with that which is not suitable. The differentiation of these two materials is based on the potential toxicity and bioaccumulation potential in benthic organisms. As described in the Plan (draft Technical Appendix, page 15), the data available at this early stage of program development are extremely limited, and therefore the assessment of potential impacts is uncertain. Regardless, a limited number of surficial harbor sediments were evaluated for potential toxicity/bioaccumulation as part of the Regional Environmental Monitoring and Assessment Program (USEPA 1993)[1] and the National Status and Trends Program for Marine Environmental Quality (National Oceanic and Atmospheric Administration [NOAA] 1995)[2]. This effects-based evaluation is consistent with current regulations on potential uses of dredged materials. However, this type of evaluation may be unsuitable for determining whether sediments can be used for land remediation and similar habitat restoration projects.

The potential for adverse effects due to bioaccumulation was assessed in the Plan by calculating the theoretical bioaccumulation potential (TBP) for nonpolar organic contaminants, and comparing the calculated tissue concentrations to tissue criteria. In the Plan, the TBP was calculated using available data for lipid concentrations, concentrations of nonpolar organic compounds in sediment, total organic carbon OI5-3

1 U.S. Environmental Protection Agency. 1993. Regional Environmental Monitoring and Assessment Program (R-EMAP). Sediment Quality of the NY/NJ Harbor Estuary.

2 NOAA. 1995. National Status and Trends Program for Marine Environmental Quality. A summary of selected data on chemical contaminants in sediments collected during 1993. NOAA Tech. NOS ORCA-88. Silver Spring, MD. 230 pp.

(TOC) of sediment, and biota sediment accumulation factors (BSAFs) reported by Rosman et al., (1997)[3]. The values which were used in the calculations should be included in the Plan. Additional comments on this topic are provided under the Specific Comments section.

5. Throughout the Plan, various environmental controls are discussed as part of the recommended management options. It appears that the costs associated with implementing such controls have not been factored into the overall placement costs presented. As such, it would appear that the unit costs included in the Plan are biased low. OI5-4

SPECIFIC COMMENTS

A. **Implementation Report**

1. Page 12 - Information related to the means/methods used in developing the fate and transport model for the Harbor should be provided in the Plan. OI5-5

B. **Technical Appendix**

2. Page 15 - Has any chemical other than dioxins caused Newark Bay sediments to be classified as Type II or III? OI5-6

3. Pages 16 and 17 - The following four comments apply to the calculations/assumptions associated with future projections of sediment quality:

- The draft Technical Appendix evaluates the potential for adverse effects due to bioaccumulation using BSAFs developed by Rosman, et al. (1977)[3]. However, these values are not provided in the Plan, and the Rosman et al. (1977)[3] citation for the BSAFs is relatively obscure (i.e., a poster presented at the 18th SETAC Annual Meeting). Without additional information, it is not possible to evaluate the quality of the data utilized in the development of the BSAFs and their applicability for extrapolation to sediments throughout the harbor to evaluate bioaccumulation potential.

- The draft Technical Appendix identifies exceedance of criteria due to bioaccumulation of polycyclic aromatic hydrocarbons (PAHs). The source of the PAH BSAF that was used in the bioaccumulation evaluation was not identified and, therefore, could not be evaluated for appropriateness.

- The similarity of the NOAA Effects Range - Median (ER-M) sediment value for PCBs to the calculated sediment bioaccumulation potential value does not justify use of the NOAA ER-M for dichloro diphenyl dichloroethane (DDD) as

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3 Rosman, L.B. and E.S. Barrows. 1997. Sediment Concentrations of Pesticides and PCBs and Associated Laboratory-Measured Bioaccumulation in New York/New Jersey Waterways. Presented at the Society of Environmental Toxicology and Chemistry (SETAC) 18th Annual Meeting, San Francisco, California.

a bioaccumulation based sediment value for DDD. The bioaccumulation potential for DDD should be identified independently.

- According to the draft Technical Appendix, the target sediment concentration for dioxin of 10 parts per trillion (ppt) was selected "following a review of bioaccumulation data from recent federal dredging projects". Additional information regarding this review should be provided.

4. Page 17 - Insufficient detail exists for understanding how predictions associated with future PCB and dioxin levels in the Passaic River were calculated/determined. Backup information/data should be provided.

5. Page 31 - Depending upon the sediment reduction method employed, it is very possible (in fact, likely) that sediments will become resuspended, thereby degrading the water quality and increasing the chances for biouptake (assuming suspended solids contain constituents). This suspended material, if impacted, could also deposit in areas that once were not contaminated.

6. Page 55 - It would appear that the decontamination technologies' impact on air quality is a significant and critical unknown, especially when considering the processes under consideration along with the targeted constituents. BBL is hopeful that the Water Resources Development Act (WRDA) and Office of New Jersey Maritime Resources (NJMR) Programs will collect sufficient data in this regard. Also, this section does not indicate whether air quality modeling has been or will be part of the air quality assessment. **OI5-7**

7. Page 55 - What is the basis for predicting that the unit cost associated with decontamination will drop from the current estimate of $54 per cubic yard (cy) to $29/cy? And what is the basis for the current cost of $54/cy? Also, do these costs include environmental controls that may be necessary for mitigating air, water, and solids bi-products?

8. Page 56 - How will WRDA and NJMR activities ensure that the sediments used to test the various decontamination processes are representative of what will be dredged in the future? **OI5-8**

9. Page 64 - Given the uncertain outlook of the various decontamination technologies, it would seem logical that the siting/permitting processes associated with the Confined Aquatic Disposal (CAD) option should be initiated as soon as possible. This would appear to be important given the "contingency" status of the CAD option, and the typically lengthy siting/permitting process.

On behalf of CLH, BBL appreciates the opportunity to comment on the U.S. Army Corps of Engineers Draft Dredged Material Management Plan for the Port of New York and New Jersey.

Very truly yours,

BLASLAND, BOUCK & LEE, INC.

Robert Romagnoli, P.E.
Associate
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RR/dmn

cc: Clifford Firstenberg, Chemical Land Holdings, Inc.

RESPONSE TO COMMENTS

OI5 Blasland Bouck & Lee, Inc. for Chemical Land Holdings, Inc.

OI5-1

Many of the assumptions inherent in this comment are either incorrect, inaccurate, flawed, or inconsistent. First, while dredging methods are, by their nature, intrusive into the aquatic environment, modern dredging methods have greatly reduced the amount of sediment that is resuspended. Second, monitoring studies have shown that redeposition of sediments suspended from dredging actions typically occurs in close proximity to the dredging site. These areas generally have similar if not higher levels of contaminants than the sediments that are being dredged. This is because sediments in regularly dredged areas represent recent depositions, whereas sediments in off-channel, non-dredged areas are older and often have higher contamination levels because they were deposited primarily in times of higher pollution inputs to the estuary. It is true that dredging in some areas of the harbor can expose sediments of higher contamination levels than those that are present at the sediment surface. This is usually because dredging, which occurred in these areas in times of higher pollution, has ceased and the area has accumulated sediments at the same time that pollution prevention measures have reduced pollution loads. A good example of this is the lower Passaic River, which was formerly dredged but is no longer dredged for navigational purposes. On any specific project, should we have sufficient data to have reason to believe that underlying contaminated sediments, which would be exposed during dredging, could be characterized as being hazardous, additional sampling of those sediments would be performed prior to permitting the dredging action to ensure that their exposure would not, in fact, create a hazard. The DMMP is intended to evaluate management options for dredged material, not to evaluate the effects of dredging. Each dredging project is evaluated with regard to its potential impacts. Only after a project is approved, would the DMMP option be used to select an option to safely reuse or dispose of the dredged material.

In cases where the underlying material is contaminated, but not characterized as hazardous (an important distinction), the contaminated sediments left exposed from a dredging activity would be buried through deposition of new sediments into the area. The rate of burial (i.e., sedimentation), however, is variable depending on area and geophysical conditions.

Another noteworthy point regarding resuspension and transport of contaminated sediments from dredging is that the contaminated sediment particles were in suspension prior to their deposition into the dredged areas. Due to natural and anthropogenic factors not directly related to the process of dredging (e.g., tidal action, waves, currents, prop wash, etc.) these sediments are subject to resuspension and transportation to other areas. The process of dredging does not create these contaminants but does, in fact, remove them from their current exposure to the environment. Consequently, dredging and the safe treatment and/or isolation of these currently bioavailable, contaminated sediments is a significant benefit to the environment.

General comment 1. appears to conflict with specific comment 9. in that potential impacts resulting from the resuspension and transport of contaminants from dredging (discussed in general comment 1.) are similar to those possible with the contained aquatic disposal options, which are supported in specific comment 9.

OI5-2

While it may appear that the sediments in several areas of the estuary have become cleaner through natural attenuation, the more likely cause of the improvement is due to implementation of pollution prevention measures. Several studies of natural attenuation show that the process requires substantial periods of time to take effect. Further, in these studies, it is often difficult to determine the primary causes of the attenuation. They can range from diffusion, long-term burial, volatilization, bio-remediation, etc. Several of these factors to not destroy or eliminate the contamination but rather spread it further in the environment (i.e., dilution). As noted in response OI5-A above, the careful and well-designed process of dredging is one method for reducing exposure of contaminated sediments to the environment.

OI5-3

Providing specific information on how each contaminant reduction forecast was made would skew the level of information on this option relative to the other options. For additional detailed, specific information on this option, or any other option, the reader is requested to contact the District (or other lead agency, as applicable), to discuss and possibly meet to gain this additional information.

OI5-4

Generally, cost figures used within the report are only for placement of the material at the selected management option and do not include dredging and waterborne transit costs. As many environmental controls are usually project specific and variable, unusual types of controls are not included within the placement cost estimates. However, typical costs such as those stemming from monitoring the site (as may be required in federal and/or state permits) is included within the placement costs, as applicable. The placement costs used within the report were provided by several of the involved agencies as their best estimate for the likely placement costs. The reader should use them only to reflect the approximate range of placement costs associated with an option. Consequently, the specific costs associated with a specific dredging project and selected placement option can range considerably.

OI5-5

Information related to the means/methods used in developing the fate and transport model for the Harbor are currently under discussion among the involved agencies and organizations. Consequently, additional information on this is not now available. Future annual updates of the DMMP will provide additional information as available.

[NOTE: This response is not clear. Why would the fate and transport model methodology be "under discussion" among involved parties? The model has been used so the methodology must be known.]

OI5-6

Sediment proposed by an applicant for placement at the HARS may be determined to be category 3 either by failing sediment toxicity tests or exceeding established bioaccumulation levels in test organisms. Toxicity testing, by its nature, does not identify any particular contaminant but the synergistic effect of all contaminants that may be contained in the sediment. Sediments that have been determined to be category 2 were based on exceedances in the bioaccumulation levels in test organisms. Dozens of different contaminants are analyzed in the bioaccumulation testing (*e.g.*, dioxins/furans, polychlorinated biphenyls, polyaromatic hydrocarbons, pesticides, heavy metals, etc.). However, with the HARS designation in 1997, the term "category 2" has become outdated in that category 2 and 3 are both not suitable for remediation material at the HARS. The tissue concentration of a given contaminant in a test organism may exceed protective criteria established by the USEPA and result in the failure of the sediments proposed for HARS placement. A concise review of past Public Notices indicates that pesticides (e.g., DDT) have caused bioaccumulation failure in three private projects located in the greater Newark Bay complex area. However, inferences should not be made about any future possible testing results for sediments from this (or any other) area because the testing criteria, may be revised.

OI5-7

Specific impacts on air quality that may result from implementation of decontamination technologies has been and will be performed on a site-by-site basis, as the different technologies vary widely. Monitoring of air quality has been and will continue to be a possible requirement that may be employed by the appropriate regulatory agency as part of the permitting process.

OI5-8

Because the sediments from any individual dredging project in the Port can vary widely in both physical and chemical characteristics, selecting a "representative" sample of what may be dredged in the future is not possible. Rather, the selection of source sediments was done to provide sediments that would be most challenging for the technology to treat. To achieve this, several sediment samples from throughout the harbor were analyzed to identify sediments with elevated levels of a broad variety of contaminants. These sediments have been used to evaluate a technology's general effectiveness. Determinations of the suitability of the technology to any specific dredging project in the future would still need to be made on a case-by-case basis.

ATLANTIC STATES
LEGAL FOUNDATION, INC.

December 3, 1999

Mr. Robert J. Kurtz
NY District, Corp of Engineers
Planning Division
26 Federal Plaza, 21st Floor
New York, NY 10278-0090

RE: Public Comment on DEIS DMMP

Dear Mr. Kurtz,

As you well know, the area in question is an essential habitat for multiple species of marine life. The options listed in the DEIS for the disposal of type F (Category III) materials into this habitat will release of PCBs, heavy metals, arsenic and other toxic materials in the sediments excavated from the dredging of Newark Bay, NJ. These toxins will bioaccumulate in many marine species, some of which are protected State and Federal laws. The fact that this material are too contaminated for ocean disposal give credence to the assumption that they are also too dangerous to be disposed of in prime fishery habitat. **OI6-1**

There are viable options in the DEIS that are quite good options and should take priority over all options of aquatic disposal which create the possibility of release of toxins in the food chain. The most positive option is to ship this material to the abandoned coal mines of central and western Pennsylvania where this material is a welcome solution to acidic water entering the aquifer of this state. There is also the potential use of these materials as a fire block to help control underground fires. The most obvious option should be the decontamination of this material. **OI6-2**

If you have any questions, please contact me at the below listed numbers.

Sincerely yours,

ATLANTIC STATES LEGAL FOUNDATION

Sean P. Lynch

658 West Onondaga Street, Syracuse, New York 13204-3757 315-475-1170 FAX 315-475-6719 aslf@twcny.rr.com

recycled paper

RESPONSE TO COMMENTS

OI6 **Atlantic States Legal Foundation, Inc.**

OI6-1

The area has been designated as essential fish habitat for a number of species/life stages under the Magnuson-Stevens Fishery Conservation Act, as amended. As part of the DMMP and NEPA process, NMFS has been contacted and on-going coordination continues on this matter. Recommendations of NMFS would be given full weight in the event that aquatic disposal option(s) were to implemented. Methods exist to greatly limit sediment distribution as described in Section 5.3.4.2.e. Careful control and capping have been shown to be successful in greatly reducing material loss during and after placement.

OI6-2

Both these options are being actively pursued.

MONMOUTH COUNTY LEAGUE OF WOMEN VOTERS
P.O. Box 7649, Shrewsbury, NJ 07702

Testimony on the US Army Corps of Engineers "Dredged Material Management Plan for the Port of New York and New Jersey"

November 22, 1999

The Monmouth County League of Women Voters wishes to express its strong concern that when necessary dredging is done in the Port of New York and New Jersey, the dredge spoils should be first evaluated and then used for beneficial purposes. Technology exists to make the spoils suitable for environmentally sound land based disposal alternatives, as has been demonstrated in New Jersey. There should be more effort on the part of New York to work toward these objectives. Dredged spoils do not belong in the water, even in sub-aqueous pits, since the material disperses as it is being dumped and finds its way into the food chain. OR1-1

As we stated in our testimony on the Castle Astoria Terminals, the EPA standards should be changed to reflect current assessment of contamination levels and only materials meeting these new qualifications should be used for clean cover at the HARS site. We appreciate the fact that the Army Corps has removed the dredge island in the Raritan from your options. However, we remain concerned regarding the use of Contained Aquatic Disposal pits (CAD) as a disposal option. OR1-2

The testimony given at the November 16th DMMP Hearing clearly indicates that other critical studies are in the process of being conducted. We hope that in the 50' Harbor Navigation Study the potential impact on our aquifers has been evaluated. The DMMP should not be finalized until the results of these other studies have also been evaluated and the public has had an opportunity to comment. OR1-3

Lila Singer, President
24 Wyckham Road
Tinton Falls, NJ 07724

WRITTEN COMMENT FORM

Public Information Meeting for the
Draft Programmatic Environmental Impact Statement for the Dredged Material Management Plan for the Port of New York and New Jersey

Please provide your written comments on the scope of work for the Draft Programmatic Environmental Impact Statement below. Your comments will be used to finalize the topics and subjects included in the evaluation of potential impacts from the Dredged Material Management Plan. This form can be copied and used by multiple individuals, or a letter containing your comments can be substituted. **Comments will be accepted through December 3, 1999,** and should be addressed to:

Mr. Robert J. Kurtz, PEIS Coordinator
New York District, Corps of Engineers
Planning Division
26 Federal Plaza, 21st Floor
New York, NY 10278-0090
(212) 264-2230

NAME: Monmouth County League of Women Voters

ADDRESS: P. O. Box ~~7649~~ 7649
Shrewsbury, NJ 07702

PHONE: Contact Louise Usechak, 732-842-1370

AFFILIATION: Natural Resource Director
(if any)

COMMENTS

(continue on back of this form or append additional pages as needed)

See Attached Statement

Monmouth County League of Women Voters
P.O. Box 7649
Shrewsbury, NJ 07702

SIGNATURE:

RESPONSE TO COMMENTS

OR1 **Monmouth County League of Women Voters**

OR1-1

All material to be dredged would be evaluated in accordance with criteria in effect at the time of dredging. This evaluation would include determining the nature of the material *i.e.,* grain size. If the dredged material is silt, further testing to determine if contaminants exist and in what concentration would be undertaken. These steps would help to decide where material should go, and what steps, if any, would be needed to treat it. Beneficial use of dredged material is an objective of the DMMP and examination of Table 2-2 in the Implementation Report reveals that treatment or decontamination of dredged material and use at upland sites is one of the priorities of the plan.

OR1-2

Criteria for determining suitability of material to remediate the HARS rests with the USEPA. The criteria which are in effect at the time an area is dredged will be used to determine its suitability for HARS or any other option.

OR1-3

Groundwater and aquifers were investigated as part of the New York-New Jersey Harbor Navigation Study that included the deepening of navigation channels to 50 feet. The conclusions of the investigations were that the proposed actions would not produce significant effects on the groundwater and that no continuous water-bearing, unconsolidated formations would be disturbed or exposed as a result of the channel deepening. (Further discussion is presented in the Feasibility Report for New York-New Jersey Harbor Navigation Study, USACE-NYD December 1999).

Natural Resources Protective Association
P.O. Box 050328 Staten Island, NY 10305 (718) 987-6037
Fighting to Protect the Marine Environment Since 1977

Colonel William Pearce
U.S. Army Corps of Engineers
26 Federal Plaza
New York, NY 10278-0900

**RE: Programmatic Environmental Impact Statement
Dredge Material Management Plan**

Dear Colonel Pearce:

We (I) strongly urge the Army Corps of Engineers to force N Y State to accelerate the timetable for toxic sediment reduction through pollution prevention and enforcement. We (I) also strongly urge the Corps to pursue beneficial re-use of *decontaminated* dredge spoils. OR2-1

We (I) will not accept thisType 'F' material dumped into the ocean or any other body of water because:

AS A SENIOR CITIZEN AND RESIDING ON STATEN ISLAND, I HAVE NOTICED THE INCREASED CLEANLINESS OF OUR LOCAL WATERS THRU THE YEARS. MY FAMILY HAS ENJOYED THE LOCAL WATERS AND HOPE THEY WILL CONTINUE TO STAY THAT WAY IN THE UP COMING YEARS

DUMPING THESE TOXIC WASTES IN OUR LOCAL WATERS WILL ONLY CAUSE MANY PROBLEMS TO THE PUBLIC AND THE ENVIORMENT.

I CANNOT EMPHASIZE ENOUGH, NO DUMPING IN OUR WATERS

We (I) would appreciate the courtesy of a written reply.

Sincerely,

Adolph Malanga

C Malanga
32 Wilson St
SI, NY 10304-4220

65: ... 47 AON
REC'D CSB

RESPONSE TO COMMENTS

OR2 **Natural Resources Protective Association-Adolph Malanga**

OR2-1

The DMMP-IR relies heavily on the use of alternate means (other than aquatic disposal) to address the placement of dredged material. Plans for the use of dredged material in or adjacent to the aquatic environment exist because some material is not contaminated e.g. sand, rock. It is possible that upland options may not be sufficient to handle all of the dredged material in need of placement, especially on a short-term basis. Any in-water placement would only proceed after a detailed site evaluation was conducted and sufficient controls placed on operations to minimize or prevent loss of sediments.

Natural Resources Protective Association

P.O. Box 050328 Staten Island, NY 10305 (718) 987-6037

Fighting to Protect the Marine Environment Since 1977

Colonel William Pearce
U.S. Army Corps of Engineers
26 Federal Plaza
New York, NY 10278-0900

RE: Programmatic Environmental Impact Statement
Dredge Material Management Plan

Dear Colonel Pearce:

We (I) strongly urge the Army Corps of Engineers to accelerate the timetable for toxic sediment reduction through pollution prevention and enforcement. We (I) also strongly urge the Corps to pursue beneficial re-use of *decontaminated* dredge spoils. **OR3-1**

We (I) do not want this material dumped into the ocean or any other body of water because:

It will be very detrimental to our health. When the water comes up on the beaches all the toxic waste will end up there.

We (I) would appreciate the courtesy of a written reply.

Sincerely,

Mildred Eiferman
545 Neptune Ave.
Brooklyn N.Y 11224

RESPONSE TO COMMENTS

OR3 **Natural Resources Protective Association-Mildred Eiferman**

OR3-1

See response to OR2.

Natural Resources ...
P.O. Box 050328 Staten Island, NY 10305 (718) 987-6037
Fighting to Protect the Marine Environment Since 1977

COALITION AGAINST WATER DISPOSAL OF CONTAMINATED SEDIMENTS

Supporters
Friends of the Boardwalk
Staten Island Federation of Sportsman's Clubs
The Committee to Preserve Brighton Beach and Manhattan Beach
Staten Island Yacht Club
Cottrell Lobster Co.
Friends of Rockaway Inc.
Douty Brothers Seafood
Community School Board District 21
Clean Ocean Action
Fisherman's Emergency Fund
American Littoral Society
BAM Consulting
Group for the South Fork
United Fisherman's Association
Highlands Chamber Of Commerce
Concerned Citizens of Bensonhurst
Human Immunology Foundation
Staten Island Tuna Club
Jersey Coast Anglers
Coast Alliance
Ocean Divas
Fish "N" Kids
Montauk Boatmen's and Captain's Assoc.
Gerrisen Beach Cares
Save the Bay
United Boatmen's Association
Surfers Environmental Alliance
Concerned Citizens of Montauk
NY/NJ Baykeeper
Foundation for Safe Boating
Coastal Conservation Association
Natural Resources Defense Council
Environmental Defense Fund
Ocean Advocates
Fisheries Defense Fund
Fulton Fish Market Cooperative
Elco Rod & Gun Club
International Order of the Blue Gavel
Belford Fish Cooperative
East Hampton Baymen
U.S. Greenpeace
Hudson River Fisherman's Club
Point Pleasant Cooperative
Fish Unlimited
Long Island Sportfish Federation
North East Saltwater
East Coast Tuna Association
Viet Nam Veterans of America
Sound Keeper
Fisher's Island Conservancy
Community Anglers Assoc.

Colonel William Pearce
U.S. Army Corps of Engineers
26 Federal Plaza
New York, NY 10278-0900

RE: Programmatic Environmental Impact Statement
Dredge Material Management Plan

Dear Colonel Pearce:

We (I) strongly urge the Army Corps of Engineers to force New York State to accelerate the timetable for toxic sediment reduction through pollution prevention and enforcement. We (I) also strongly urge the Corps to pursue beneficial re-use of *decontaminated* dredge spoils. **OR4-1**

We (I) will not accept this Type F material dumped into the ocean or any other body of water because:

The ocean is God's backyard not the dump core. I can't smell the saltwater as it is. Don't dump in my children [signature]
Founder
Brighton Neighborhood Assoc.
891-6800

We (I) would appreciate the courtesy of a written reply.

Sincerely,

RESPONSE TO COMMENTS

OR4 **Natural Resources Protective Association-Pat Semp**

OR4-1

While some temporary disturbance to the water column would be expected during the placement of material in the aquatic environment, removing sediments with contaminants from the surface layer of the bay/harbor bottom would have beneficial effects. Please also see the response to comment OR2.

Natural Resources Protective Association

P.O. Box 050328 Staten Island, NY 10305 (718) 987-6037

Fighting to Protect the Marine Environment Since 1977

COALITION AGAINST WATER DISPOSAL OF CONTAMINATED SEDIMENTS

Supporters

Friends of the Boardwalk
Staten Island Federation-of Sportsman's Clubs
The Committee to Preserve-Brighton Beach-and Manhattan Beach
Staten Island Yacht Club
Cottrell Lobster Co.
Friends of Rockaway Inc.
Douty Brothers Seafood
Community School Board-District 21
Clean Ocean Action
Fisherman's Emergency-Fund
American Littoral Society
BAM Consulting
Group for the South Fork
United Fisherman's-Association
Highlands Chamber-Of Commerce
Concerned Citizens of-Bensonhurst
Human Immunology-Foundation
Staten Island Tuna Club
Jersey Coast Anglers
Coast Alliance
Ocean Divas
Fish "N" Kids
Montauk Boatmen's-and Captain's Assoc.
Gerritsen Beach Cares
Save the Bay
United Boatmen's-Association
Surfers Environmental-Alliance
Concerned Citizens-of Montauk
NY/NJ Baykeeper
Foundation for Safe-Boating
Coastal Conservation-Association
Natural Resources-Defense Council
Environmental Defense-Fund
Ocean Advocates
Fisheries Defense Fund
Fulton Fish Market-Cooperative
Elco Rod & Gun Club
International Order of the-Blue Gavel
Belford Fish Cooperative
East Hampton Baymen
U.S. Greenpeace
Hudson River-Fisherman's Club
Point Pleasant Cooperative
Fish Unlimited

Long Island Sportfish-Federation
North East Saltwater
East Coast Tuna Association
Viet Nam Veterans of-America
Sound Keeper
Fisher's Island Conservancy
Community Anglers Assoc.

Colonel William Pearce
U.S. Army Corps of Engineers
26 Federal Plaza
New York, NY 10278-0900

RE: Programmatic Environmental Impact Statement
Dredge Material Management Plan

Dear Colonel Pearce:

We (I) strongly urge the Army Corps of Engineers to accelerate the timetable for toxic sediment reduction through pollution prevention and enforcement. We (I) also strongly urge the Corps to pursue beneficial re-use of *decontaminated* dredge spoils. **OR5-1**

We (I) do not want this material dumped into the ocean or any other body of water because: it is very detrimental to our health. The Ocean brings toxic waste to our area.

We (I) would appreciate the courtesy of a written reply.

Sincerely,

Sylvia Harris
2285 W. 5th St - apt 9D
B Klyn NY 11224

RESPONSE TO COMMENTS

OR5 **Natural Resources Protective Association-Sylvia Harris**

OR5-1

See response to OR2.

SURFERS'
ENVIRONMENTAL ALLIANCE

December 1, 1999

Frank Santomauro, P.E.
Chief, Planning Division
Department of the Army
New York District, US Army Corps of Engineers
26 Federal Plaza,
New York, NY 10278-0090
Fax: (212) 264-4260

Re.: Public Comments Concerning the Programmatic Environmental Impact Statement for the Dredged Material Management Plan for the Port of NY and NJ

Dear Mr. Santomauro;

The Surfer's Environmental Alliance has been outspoken in its opposition to continued disposal of potentially harmful dredged material in the ocean and in the marine environment. Our organization consists of over 250 supporting members and 50 activists from the surfing community. Our East Coast steering committee consists of business leaders, attorneys, physicians and scientists from the New York Metropolitan region. Together with our West Coast affiliates based in Santa Cruz, California, we represent the collective interest of tens of thousands of surfers in this country who are concerned that oceans, as well as their supporting salt marshes and river estuary systems, no longer be used for the disposal industrial pollutants. We have significant concerns regarding the adverse environmental impacts of the disposal of dredged material from New York and New Jersey shipping channels. We feel that these concerns should be addressed in the final draft of the Programmatic Environmental Impact Statement for the Dredged Material Management Plan for the Port of New York and NJ (PEIS-DMMP-NY/NJ). These concerns are outlined below.

The Mud Dump or Historic Area for Remediation Site (HARS) located offshore of New York and New Jersey as well as various locations proposed for the future situation of subaqueous burrow pits and/or containment islands are all problematic. This, of course, is because of a very real concern with regard to environmental pollution with industrial chemicals. The public has a very strong and valid concern that environmental pollution may OR6-1

NEW JERSEY · (908) 870-8822 · FAX (908) 571-0728

negatively impact our health and produce long term economic costs associated with increased morbidity, mortality and associated health care expenses.

Humans are exposed to carcinogenic and toxic chemicals when we ingest the flounder, lobster and other seafoods which have bioaccumulated polyaromatic hydrocarbons, polychlorinated biphenyls, and dioxins from impacted marine environments. The HARS lies beneath an area of ocean in which fish are caught, and where lobsters are harvested for human consumption. The Hudson and Raritan River estuaries support a huge diversity of marine organisms and are also fished extensively. Evidence from studies of fishery samples by the National Oceanographic and Atmospheric Association suggest that benthic and pelagic organisms harvested from the New York bight apex contain significant levels of these chemicals and suggest furthermore that they put our health at risk. In particular the hepatopancreas of lobster taken from the HARS area was found to have unacceptably high levels of dioxin for human consumption as outlined by the US Food and Drug Administration. These same concerns are relevant to other areas proposed to receive dredged materials including but not limited to the Jamaica Bay National Wildlife Refuge. Thus we are opposed to the disposal of dredged sediments in any benthic marine, salt marsh or estuary due to a potential impact on human health

According to the Exective Summary of the MDS/HARS Environmental Impact Statement published by the EPA in May 1997, page xii: <The HARS will be remediated with "uncontaminated dredged material (*i.e.* dredged material that meets current Category I standards and will not cause significant undesirable effects including through bioaccumulation)" in order to reduce impacts at the site to acceptable levels [see 40 CFR Section 228.11(c)].> According to the Joint Dredging Plan for the Port of New York and New Jersey approved by Governor C.T. Whitman, NJ, and Governor G.E. Pataki, NY on Oct. 7, 1996, the following definitions apply to qualify dredged material: <Category I: Sediments which meet "unrestricted" ocean dumping criteria, test results indicate no unacceptable toxicity or bioaccumulation. No special precautionary measures are required during ocean disposal. Category II: sediments which demonstrate no toxicity, but where there is the potential for bioaccumulation. Restricted ocean disposal, capping or some other disposal management practice required.> According to these requirements significant changes must be implemented with regard to the qualification of material for suitability for disposal at the HARS and at other marine estuary sites. Our concerns on these issues are outlined below. OR6-

Firstly, a more explicit and stringent definition for the terms "significant undesireable effects including through bioaccumulation" and "unacceptable toxicity or bioaccumulation" should be made and adopted into policy. This definition should take into consideration a formal risk assessment using chronic toxicities of cancer and birth defects on the human population as the endpoint. The extrapolation of 28-day bioaccumulation tests to the steady state on marine organisms should be replaced by actual steady state sampling from the fishery regions. Secondly, a formal and more complete study of the HARS and other potential remediation sites should be completed to get a better understanding of what industrial pollutants are in existence at the remediation sites. This study should utilize both surface and core samplings of sediments and should be highly localized to the area of proposed remediation. This would allow for proof that given remediation material is indeed cleaner that the area that it is proposed to remediate. Thirdly, a long-term economic projection of the relative costs of short-term disposal options and long-term economic impacts must be undertaken. This study would include not only analyses of short-term economic incentives to dredging but long-term projections of alternatives including new deep water port infrastructure development. The long-term economic impacts of reduced productivity and increased costs for human health care should also be included in these analyses. OR6-3

The draft PEIS-DMMP-NY/NJ is a significant advancement in the state of scientific analyses of the marine environment. If it is further modified to adopt risk assessment procedures similar to those applied to Federal Super Fund Toxic Waste designated sites, OR6-4 additional oceanographic, hydrogeological and chemical analyses, as well as comprehensive economic cost projections it will be a state of the art environmental impact statement. OR6-5

Respectfully Submitted,

Kevin O'Driscoll, Ph.D.
SEA Staff Scientist

RESPONSE TO COMMENTS

OR6 **Surfers' Environmental Alliance**

OR6-1

USEPA determines the suitability of material that will be placed at the HARS to remediate effects of past disposal actions. Islands are no longer under active consideration. New pits in existing channels or in flats of the Upper Bay and Newark Bay are designated as contingency options, to be used only if preferred options are unable to meet placement needs. These pits would receive only material dredged from the near vicinity of the pit. Potential subchannel pits are located in areas with low habitat value and would be capped to isolate organisms from any contaminants. Detailed site specific NEPA evaluations would be prepared to assess the environmental suitability of each pit. Only one existing pit, Norton Basin, is proposed to be filled and that with HRS suitable material to evaluate the feasibility of this option. Expansion of this concept would occur only if the Norton Basin pit establishes the value and safety of such use.

OR6-2

The material to be placed at the HARS site would have to pass ocean placement criteria and would be suitable for remediation of the site. The expectation is that fish and shellfish would be isolated from existing contaminants at the HARS.

OR6-3

Criteria for determining suitability of material to remediate the HARS rests with the USEPA. The criteria which are in effect at the time an area is dredged will be used to determine its suitability for HARS or any other option.

OR6-4

Risk assessments would be conducted as part of the individual site/option investigations for site specific NEPA documents. The HARS was the subject of investigation by the USEPA prior to their issuance of the Supplement to the Environmental Impact Statement on the New York Dredged Material Disposal site Designation for the Designation of the Historic Area Remediation Site (HARS) in the New York Bight Apex (May 1997.) Long-term economic projection of the relative costs of short-term disposal options and long-term economic impacts must be undertaken for the HARS.

OR6-5

Preliminary risk assessments were done for the options which were believed to entail the greatest risk to the environment and human health, using worst case assumptions. These assessments provided a screening tool in keeping with the early phase of planning for the DMMP. Risk assessments would be conducted for the site/option specific EIS'S.

Natural Resources Protective Association

P.O.Box 050328 Staten Island, NY 10305 (718) 987-6037

December 1, 1999

ACOE
26 Federal Plaza
New York, NY 10278-0900

Dear People: Re: Comments on DEIS DMMP

The NRPA comments to the DEIS DMMP consists of the following:

1. Notes prepared by Dr. Charles Talley 2 pp
2. Notes prepared by Dr. Dennis Thoney 4 pp
3. Notes prepared by James Scarcella and previously submitted to ACOE at the public meetings on 11/22 and 11/23/99. 2 pp
4. Notes on "Citizens Guide to the DEIS/DMMP prepared by ACOE" NRPA 10/99 1 pp
5. Notes that are presented in this letter as follows: 3 pp

While we are pleased with your implementation of our recommendations to remove a "containment" island, the East Bank Pits and the C.A.C. Pit from your disposal options, we are deeply disturbed by your continued reliance on water-based disposal. **OR7-1**

Please note that we remain opposed to your position that untreated, poisonous, severely contaminated type "F" (non-HARS) sediment can be safely used for "beneficial" uses like habitat "restoration", marsh "creation" or "contained aquatic disposal" (CAD'S) subaqueous pits. We request that they be removed from consideration entirely. **OR7-2**

We are extremely disappointed that the earliest you expect a reduction in contaminants through pollution reduction programs is the year 2011. This is thoroughly unacceptable! It also means that ACOE will be forced to implement "fallback" and "uncertain" options much faster than anticipated. **OR7-3**

Filling borrow pits or sub-channel cells with toxic type "F" material is not habitat restoration, it is habitat destruction.

Also, we do not consider pneumatic sediment suspension and "turbo scour" solutions to dredged material management. These systems transport toxics from one place to many places and organisms. **OR7-4**

We insist ACOE instruct the Port Authority that land-based disposal options should be done with "stabilized" treated sediment, using untreated type "F" material for this purpose is a recipe for disaster.

Natural Resources Protective Association

P.O.Box 050328 Staten Island, NY 10305 (718) 987-6037

ACOE December 1, 1999

Page 37 describes a NYS option shortfall of 500,000 for type "F" sediment. That shortfall will grow into unmanageable amounts unless you prod NYS E.S.D.C. to spend some of the $45 million they have to stablize this sediment. **OR7-5**

We request that you consider using STABILIZED "treated" type "F" material for landfill capping at the Fresh Kills landfill. It would be a win-win situation. **OR7-6**

We are requesting that ACOE conduct a "cumulative impacts survey, evaluation and analysis" on damages to natural resources that have occurred as a result of wetland filling, sand mining and dredge actions authorized by ACOE over the last 15 years. This should be conducted with U.S. Fish and Wildlife Service, National Marine Fisheries Service, EPA and other federal, state and local resource agencies. **OR7-7**

Re: Summary Sec. 1.4 unresolved issues, we request a definition of "out-of-kind mitigation". What is meant by this term? Permanent protection through local state and federal "parkland" status through acquisition and transfer of threatened tidal wetlands and other critical habitat is the only "mitigation" acceptable for most of your options. **OR7-8**

NRPA has proven that the current habitat use/value of existing pits are extremely abundant biota and totally invaluable. **OR7-9**

We have quality video tape of quantitive and varied marine life, tremendous fauna and flora, in all of the lower bay pits.

Contaminants cannot be kept from spreading outside pit areas during disposal because of water column dispersion, wind, currents, tides, inter-tidal currents, and other physical forces. Please consult some oceanography and science texts. **OR7-10**

We are tired of ACOE degrading the resources of the lower bay and/or minimizing the tremendous quality and quantity of life in the borrow pits. ACOE's draft D.E.I.S. navigation study (10/99) did a more thorough job of bringing to light resources of the NY/NJ harbor estuary, who so many shortfalls in the DMMP/DEIS? **OR7-11**

On impact assessment 5.4 risk assessment (P.5-51) you do not specify the criteria, tests or standards goals of the screening assessment and give 1 paragraph of a 260 page document to this subject. This is inadequate and irresponsible. **OR7-12**

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Fighting to Protect the Marine Environment Since 1977

COALITION AGAINST WATER DISPOSAL OF CONTAMINATED SEDIMENTS

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Staten Island Yacht Club
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Ocean Advocates
Fisheries Defense Fund
Fulton Fish Market-Cooperative
Elco Rod & Gun Club
International Order of the-Blue Gavel
Belford Fish Cooperative
East Hampton Baymen
U.S. Greenpeace
Hudson River-Fisherman's Club
Point Pleasant Cooperative
Fish Unlimited
Long Island Sportfish-Federation
North East Saltwater
East Coast Tuna Association
Viet Nam Veterans of-America
Sound Keeper
Fisher's Island Conservancy
Community Anglers Assoc.

ACOE

December 1, 1999

On 5.5. environmental justic (P5.53) ACOE touches briefly on fish consumption and public participation and awareness, fully 80% of NYC citizens/fishermen eat their catch and most are unaware of any advisory. Your proposals to use water-based disposal for type "F" toxic sedminets would make contaminants more readily available for minority, low-income and native americans, to the detriment of their health and well-being - an environmental injustice! OR7-13

Pages 31 and 32 of the USFE coordination lacks shellfish data for NYS waters of Raritan Bay/Lower Bay. This is an unacceptable omission and a disgrace. Who is responsible for this omission? OR7-14

Why does the CZMA report appendix "B" for NYS have 4 pages with little insight, while the NJ secion has a full 26 pages? OR7-15

Regarding section 106 coordination, we respectfully bring to your attention that wrecks are both culturally significant and recreationally important. We feel ACOE mislead NYSOPRHR into thinking that no wrecks in zone 2 existed (moderate sensisivity) in fact, an 1830's sailing schooner wreck sits on the eastern edge of the large west bank pit. It is extremely important for cultural and recreational resources, and it would be lost forever if you were to fill it with dredge material. Please concur with ~~WOAMS~~ us and contact NYSOPRHR. OR7-1

While ACOE is quite willing to point out problems in water quality affected environment P.4-21 - 4.23, there is little or no information of the toxic contaminants in the type "F" sediment you are proposing to dredge and dispose. Why is this info omitted? OR7-1

To summarize, we urge you to continue to press for landfill remediation, mine reclamation and decontamination w/beneficial reuse. We will not accept water-based disposal of type "F" sediment anywhere in the NY/NJ harbor estuary. Thank you.

Respectfully submitted,

Jim Allen

James Scarcella,
President

w/att 9 TOTAL 1277

cc: Hon. V. Fossella
cc: Hon. C. Schumer
cc: Hon. G. Pataki
cc: Hon. Westphal
cc: Baykeeper

Comments to ACOE regarding DMMP DEIS by DR. CHARLES TALLEY NKPA

GENTLEMEN: We are elated that the large containment island concept has been eliminated from the near term plan for contaminated dredge spoil disposal .Although public opposition helped make this decision , the stronger motivation was an economic one : there would not be enough contaminated material available in a short enough time period to warrant the cost of building the island .

We have repeated ad- nauseum the warning that contaminated spoils are most harmful to the environment when they are in water which contains benthic organisms. In most cases these spoils are innocnious when dug in that their toxic components are unavailable to the food chain . Nonetheless, ACOE has coined a new term for dumping contaminated dredge spoils in the environment in a way that insures toxic components will enter our food chain :it is called 'habitat creation ' or 'habitat restoration ' . The habitats mentioned are all wet-marshlands, borrow pits ,etc.. It is through exposure to benthic organisms that these contaminants enter the food chain and bioaccumulate to chronic and /or acute levels in other aquatic organisms , terrestrial wildlife , and finally ,humans .There is no proven technology, no guarantee that useful functioning habitat would be created even with clean dredge spoils . There is no evaluation of long term impacts, permanency of any structures created in the presence of severe storms, etc. Marshlands are teeming with life forms that are the basis of the food chain. Marshes are prime feeding grounds for higher organisms . Habitat creation as described in this DEIS is second in its irresponsibility only to the continued plan to dump these spoils in open pits which do not have the design criteria on the Newark bay CDF .Why not dip handfuls of these contaminated spoils in chocolate and sell it to humans as a confection? **OR7-18**

In addition to the new proposal to create/restore marshlands with contaminated dredge spoils, the Army Corps continues unrelentingly to espouse their favorite disposal option—the borrow pits. The new twist on this discredited proposal is to place it under the umbrella of habitat restoration. The Jamaica Bay pit has been chosen as the test case, but all harbor pits (and future ones created just for this purpose) are explicitly included as candidates. The Jamaica Bay pit is unique in that one end is land-locked preventing good, cleansing flow. As a result, the deeper portions of the various pits in Jamaica Bay, especially the Grassy Bay section, contain water that is relatively stagnated as compared to the surface water. Filling in these deeper portions should bring the subsurface up into a level of higher flow and it should improve the habitat quality of Jamaica Bay. This condition does not apply to any of the pits in the Lower and Raritan Bays for two reasons. These pits are completely surrounded by open water. They are relatively flat, large, and shallow. Therefore, water flow is much greater at the bottom of these pits than at the bottom of pits in Jamaica Bay. **OR7-19**

There is no question that Jamaica Bay can be improved by filling in its' deep pits. However, contaminated dredge spoils are the poorest choice for that purpose. The poor water quality that has resulted in the diminution of life forms in Jamaica Bay is an acute insult to the benthic community. Remove oxygen from the water and all aerobic organisms die quickly. Poor sediment quality, on the other hand, is a chronic insult to the benthic community and to the higher members of the food chain. It may take a long time for the toxic effects of these contaminants to manifest themselves in the aqueous flora and fauna. Quickly improving the water quality in Jamaica Bay by filling in the stagnated pits will permit the benthic community to flourish. That, in turn, will attract the higher organisms that feed on benthic species. Accomplishing this with poor quality sediment will pump toxins into the food chain at unprecedented levels. Certainly, Jamaica Bay pits should be filled. They must be filled with clean material.

The Army Corps will counter that contaminated dredge spoils can be used to fill in pits as long as it is capped with one meter of clean materials. We have raised the challenge for more than twenty years to the Army Corps to develop solid evidence that capping works. To date, all evidence is to the contrary. A capping experiment in Boston harbor was a dismal failure. The dumped spoils were allowed to settle for ten days before capping began. The capping material went right through the dumped spoils. The Army Corps decided that dumped spoils must settle for 120 days before capping can begin—one-third of a year. We hope there are no storms during that time. We hope no large vessels pass over the dumping area. We hope no benthic organisms take up residence in the dumped spoils. We hope the capping will cover the spoils. We also hope to win the lottery. Except for the well-designed and executed Newark Bay pit **OR7-20**

DR CHARLES TALLEY NRPA

experiment, there is no evidence that contaminated dredge spoils can be dumped without significant loss of contaminated fines or that the resulting dump site can be effectively and permanently capped.

An even more ludicrous proposal is to dump the contaminated spoils in sub-channel pits. Here, the dumping will be through a 90 degree column of water in the high flow environment of a shipping channel. The Army Corps has absolutely no basis for believing that the contaminated fraction of the dredge spoils will remain under control and come to rest in the designated location. To make matters worse as only the Army Corps (and possibly the Port Authority) can do, the sub-channel proposal suggests that capping may not be necessary. Let the natural flow of sediment in the shipping channel gradually cap the contaminated spoils. In making this suggestion, the Army Corps is admitting that capping, even after 120 days of settling, cannot work because the interface between the dumped spoils and the surrounding water is so diffuse that the cap penetrates and does not cover. The Army Corps hopes that the gradual, natural sedimentation will effectively cover the contaminated spoils. OR7-21

In conclusion, we must repeat that the contaminated spoils are most dangerous to the environment when they are in the water. None of the Army Corps' aqueous disposal options mitigates that danger. The elegantly simple Newark Bay pit design does remove the danger and it was suggested to the Army Corps by concerned members of the community who do not possess the "expertise" of the Army Corps group charged with solving this difficult disposal problem. Why is it that the Army Corps cannot come up with any ideas that aren't just the same old proposal to dump in the water and try to cover it up. The name of the proposal isn't what matters. It's the substance of the proposal that will finally solve this problem. OR7-22

WILDLIFE CONSERVATION SOCIETY
FOUNDED IN 1895 AS THE NEW YORK ZOOLOGICAL SOCIETY

AQUARIUM FOR WILDLIFE CONSERVATION

Jim Scarcella, President
Natural Resources Protective Association
P. O. Box 050328
Staten Island, NY 10305

November 29, 1999

Dear Mr. Scarcella:

As requested, I have reviewed the September 1999 draft of the U. S. Army Corp of Engineers "Dredged Material Management Plan for the Port of New York and New Jersey," including the Implementation Report Programmatic Environmental Impact Statement and Technical Appendix. It is clear that many of the shipping channels within the Port/Harbor must be dredged in order to maintain the economic viability of the harbor. Proposed dredging over the next 40 years will result in an estimated 217.2 million cubic yards of sediment that must be disposed of using environmentally appropriate methods. Unfortunately, approximately 46% of the dredged sediment is contaminated with various toxicants making it unsuitable for either ocean or many other types of disposal. Contaminated (F-type) sediments contain many toxic compounds including heavy metals, polyaromatic hydrocarbons (from oil pollution), and chlorinated hydrocarbons (PCB's, DDT, dioxin). Therefore, it is essential that any contaminants in dredged material are contained and that the surrounding environment is not exposed.

In the reviewed report, the U. S. Army Corp of Engineers has evaluated available options for disposal of dredged sediments and has made recommendations based on environmental, economical, and cultural concerns. After reviewing this report, I have several comments and recommendations that are addressed below.

I agree with the premise suggested in this report that dredged material, whether it be type F or clean, should be used in a beneficial manner to restore degraded habitat if possible. Using "clean" sediments to restore the Historic Area Remediation Site and other areas by covering contaminated sediments by a layer several meters thick would certainly be beneficial if the sediment deposited is indeed "clean." However, sufficient studies must be conducted to insure that dredged OR7-23

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sediments will remain in the location where they are deposited and will not be transported in the future by ocean currents or by turbulence generated by storms, ships, etc.

It should be noted that if sediments meet the requirements which define them as "clean," this does not preclude toxic contaminates from being present. Therefore, these "clean" sediments also must be evaluated in relation to contaminant levels in the area of disposal. Non-F type categorized sediments could be more contaminated than the area surrounding the HARS, which would make those sediments unacceptable for disposal in that area. Further, very clear sediment standards must be set and adhered to, to prevent more contamination. Once standards have been met, a verifiable system must be in place to insure that only sediments meeting the standards are used in the remediation process. The dilution of contaminated sediment with clean sediment to meet "clean" standards also should be unacceptable.

In regard to the issues discussed above, I have concerns regarding the U. S. Army Corps of Engineers' Public Notice No. 1999 RR-AK Cut-off Channel that was published 9/16/99 and entitled "Raritan River to Arthur Kill Cut-off Channel Federal Navigation Project Maintenance Dredging." Even though the sediment to be dredged from this area appears to meet the Regulatory testing criteria of 40 CFR Section 227.6 and 227.27 and the requirements of the rule establishing the HARS in Section 228.15(d)(6), it has relatively high concentrations of PCB's (0.179 ppm), pesticides, dioxins, and PAH's that should be considered in relation to background levels in the area to which these sediments would be moved. In addition, the sampling method used to determine the toxicity of this sediment should be questioned. In this analysis, the seven core samples were combined to "yield one sediment composite" for analysis. Because sediment contamination likely varies through out the channel, these samples should have been analyzed separately to determine whether "hot spots" of contamination occur. Analyzing the core samples separately also would help prevent biasing of data by selecting more "clean" areas that would dilute more contaminated cores. Bioaccumulation tests showed that several contaminants exceeded referenced levels for clam and worm, but did not exceed regional matrix or dioxin levels. If the seven core samples were analyzed separately it is likely that some would have not passed the criteria. I must conclude that even though this material may meet Category I requirements, it only minimally does so, and therefore, the disposition of this material in HARS should be reconsidered since at least some of the material is probably inappropriate for disposal there.. OR7-24

Management options for the disposal of F-type materials that utilize non-aquatic deposition should be given high priority. Mines, brown fields, quarries, and landfills that require remediation/restoration will require tremendous amounts of soil/sediment to restore them. Following treatment to stabilize and contain toxicants, these sediments should be environmentally OR7-25 safe to use.

Depositing type-F materials in Contained Aquatic Disposal facilities (CAD) must be restricted to areas in the vicinity where the contaminated sediment originated. Using subaqueous pits in the Lower Bay (including Jamaica Bay) and the New York Bight is an unacceptable alternative. The transport of type-F materials from contaminated sites to areas that are far less protected from unpredictable currents and storms would expose these areas to higher contaminant concentrations both during placement and in the future with the possible of exposure of toxicants through erosion that would result in bioaccumulation of toxicants in fauna and flora of the area, as well as increased chances of human exposure. If the use of CAD's is necessary, constructing new facilities in shallow shoal areas where the water depth is minimal would be preferred over sub-channel cell sites where water depths and currents are the greatest. Strong tidal and riverine currents would distribute the fine-grained sediments (which are the most contaminated) over broad areas as they drift down to the channel bottom. It would be much less difficult to prevent the straying of contaminated sediments in the shallower shoal areas. And although shoal area habitats are relatively undisturbed in regard to physical disruption, they are areas with contaminated sediment that would benefit from the burial of surface layers and a layer of clean sediment placed on top. Benthic fauna would be only disturbed for the short-term and would likely recolonize quickly to the clean overlying sediments. OR7-26 OR7-27

Although Confined Disposal Facilities (CDF) may provide a relatively safe area to deposit contaminated sediments, they could be subject to storm damage if they are located near shore. The potential risk of containment failure caused by storm damage (hurricane, etc) should preclude the construction of these facilities in open areas such as the Lower Bay or New York Bight. Another shortfall of CDF's is that they destroy natural habitat which should be evaluated carefully considering the hectares of wetland habitat that has been lost over the last 200 years in the harbor (e.g. only 16 percent of the City's original saltmarsh habitat remains today, Mittelbach, M. and M. Crewdson. 1997. Wild New York. Crown Publisher, New York. 46pp.). OR7-28

In conclusion, it is essential that both sediment reduction and contamination are high priorities for the future. Meanwhile, dredged materials must be disposed using environmentally safe methods. First, sediments that have been found not to be Type-F which also meet the requirements of Category I should be used to restore habitat such as the HARS and other degraded habitat. This sediment also should be evaluated carefully prior to release in regard to regional background contamination as discussed previously, sediment type (grain size, etc.), and existing biota in the area of planned deposition. A system must be in place to insure that only tested and approved materials are placed in these areas. Second, Land Remediation should be used to dispose of processed OR7-29 contaminated F-type materials (solidified/stabilized). This material could fill the need for many remediation projects including mines, quarries, brown fields, and landfills that were mentioned in the report. However, continued monitoring for many years will be required to prevent the contamination of ground water and surrounding areas. Third, Type-F materials should not be disposed of in the aquatic environment at all, except under specific, controlled conditions. In addition, contaminated materials should not be moved out of the source area to other less contaminated areas. This would exclude the dumping of any Type-F (or Category 2 or 3) materials in the Lower Bay (including Jamaica Bay) and the NY Bight using any of the proposed methods. CAD's should be confined to shoal areas in the upper Bay near where they originated. The construction of CAD's in channel areas where the depths and currents are the greatest is not an acceptable solution. CDF's are not the best solution because of their cost and the associated loss of habitat that occurs, and therefore, should not be a preferred option.

After reviewing specific proposed projects and their "Option Preference" and "Options Status" most follow the above recommendations. However, six projects considered under "Beneficial Uses" would use Type-F material as subfill. As stated above, type-F material should not be disposed of in other less contaminated aquatic areas. Projects HC7F Marsh creation at Bowery Bay, NY; HR2F Little Bay, Jamaica Bay, NY; HR3F Grassy Bay, Jamaica Bay, NY; Hr4F Jo-Co Marsh Pit, Jamaica Bay, NY; HR6F Hoffman/Swinburne South Pit, NY; and, HR7F West Bank Pit, Lower Bay, NY should be redesignated not to receive any Type-F material. OR7-30

This concludes my review. If I can be of further assistance, please do not hesitate to contact me.

Sincerely,

Dennis A. Thoney

Dennis A. Thoney, Ph.D.
General Curator & Senior Scientist

enc.

cc P. Boyle, Ph.D., Director, Osborn Laboratories of Marine Sciences
L. Garibaldi, Director, New York, Aquarium

Dredge evaluation let.wpd

NRPA

J. SCARCELLA - COMMENTS ON DEIS - DMMP 11/22/99

(1) ACOE PREFERRED OPTIONS (IE POLLUTION PREVENTION) OR7-31
NOT LIKELY, NOT FEASABLE (NY STATE EARLIEST IMPLEMENTATION ~~2011~~ !)

(2) SUSPENSION OF CONTAMINATED SEDIMENTS IS A POOR SOLUTION TO CONTAMINANT REDUCTION OR7-32

(3) FALLBACK AND UNCERTAIN OPTIONS WILL LIKELY BE FULLY UTILIZED OR7-33

(3) SUB-CHANNEL CELLS FOR CAD TOTALLY UNPROVEN, DANGEROUS, INADEQUATE (BAY RIDGE/RED HOOK, N.B.) OR7-34

(4) HOFFMAN SWINBORNE, WEST BANK, BAY RIDGE/RED HOOK AND NEWARK BAY SUB CHANNEL CELLS AND JAMAICA BAY ALL TARGETED FOR DISPOSAL OF TYPE 'F' SEVERLY CONTAMINATED (TOXIC) SEDIMENTS - UNACCEPTABLE! OR7-35

(5) NY STATE <u>SHORTFALL</u> OF OPTIONS FOR 2001 ALREADY 500,000 YDS^3, WILL GROW, NOT DIMINISH OR7-36

(6) HARD CLAM ~~DATA~~ FOR RARITAN BAY NOT INCLUDED IN DEIS (SHELLFISH HARVEST AREAS) OR7-37

(7) EXTENT OF CONTAMINANT CONTAMINATION ALREADY SEVERE IN NY/S WATERS. SEE 'CHEMICAL CONTAMINATION IN SPORTFISH AND GAME, 1999-2000' NY STATE D.O. HEALTH OR7-38

(8) RISK ASSESSMENT IN DEIS SERIOUSLY FLAWED, DOES NOT INCLUDE FULL RANGE OF TOXICS AN SEDIMENT; DOES NOT INCLUDE SEVERE CONCENTRATIONS OF CONTAMINANTS OR7-39

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Sound Keeper
Fisher's Island Conservancy
Community Anglers Assoc.
SI TAXPAYERS ASSO.

11/23/99

Colonel William Pearce
U.S. Army Corps of Engineers
26 Federal Plaza
New York, NY 10278-0900

RE: Programmatic Environmental Impact Statement
Dredge Material Management Plan

Dear Colonel Pearce:

We (I) strongly urge the Army Corps of Engineers to force N Y State to accelerate the timetable for toxic sediment reduction through pollution prevention and enforcement. We (I) also strongly urge the Corps to pursue beneficial re-use of *decontaminated* dredge spoils.

We (I) will not accept this Type 'F' material dumped into the ocean or any other body of water because: IT WILL CAUSE IRREPARABLE HARM TO MARINE ECOSYSTEMS AND CAUSE PERMANENT DAMAGE. TYPE 'F' TOXIC MATERIALS CAN CONTAIN CARCINOGENS AND OTHER HARMFUL SUBSTANCES. WHY DOESN'T NY STATE EMPIRE STATE DEVELOPMENT CORPORATION SPEND THE 45 MILLION THEY HAVE ON SAFE OUT OF WATER DISPOSAL OPTIONS? WHERE IS THE N/S DOH HEALTH ADVISORY ON 'CHEMICAL CONTAMINANTS IN SPORTFISH AND GAME' 1999-2000? WHERE IS THE SPECIFIC REQUIRED CONSULTATION WITH USF+W, NMFS AND D.O.I REGARDING YOUR PROPOSED ACTIONS?

OR7-40

OR7-41

OR7-42

We (I) would appreciate the courtesy of a written reply.

Sincerely, JAMES SCARCELLA

WHY IS RISK ASSESSMENT 1 PAGE? OR7-43

WHY DOES THE ENVIRONMENTAL JUSTICE SECTION SEEM FALSEIFIED? OR7-44

Natural Resources Protective Association

P.O. Box 050328 Staten Island, NY 10305 (718) 987-6037

CITIZENS GUIDE TO THE PROGRAMMATIC DRAFT ENVIRONMENTAL IMPACT STATEMENT OF THE DREDGED MATERIAL MANAGEMENT PLAN
DOCUMENTS PREPARED BY ARMY CORPS OF ENGINEERS

THE DEIS LISTS THE FULL RANGE OF OPTIONS AVAILABLE TO THE CORPS AS THEY TRY TO HANDLE CONTAMINATED SEDIMENTS FROM CHANNEL DEEPENING AND MAINTENANCE DREDGING OF BERTHING AREAS IN THE HARBOR ESTUARY.

SOME OF THE OPTIONS ARE POLLUTION PREVENTION, SEDIMENT SUSPENSION "HABITAT RESTORATION", SEDIMENT REDUCTION , DECONTAMINATION W/BENEFICIAL REUSE

POLLUTION PREVENTION IS THE #1 PREFERRED OPTION ,BUT THE EARLIEST AVAILABLE DATE FOR REDUCTION OF POISONOUS ,TOXIC TYPE 'F' SEDIMENTS BY THIS METHOD IS THE YEAR 2011 !!! THIS IS TOTALLY UNACCEPTABLE! THE STATE OF NY MUST DO A MUCH BETTER JOB ON POLLUTION PREVENTION & ENFORCEMENT!
THE CORPS ESTIMATES THAT THEY MUST DISPOSE OF 2,700,000 CUBIC YARDS (TONS) OF TYPE 'F' SEDIMENT (LOADED WITH DIOXINS, PCBs, PAH, LEAD, ZINC, NICKEL, CHROMIUM, COPPER, AND OTHER HARMFUL CHEMICALS) EACH YEAR.

UNDER THE GUISE OF ' HABITAT RESTORATION ' ARE PLANS TO FILL SEVERAL BORROW PITS (DEPRESSIONS IN BAY BOTTOMS WHERE CLEAN SAND & STONE WERE REMOVED) WITH TYPE F TOXIC SEDIMENT AND CAP IT WITH CLEAN MATERIAL.
AREAS TARGETED INCLUDE GRASSY BAY, LITTLE BAY, JO-CO MARSH IN JAMAICA BAY & HOFFMAN-SWINBURNE S PIT & WEST BANK IN LOWER NY BAY (OFF SOUTH BEACH S I)
UNDER THE HEADING OF CONTAINED AQUATIC DISPOSAL ARE PLANS FOR BAY RIDGE / RED HOOK SUB CHANNEL PITS TO 'CONTAIN' 10,000,000 CUBIC YARDS (TONS) OF TYPE F MATERIAL

TO BE FAIR, THE PLANS OFFERS SOME GOOD SOLUTIONS TO THE DREDGE DISPOSAL PROBLEM. REMEDIATION OF THE OLD 'MUD DUMP' NOW CALLED 'HARS' WITH TYPE A-D MATERIAL (PROVIDED THE STUFF IS TRULY 'CLEAN') IS A GOOD IDEA
ALSO, IT SHOULD BE NOTED THE CORPS IS PUSHING LANDFILL, BROWNFIELD, AND MINE REMEDIATION WITH STABILIZED MATERIAL
ALSO, THE EAST BANK, CAC PIT AND A 'CONTAINMENT' ISLAND HAVE BEEN REMOVED FROM THE STUDY.

BUT MANY PROBLEMS REMAIN AS MENTIONED PREVIOUSLY, ESP WITH MATERIAL THAT IS NY STATE RESPONSIBILITY .NY REFUSES TO SPEND THE MONIES NECESSARY TO KEEP TYPE F TOXIC SPOILS OUT OF OUR WATERS. THE CORPS IS ALMOST FORCED TO LOOK AT THE CHEAPEST SOLUTION, WATER BASED DISPOSAL. THIS IS GOVERNOR PATAKI'S RESPONSIBILITY. WRITE TO HIM AT THE CAPITOL, ALBANY NY 12224 .

WE MUST TELL THE CORPS HOW WE FEEL IN WRITING. CALL 212 264 2230 OR 212-264 5797 FOR A COPY OF THE DEIS. ATTEND THE PUBLIC HEARING AT COLLEGE OF STATEN 2800 VICTORY BLVD. MONDAY NOVEMBER 22, FROM 7-10 PM THE COMMENT PERIOD ENDS DEC 3, 1999. SEND YOUR WRITTEN COMMENTS TO COL. WILLIAM PEARCE ACOE 26 FEDERAL PLAZA NY, NY, 10278

THIS GUIDE TO THE DEIS WAS PREPARED BY COALITION AGAINST WATER DISPOSAL (CAWD) OF CONTAMINATED SEDIMENTS. LED BY NATURAL RESOURCES PROTECTIVE ASSOCIATION NRPA .
WWW.NRPA.COM 718-987-6037

RESPONSE TO COMMENTS

OR7 **Natural Resources Protective Association**

OR7-1

The Recommended Plan has no options for the aquatic disposal of non-HARS material, which is the largest portion by far of the dredged material taken from the Port. The HARS suitable material is being used to remediate the previously impacted area in and around the old Mud Dump Site.

OR7-2

We note your objection, but continue to disagree with you over the characterization of dredged material and its ability to be safely used in a beneficial manner to restore suitable habitats, an option that must and will be evaluated on a case by case basis.

OR7-3

The estimate for obtaining reductions in contaminant levels is based on the timing of the completion of the bi-state track-down program, modeling to use the information to identify primary sources of contaminant input, and implementation of measures to control the input sources. There will also be a period of time for the program to become effective because there are contaminants already in the aquatic system. It is possible that this program can be accelerated and the estimate revised, but it was felt that for planning purposes a more conservative time-frame should be used. We concur that the reductions that are achieved sooner, would be a beneficial effect to the program and the Corps will continue to provide what support it can to assist those efforts. The yearly update process will be used to investigate such means of accelerating the program and adjust its recommendations of the options to use, accordingly.

OR7-4

We continue to disagree with your generic dismissal of using category F material as a part of a well planned and monitored restoration effort. It would be used as a sub-fill with a substantial cap of clean material above it to isolate it from marine organisms and contain the fine-grained sediment which bind the contaminants. We are aware of your concern, and those of others, regarding the loss of contaminants during disposal and the subsequent retention when placed into a pit. It is the purpose of the small pit fill at Norton Basin-Jamaica Bay, to use clean fine-grained sediment as a surrogate to trace any loss and the retainability of material in a pit. If successful, this could open-up a tremendous opportunity for restoring degraded habitats throughout the Harbor that might otherwise continue to function well below their potential.

OR7-5

New York continues to investigate options for category F material from New York waters, and given their support of the DMMP recommendations, it is assumed they will implement these options to meet their projected short-fall needs.

OR7-6

New York is currently considering a proposal for a demonstration with dredged material at Penn and Fountain landfills adjacent to Jamaica Bay. Local opposition in the past has effectively prevented any use of material at Fresh Kills, even though past Corps studies have shown the material to be suitable from an engineering standpoint. We continue to explore the potential for a small-scale project at Fresh Kills, perhaps with material taken from or around Staten Island (e.g., Howland Hook).

OR7-7

Natural resource damage assessments are coordinated by the agencies charged with the natural resource management and protection, namely USFWS and NOAA (NMFS).

OR7-8

Mitigation would be used to offset losses resulting from the implementation of a project. The goal is normally to replace that which is lost wit the same type of natural habitat, e.g., replace two acres of Spartina marsh with two acres of the same type of marsh. "Out of kind" mitigation is used when there is no practical way of replacing the type of habitat lost. For example, if one were to build an island in the ocean, ocean bottom habitat would be lost and replacing it "in kind" would not be feasible, but mitigation would still be required. The alternative would be to mitigate using "out of kind" mitigation, for instance, with an agreed upon number of acres of tidal flats and perhaps a salt marsh. It is recognized that this is not an equivalent replacement, but a necessary feasible replacement base upon the technical expertise of involved resources agencies. Fortunately, if the Recommended Plan is fully implemented there will be no long-term loss of resources and no need for mitigation.

OR7-9

We are aware of the work conducted by NRPA and others on the pits in Lower Bay. While suggestive of a functioning habitat, videos and diver observations are insufficient, in themselves, to assess the use and value of a habitat. In addition, value to fisherman and others who harvest the resources is not always synonymous with value to the ecosystem overall. It would require a well-designed, extensive sampling program to obtain the quantitative data needed to make this assessment. Such an effort is proposed for the Norton Basin pit which would be the first pit to be used. This small pit is in a dead end basin that is part of the Jamaica Bay system. The initial test would use HARS suitable material.

Currently, no Lower Bay pit is proposed for use, nor would they even be considered before the Norton Basin-Jamaica Bay placement successfully answered all concerns on habitat use and ability to place and contain sediments in a pit.

A similar testing approach would be undertaken with Lower Bay pits. The Lower Bay pits in question are the Hoffman/Swinburne, and West Bank Pits. The East Bank Pits, and the CAC pits are no longer considered viable candidates for use based upon data from corps surveys. An evaluation program of existing habitat would be needed for the Lower Bay before a first placement in that body of water. If the detailed evaluation confirms what your work suggests, they would not be considered in need of habitat restoration. If, however the study showed them to be functioning well below expected levels, restoration efforts may be undertaken following a permitting review process.

OR7-10

Please refer to response to your comment D. Past studies on the use of borrow pits and even some surface disposal has shown it can be conducted safely. Even so, we would still undertake a thorough and detailed evaluation of this option in accordance with the proposed small pit placement at Norton Basin-Jamaica Bay, to address these concerns before any category F material would be used.

OR7-11

The draft PEIS recognizes the resources in the Lower Bay (please see pages 4-29 through 4-47). It acknowledges the assignment of Essential Fish Habitat in the Lower Bay as designated by the NMFS (page 4-38). In depth review and coordination on the EFH and other resource issues will be addressed in the site-specific assessment documents for the implementation of each option. The general nature of the information provided in the draft PEIS for the DMMP reflects the stage of the planning process that the DMMP is in. Site specific assessment documents would highlight in more detail resources specific to the area where the option would be implemented and evaluate the potential impacts of the action.

OR7-12

The Risk Analysis that was performed was preliminary in nature and mainly addressed a "worst case scenario" approach for selected options with the potential to effect both humans and the natural environment. It was a planning tool to provide direction on the general sensitivity of receptors to pathways. This was in keeping with the programmatic nature of the draft PEIS. Further risk analysis, as warranted, would be performed for the project-specific NEPA documents.

OR7-13

Once again, the use of aquatic disposal sites for contaminated material represents an extremely small portion of the recommended management options to be used with this category of sediment. We feel the options do not represent a risk to the environment or human health. We have proposed a well designed and monitored series tests at small pits to confirm this and allay the fears of many.

OR7-14

This report is from the US Fish and Wildlife Service. Data on landings and worth of shellfish in New York waters will be added to the final PEIS.

OR7-15

The CZM report prepared for this document is a preliminary evaluation and was used for oversight purposes. The purpose of the evaluation was to solicit comments on the possible addition, removal or changes in policies that may have occurred regarding CZM. This would be taken into account in promulgating the CZM Consistency Determination (CD) that would be filed with the project-specific NEPA document for project-specific actions. The length of the report for each State should not be viewed as the degree of policy review or amount of effort that would be used to address the CZM requirements for each state. The individual CZM-CD will address the pertinent policies and potential impacts of the specific projects and relate the project actions to the pertinent CZM policies.

OR7-16

Section 106 coordination with regard to Zone 2 concentrated on the area designated "Zone 2" by the DMMP. The large West Bank pit is located over a mile north of that zone . Any historic resources located at such a distance from Zone 2 would not be impacted and were therefore not addressed in project documents. A remote sensing survey, including magnetometer and side-scan survey, was conducted in Zone 2 by an underwater archaeologist meeting all applicable qualifications and having experience in the maritime archaeology of the New York and New Jersey area. The survey identified two possible resources that have not, to date, been subject of any further identification. If Zone 2 is selected for any further work (and that is not part of recommended or contingency plans) under the DMMP, these potential resources would be buffered and avoided or further studies would be conducted if avoidance were not possible. Work proposed in other locations, as the DMMP project proceeds, will be preceded by relevant cultural resources surveys and coordination with the appropriate State Historic Preservation Office.

OR7-17

Sediment quality is addressed under the biota and the water quality sections since these are the affected elements related to the sediment quality. The sediments that would be dredged vary substantially in terms of contaminants they contain. Sediment quality, since it would vary from site to site, would be addressed in the individual NEPA documents for site/option specific projects. The timing of the projects, options proposed, and the reaches to be dredged would be evaluated in the site/option specific NEPA documents.

OR7-18

Dredged material has been used to create habitat for a number of years and has provided areas where wildlife has flourished. An example is the dredge disposal islands within the sounds of North Carolina where thousands of terns of several species (*Sterna spp.*) have been successfully nesting for many years. Use of dredged material in beneficial ways including creation of marshlands to offset past losses, provides an opportunity to restore habitat from a very low productivity state to a higher state. An increase in productivity is a goal to offset losses of habitat that have occurred in the last three centuries. The few Beneficial Use options recommended by DMMP all use clean dredged material to show that it can be used for practical application, with substantial monitoring included to confirm this belief. Use of contaminated dredged material for the purposes of creating new wetlands would likely involve decontamination/stabilization before placement.

OR7-19

We concur with your appraisal of the poor existing conditions of the Jamaica Bay pits and of their potential for improvement by filling. It is for this reason that we proposed the small pit project in Norton Basin using clean material to test the ability to deliver fine grained sediment with minimal or no loss to the water column, and to test the degree of compaction needed over time, to support a cap. Your categorical denial of the existence of similar degraded conditions in some Lower Bay pits however, does not fit with some of our preliminary findings in the Hoffman/Swinburne or West Banks pits. None-the-less these pits are not proposed for use at this time without the benefits of success at the pit in Norton Basin. If the pit in Jamaica Bay does not show the need for restoration, or if the restoration was not successful, no pit restoration in the Lower Bay would be considered. If, on the other hand, the pit(s) in Jamaica Bay are encouraging, then a similar set of projects starting first with confirmation on the degraded nature of the habitat and the use of clean material, might be considered. Interested parties would be kept continually informed of the progress in this matter through yearly updates of the DMMP, and site specific NEPA documents and permits for each proposed step in the process.

OR7-20

The reference to the Boston Harbor and the failure of the first cap does not reflect the adjustments made for the second cell which proved to be quite successful as per data provided by the Boston Harbor initiative. The lessons learned from the on-going work being conducted in Boston Harbor will prove to be very beneficial in designing any capping effort for pit utilization within the Port of New York. We too are concerned with the practical application of this option. That is why the first stage in the Norton Basin pit would be with clean material until placement and capping are demonstrated to be successful.

OR7-21

The use of sub-channel pits is limited to (supported by past meetings with the Staten Island workgroup) only material from the same sub-basin as the pit so that any loss of sediment would not redistribute contaminants outside areas in which they already occur. The alternative of not capping was considered in the event that channel areas were already disturbed and contain the very material that would be placed in the pit. Thus, at the end of any operation, contaminated sediments, (if present) that are now spread throughout the channels to be dredged, would be concentrated.

OR7-22

We disagree. Placement in a safely designed containment area that puts the material in a reduced chemical state ensures that the contaminants are isolated from benthic organisms that burrow into the sediment. The Norton Basin project in Jamaica Bay (and if successful, Little Bay) would follow all the safety protocols and modeling requirements now in place for the Newark Bay pit.

OR7-23

Deposition within pits places the material in areas that naturally accumulate sediments. Placement in the depths of the bay below where they would be disturbed by storms and protecting them with a suitable clean cap helps ensure that the material remains in place. Suitable limitations placed on disposal time and conditions would help ensure the material reaches its intended location. The Norton Basin Project would further help in establishing the appropriate operating conditions. Further, the appropriateness of the material used would be in accordance with the criteria set by USEPA to remediate the HARS.

OR7-24

Testing criteria and protocols are set by USEPA. The Corps will follow all the criteria and protocols in force at the time that any dredging and disposal is proposed. If these criteria are changed in the future, the new protocols would be followed in determining the acceptability of any option.

OR7-25

The recommended options in the DMMP do rely heavily on these options for non-HARS materials.

OR7-26

If the proposed project in Norton Basin, and then Little Bay (if the Norton Basin Project is successful) show that habitats can be safely restored with category F material, then this option should be actively pursued. This is because they offer an excellent opportunity to restore areas that can be demonstrated to currently have a degraded ecological value.

OR7-27

By limiting both shallow water and sub-channel pits to materials that come from the same sub-basin, as recommended by a number of environmental groups, the potential to contaminate other areas is greatly minimized. We do concur with your assessment of the potential benefit of creating and using pits in shallows providing it could be demonstrated that the shallows under consideration are degraded and could benefit in the long-term, as you suggest.

OR7-28

We concur with your concerns regarding CDF's, especially their impacts on existing habitats. These options, therefore, have been removed from the list of those options being actively considered for any type of dredged material.

OR7-29

Sediment and contaminant reduction received the highest priority in the DMMP because they address the long-term problem and benefit the estuary as well as the harbor. All sediment will be tested and used in accordance with standards that are in effect at the time they are dredged. Low level decontamination (solidification/stabilization) is re-commended for management of the vast majority of non-HARS suitable material. The exceptions are those cases where local conditions warrant and allow partial use of these sediments to safely restore degraded habitats. See also responses to comments A, B, W, X, Z.

OR7-30

See response to comments S, W, Z.

OR7-31

See response to comment C.

OR7-32

See response to comment D.

OR7-33

We do not concur. The Recommended Plan has full support of all DMMP team members and their pledge to move toward its full implementation. Selected contingency options maybe needed on a short-term project-specific basis. But the use of these options would be limited to the identified specific need, and not extended to become an option for other projects. Uncertain options are unlikely to be used, especially if the reason for that uncertainty is not adequately addressed.

OR7-34

See response to comments U and AA.

OR7-35

See response to comments S, U, AA.

OR7-36

We have no basis to concur or assume that the short-falls will grow, especially given the more recent proposals for pit and landfill demonstrations.

OR7-37

See response to comment N.

OR7-38

Appropriate use of options in the Recommended Plan or contingencies would reduce, rather than increase exposure of fish or their benthic food sources to contaminant uptake. See also response to comment M.

OR7-39

See response to comment L.

OR7-40

See response to comment E.

OR7-41

See response to comments M and U.

OR7-42

The draft USFWS Coordination Act Report is attached to the PEIS. The newly mandated requirement for coordination with NMFS on Essential Fish Habitat is included in numerous locations under special habitats of the PEIS.

OR7-43

See response to comment L.

OR7-44

The Corps does not believe the section on Environmental Justice is false or incomplete. See also responses to comments M and LL.

BWECC

"Guardians of Our Community"

"The Bensonhurst West End Community Council"

Carmine C. Santa Maria, President
2483 West 16th Street
Brooklyn, NY 11214

Tel. (718) 946-6665 Fax (718) 449-7781

November 22, 1999

Colonel William Pearce
U.S. Army Corps of Engineers
26 Federal Plaza
New York, NY 10278-0900

Dear Colonel Pearce:

I was mandated by a complete majority of the members attending our Open Community meeting tonight at IS 96 to write you and voice this community's objections to the dumping of toxins into our waters. The dredging of the shipping canals that directly affect the residents of this Borough must be done in a safe matter to all concerned. OR8-1

We strongly urge the Army Corps of Engineers to force New York State to accelerate the timetable for toxic sediment reduction through pollution prevention and enforcement. We also strongly urge the Corps to pursue beneficial re-use of decontaminated dredge spoils. OR8-2

We would appreciate the courtesy of a reply.

Sincerely,

Carmine Santa Maria

Carmine C. Santa Maria, President

REC'D TSB
USACE, NY

RESPONSE TO COMMENTS

OR8 **Bensonhurst West End Community Council**

OR8-1

The Recommended Plan in the DMMP does provide for both safe and beneficial use for all categories of dredged material. See specific responses to comments in letters OR7 and OR-12.

OR8-2

See response to comment OR7-C.

Concerned Citizens of Bensonhurst, Inc.

(718)256-6471 8616 19th Avenue Brooklyn, NY 11214 E-Mail concitofben@juno.com
"non-profit organization"

November 23, 1999

Department of the Army
NY District Corps of Engineers
Jacob K. Javitts Federal Building
New York N. Y. 10278- 0090

Attn. Colonel William Pierce:

Concerned Citizens of Bensonhurst Inc. Has received your navigational P.E.I.S. Programmatic Environmental Impact Statement with its fourty year future forecast of The NJ/NY harbor Dredged Material Management Plan. As a layperson I see the advantages and the disadvantages of this report, as we have taken the time to follow up on meetings and updates that seem to take forever with the Army Corps of Engineers. We are told many different reasons for delay. And you cause the public to doubt your intentions. We the taxpayers are always the victims of your desire to maintain your job positions and please the government with the cheapest way out.

Concerned Citizens of Bensonhurst inc. Has always been an advocate of the Technologies that were developed by U.S. E.P.A. Dr. Eric Stern Region II and Brookhaven Labs. And we attended all the preliminary testing. Why would the Army Corps of Engineers decide to draft a study excluding these technologies that provide marketable construction products, create job opportunities, keep our waters clean for wildlife to survive for those citizens that choose the sea as a source of food.. Especially! our new immigrants. Plus have less social problems for the future health of those that consume the contaminated wildlife. The publics health has to be given priority over your cheapest way out. **OR9-1**

On November 22, 1999 I attended the Citizens Advisory Committee at Kearny, NJ at 7 PM. Technologies updates and awarded contracts were presented to the public for review. IT has taken a total of five years to complete the pilot projects that we viewed three years ago at Newark NJ. I would appreciate Roberta Weisbrod to answer that question.? We should not be hear today responding to the concerns that we read in this study. Such as Category F the most contaminated sediment for the Contained Aquatic pits located near Owls head severage plant, **OR9-2** I also read that controlled blasting will be done to the depth of Fifty Feet jeopardizing our main water lines coming in from the Delaware. Wildlife will be stunned and destroyed specific species will no longer exit. I realize the economic growth to our two states the job opportunities. But not at the cost of the publics health. The technologies as they establish themselves in the next few months must be given the sediment and never again to dump any toxic sediment into our landfills or our Burro pits or oceans, lakes, and harbors. As they progress there cost per C/Y will decline. We the Concerned Citizens of Bensonhurst strongly advise other organizations, Legislators. Commissioners. to view what has been developed especially Westinghouse Plasma which has been sold to Global Plasma Systems Corp. An Innovative Waste Management Company. Which has been developed by NASA. They specialize in Hazardous waste, contaminated sediment, Garbage, Medical waste etc. and develop a marketable Architect tile equal to that on our space ship Colombia.. Europe already has this. Thank You.! **OR9-3**

Sincerely,

Adeline Michaels

Adeline Michaels Pres. C.C.B

RESPONSE TO COMMENTS

OR9 **Concerned Citizens of Bensonhurst**

OR9-1

The Corps DMMP-IR emphasizes the use of decontamination/treatment of contaminated dredged material as shown in Table 2-2, and relies heavily on these and other treatment technologies to manage the majority of material deemed unsuitable for use at the HARS. Also, the least cost plan (NED) was <u>not</u> recommended for implementation in the DMMP.

OR9-2

The DMMP is a plan for managing dredged material and not for any specific dredging project. Your concerns relating to blasting for the KVK were addressed in the EIS for that project. In summary, before blasting is undertaken, infrastructure such as water pipelines are identified and all precautions taken to ensure no harm to them. Methods used during blasting confines shock waves thus preventing or mitigating adverse effects on wildlife. Further, the rock from the channel is then used to create fishing reefs in NY and NJ at low productivity sites creating increased diversity and habitat for fish and invertebrates.

OR9-3

To the extent practicable and appropriate, these technologies are included in the DMMP. See also response to A above.

S.I. TAXPAYERS' Assc., Inc. 1933
c/o 39 Wheeling Ave.
Staten Island, N.Y. 10309
(718) 356-7070 Fax: 356-7547

November 26, 1999

Colonel William Pearce
U.S. Army Corps of Engineers
26 Federal Plaza
New York City, N.Y. 10278-0900

RE; **Programmatic Environmental Impact Statement Dredge Material Management Plan**

Dear Colonel Pearce,

This organization has been involved in cleaning up our surrounding waterways for the past 20 plus years. We are happy to report we are finally seeing improvement. However, you, our elected officials, and all of the thousands of taxpayers who have joined this vital health and quality of life issue must agree it is essential to maintain enforcement of the present environmental laws if we are to continue this successful effort.

Therefore, we virgously oppose any approval of Type F material to be dumped into the ocean or any other body of water, especially in any of our waterways! OR10-1

We urge the Army Corps of Engineers to force NY State to accelerate the timetable for toxic sediment reduction through pollution prevention and enforcement. We also urge the Corps to pursue beneficial re-use of decontaminated dredge spoils. OR10-2

We endorse the Natural Resources Protective Association; the Coalition Against Water Disposal of Contaminated Sediments, and the other many public officials and organizations in their many efforts in this regard.

Thank you for your immediate attention and are available if you have any questions. We would also request you keep us fully informed on your activities in this regard.

Sincerely,

Lorraine Sorge

Lorraine Sorge, President

S. I. TAXPAYER'S ASSOC., INC.
c/o 39 WHEELING AVENUE
STATEN ISLAND, N.Y. 10309-3024

RESPONSE TO COMMENTS

OR10 **Staten Island Tax Payers Association, Inc**

OR10-1

We note your objection, but point out that there may be a number of opportunities to beneficially address habitat issues and safely contain these sediment. See responses to OR-7.

OR10-2

New York State is working on a joint pollution track-down program with New Jersey as a necessary precursor to developing and implementing a contaminant reduction program. The Corps is assisting in this effort within our statutory limits. The DMMP pledges continued support in this effort. The DMMP includes contaminant reduction with other options in its Recommended Plan.

1984 - 1999
CLEAN OCEAN ACTION
15 Years of Ocean Advocacy

CLEAN OCEAN ACTION

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Mr. Robert J. Kurtz
PEIS Coordinator
Department of the Army
NYD Corps of Engineers
Jacob K. Javits Federal Building
New York, NY 10278-0090

December 3, 1999 Via facsimile

RE: Comments on behalf of Clean Ocean Action on the Draft Implementation Report on the September 1999 Draft Implementation Report for the Dredged Material Management Plan for the Port of New York and New Jersey, Programmatic Environmental Impact Statement and Technical Appendix (DMMP).

Clean Ocean Action has reviewed the above referenced document and submits comments in two forms. This letter provides general comments regarding the Draft DMMP. Due to the detail of comments, under separate cover, COA is submitting a marked up copy of the Draft document with a page by a page review.

Overview of DMMP

On first glance the Draft DMMP implies a more rational framework for decision-making than in earlier drafts of similar plans. The focus is now on a comprehensive approach including contaminant reduction, sediment reduction, and beneficial reuse. This is an encouraging sign. The support of upland treatment and beneficial reuse is impressive. Even the evil containment island in the bay is almost "dead in the water." According to the Corps, it is "no longer under consideration." However, this perceived progress is not supported by the plans proposed in the draft for reasons including:

General comments:

COA raises the following points of concern.

1.The plan is based on using the "current" HARS remediation material evaluation. This is completely irresponsible. The Corps is well aware of the ongoing re-evaluation and the planned implementation of a revised HARS remediation material standard. This fundamental omission, in effect, makes the entire draft fatally flawed. OR11
In addition, the HARS discussion fails to include the regulatory requirement that impacts at the HARS be reduced to acceptable levels.

2. The latest version of the DMMP provides two primary approaches for managing dredged material over the next 40 years. The first is called the Recommended Plan, the second called the Base Plan. It is unclear which plan will be implemented under what circumstances. The DMMP must clearly state conditions under which each plan (or parts of the plans) would be implemented. It appears from our review that the Corps is obligated under the EC- 1165-2-200 to implement the Base Plan rather than the Recommended Plan. A detailed discussion is required regarding these concerns. OR11-2

3. COA opposes the Base Plan.

4. COA, along with many other groups, is concerned with the lack of coordination of the Draft Plan with other major harbor and estuary initiatives. For example, the HARS remediation material and the Comprehensive Port Improvement Plan (CPIP)/EIS are not coordinated with the DMMP despite the fact that they will have tremendous impact on dredged material management. OR11-3

5. The lack of alternatives available in New York is alarming. The lack of available alternatives leads to implementation of unacceptable options. Case-in-point is the Castle Astoria Terminals, Inc. project that was proposed for Jamaica Bay and is now only proposed for the HARS. This material should be confined using treatment technologies in the region. Refer to COA letter dated October 26, 1999. OR11-4

6. COA is opposed to aquatic disposal in near-shore waters that is proposed without adequate input from natural resources agencies and communities, and where land based treatment and upland beneficial reuse options are available, even if the alternatives have higher costs. Refer to COA letter dated April 15, 1999. OR11-5

7. The plan fails to take into account the environmental and community gains (both economic and health) of upland treatment and beneficial reuse. These sustainable re-use alternatives provide a value back to the community and eliminate sources of contamination. By failing to include these financial contributions the alternatives as currently rated are skewed. Similarly, the DMMP skews the costs associated with aquatic disposal by failing to include costs for mitigation, long term monitoring, and contingency plans. OR11-6

8. The suggested hierarchy presented in the Draft plan is encouraging. Starting with pollution prevention, volume reduction and then beneficial reuse is the rational regional approach. However, as proposed, the DMMP will not achieve the actual benefits of the proposed approach. The federal agencies must do more to require states and regional agencies to implement the approach, using incentives and penalties. OR11-7

9. New remediation ocean dumpsites must be stricken from the plan. Putting aside the issue of the current outrageous application of so-called remediation standards at the HARS, it is completely inappropriate and scientifically flawed to suggest using dredged material to remediate areas that were not adversely affected by dredged material. OR11-8

10. Estimates of the extent of contamination are flawed. The DMMP repeatedly states that the levels are of toxins in sediments in the harbor are low. In light the many documents from OR11-9

NOAA, EPA, USGS, the states of NY and NJ, the numerous fish and shellfish consumption advisories, and the HARS remediation to name a few, the sediments in the harbor are highly contaminated and may be the worst in the nation. In addition, sediment quality is not assessed in the EIS.

11. There is no recognition of or planned implementation for environmental dredging. Environmental dredging of harbor hot spots would improve overall dredge material quality in the regional in the future. To exclude this option is both shortsighted and affirms COA's concerns that commitments to pollution prevention in the DMMP are a hollow goal. The Corps must seize the opportunities under environmental dredging aid in the clean-up of the harbor where appropriate. **OR11-10**

12. The concept of a DMMP Workgroup to revisit the DMMP and address the issues on an annual basis over time is important and COA would support and participate in such an effort if the following parameters applied. **OR11-11**

a) Public interest groups and natural resources agencies (including NMFS, US FW, and USGS) are equal participants.
b) The workgroup meaningful watch-dog for the Recommended Plan.
c) Treatment and beneficial reuse are deemed economically and environmentally preferred option.

In closing, while COA has long advocated for a dredged material management plan that is flexible to allow implementation of new technologies and based on the principles outlined on page 6, this plan is so vague and contradictory that it provides an unclear future for dredged material in the region. COA looks forward to working with the Corps and other partners to having a plan that sets strong framework for implementing the hierarchy outlined on page 6 in the plan, i.e. reduce pollution, reduce volume, reduce bioavailability, use dredged material in a beneficial manner, and as a last option, disposal. This is laudable framework and good for the region's port and environment.

Sincerely,

Cindy Zipf
Executive Director

Kristen Milligan, Ph. D.
Staff Scientist

RESPONSE TO COMMENTS

OR11 **Clean Ocean Action**

OR11-1

During the development of the DMMP-IR the Corps maintained coordination with USEPA, the Federal lead agency for revising the HARS suitability criteria. The USEPA recently stated that these criteria were still under review and that no changes to current standards have been enacted. Since the DMMP-IR will be updated on approximately a yearly basis, new standards can be applied when final decisions are made on any new evaluation criteria.

OR11-2

The Recommended Plan is the one which is being offered for consideration to decision makers as the best overall approach. It is based upon extensive coordination with Port partners. The Base Plan alternative is included in the report by regulation so that decision-makers can have a basis for comparison, but its use is neither required nor recommended.

OR11-3

There is extensive and on-going coordination on the plans that are currently being promulgated for the Port. The DMMP relies on existing HARS suitability criteria and projected volumes from the Port deepening project. Annual updates to the DMMP-IR will ensure continued adjustments to the Plan as conditions change.

OR11-4

As previously stated, management of dredged material is based on current testing protocols and criteria. If these are revised, the DMMP will be revised to reflect those changes. We continue to work with New York on restoration options and other beneficial uses to accommodate their management short-fall. Presently, (since the draft PEIS), New York has funded two demonstration projects to use treated and untreated dredged material to close and remediate landfills adjacent to Jamaica Bay. We are confident that other options will similarly surface as proposals are developed and reviewed.

OR11-5

The only nearshore option proposed in the Recommended Plan is the Norton Basin Pit in Jamaica Bay. This option uses only clean material for fill and monitors sediment containment, dispersal, and consolidation. This option would be undertaken only if the pre-test monitoring effort determines the pit is degraded enough to benefit from habitat restoration. If Norton Basin is safely and successfully restored, a second location would be tested with category F material. The test site would be Little Bay next to Norton Basin and contained in the same larger embayment as Norton Basin. However, at present, there are no plans to move to the next stage, pending the outcome (completion, monitoring and review) of the Norton Basin Project.

OR11-6

Except for the Newark Bay pit managed and monitored by the Port Authority, no aquatic options for category F Material is identified in the Recommended Plan as preferred (preference category 1). Aquatic disposal preference category one includes only one site, Norton Basin, and then only for the deposition of HARS suitable dredged material. The Norton Basin project includes funding for extensive monitoring. Several new pits in shallows or channels of Upper Bay/Newark Bay are identified as contingency options (preference two) and their costs also include monitoring. Mitigation would not be needed for these options since impacts are short-term, confined to the basin in which the pit is located, and the site would be returned to previous conditions (or even cleaner) when done.

OR11-7

As partners in the DMMP process, Federal agencies including the Corps, have pledged to work toward implementing the options in the Recommended Plan.

OR11-8

New ocean remediation sites are not recommended. The Recommended Plan Table 2-2 rates this option as a 5/5, that is non-preferred and no longer under consideration. A number of possible options were discussed in this document because they were technically feasible and the Corps is required to address them. Although they appear in the document that does not mean they are recommended by the Corps or its Port partners for implementation.

OR11-9

The sediments that would be dredged, vary substantially in terms of contaminants they contain. Sediment quality, since it would vary from site to site, would be addressed in the individual NEPA documents for site/option specific projects. The timing of the projects, the options available and the reaches to be dredged would be evaluated in the site specific NEPA documents.

OR11-10

The DMMP was developed to address dredged material produced by Harbor navigation improvements. Hot spot remediation is part of the sediment reduction option. This remediation would be carried out by the appropriate Federal or state agency after plans were completed and the project was permitted.

OR11-11

We appreciate your desire to work with us on annual updates. Be assured that it will be accomplished with full participation of all stakeholders. The update will strive to move toward implementing the options in the Recommended Plan, which along with environmental restoration, stresses the use of dredged material as a resource.

1 ✓

Long Island Diver's Association
58 Woodcut Drive
Mastic Beach, NY 11951

Colonel William Pearce
U.S. Army Corps of Engineers
26 Federal Plaza
New York, NY 10278-0900

RE: Programmatic Environmental Impact Statement, Dredge Materials Management Plan

Dear Colonel Pearce,

Long Island Diver's Association strongly urges the Army Corps of Engineers to force NY State to accelerate the timetable for toxic sediment reduction through pollution prevention and enforcement. LIDA also urges the Corps to pursue beneficial reuse of Decontaminated/Clean materials. **OR12-1**

Long Island Diver's Association does not support the dumping of toxic (type F) materials into *any* body of water. The toxins in this sediment are PCBs, PAH, dioxins, and heavy metals such as lead, mercury, cadmium and zinc, as well as other organic and toxic pollutants. These materials cause serious damage to the marine environment, and are hazardous to people who live, play and consume the seafood of these waters. LIDA strongly urges the Corps to remove any options to utilize "borrow pits" for the dumping of contaminated material from the Dredging Materials Management Plan. The material that is dumped into these pits will not be permanently removed, and even when capped, storms, and normal tidal movements can, and most probably will uncover this material. Therefore, the only acceptable way to remove these pollutants from the marine environment is to utilize them for Land Remediation of Landfills, Brownfields, and Mine Remediation, in other words, permanently. In addition, the open water dumping of this material would allow unacceptably high levels of pollutants to disperse into the waters of New York harbor, and then the Atlantic Ocean. **OR12-2**

As divers we have witnessed first hand the damage that this type of dumping causes. In the New York Bight there are several sites that were utilized for the dumping of dredge materials similar to what is being allowed for the "borrow pits" in lower New York harbor. Divers at these sites found no life whatsoever, and the bottom was blanketed by a material described as "black mayonnaise". Since the dumping has stopped on this site, healthy populations of winter flounder, summer flounder, tautog, ocean pout, ling, lobster, and anemones, just to name a few of the species, have begun to thrive at these sites.

LIDA supports the dredging of New York Harbor, and understands that this must be done for the continued economic growth of the region, we do not however, support the damaging of a delicate and unique ecosystem in this process. We would appreciate the courtesy of a written reply.

Sincerely,

Steve Shataka
Marine Disposal Committee
Long Island Diver's Association

Paula Jerman
President
Long Island Diver's Association

99, MJ 12 71 0 3:59
US AED NY
RECD TSS

RESPONSE TO COMMENTS

OR12 **Long Island Diver's Association**

OR12-1

As outlined in the DMMP and in response to comments from NRPA (OR-7), the two states have pledged in excess of $20 million to complete a track-down program to identify sources of contaminant input as a necessary first step toward implementing a control program. The program will take some time to put into place after the key sources have been identified and still more time before reductions are achieved. For planning purposes and to help ensure adequate capacity for dredging needs, we assumed that benefits would occur only in the long-term. To the extent that the benefits can be accelerated, the parties have agreed to work toward that end.

OR12-2

As stated in the previous responses, there are no aquatic options for category F material in the DMMP's Recommended Plan. The Plan relies heavily on treatment and land remediation, as you recommend. New pit use in the Upper Bay and Newark Bay are contingency options for specific (not general) project needs. It is our belief that these can be implemented with minimal adverse impacts. The only existing pit use is with HARS suitable material at Norton Basin. This project would evaluate the potential to restore degraded habitat conditions in that pit. See also detailed responses to NRDA (OR-7) comments A, B, M, S, T, U, V, W, Z, AA.

Aileen Scalice
1150 Bay Ridge Pkwy.
Brooklyn, NY 11228

Robert J. Kurtz
Dept. of the Army
New York District Corps of Engineers
Jacob K. Javits Federal Bldg.
New York, NY 10278-0090

Dear Mr. Kurtz:

I received a copy of the Dredged Material Management Plan for the Port of New York and New Jersey. I am in support of the **3.4.2 Environmentally Preferred Plan**. You can't put a dollar amount on our health and safety. I am a cancer survivor who grew up on Staten Island and know too well the importance of good health. All the money in the world can't save you if you get a terminal illness. Thank God I am still here but I may not be that lucky the next time. Please support any plan that is environmentally safe for humans as well as fish and wildlife.

I am an avid environmentalist and wasn't too happy receiving such a waste of paper as I could never read such an extensive report. I am a teacher full time and do not have the time to do so. How many trees did the Army have to cut down to make copies of this report? Please do not send me such reports in the future. Please send them over the web. My e-mail address is **Albean@aol.com.** You may respond to this letter and send future reports by e-mail to this address.

Thank you for your attention in this matter.

[redacted]

Sincerely,

Aileen Scalice

Aileen Scalice

November 19 1999

Matt Madden
24 Lake Drive
Colts Neck NJ
07722

Dear Colenel William Pierce,

Hello, my name is Matt Madden and I am a senior at Red Bank Catholic High School. In my marine science class, Cindy Zipf came into our class to speak to us about the status of the mud dump off of Sandy Hook.

I understand that a sediment cap will be placed over the site if it is passed. The material being used is approved by the EPA, but it is still very toxic. This material is very fine in consistency, and it is my opinion that it will not function nearly as well as a sand cap. This toxic material posses a disastrous affect to the marine enviroment and businesses that rely on this enviroment, ie. commercial fishing, recreational activities, and Tourism in the New Jersey coastal areas.

I am aware that if a document is signed by yourself, this material which is hazardous to many, rather, all organisms will be used as a cap for the mud dump. I implore you to refuse to sign this document. These toxins will only worsen the condition offshore the New Jersey coast.

I feel that it is our duty as citizens, and inhabitants of our planet, to preserve it at any and all costs. The future of many generations is in your hands, as this dump if approved will set a new, lower standard of quality in our waters. I thank you for taking the time to read my letter, and for making the right decision concerning this matter.

Sincerly,
Matt Madden

WRITTEN COMMENT FORM

Public Information Meeting for the
Draft Programmatic Environmental Impact Statement for the Dredged Material Management Plan for the Port of New York and New Jersey

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Mr. Robert J. Kurtz, PEIS Coordinator
New York District, Corps of Engineers
Planning Division
26 Federal Plaza, 21st Floor
New York, NY 10278-0090
(212) 264-2230

NAME: ANNA MARCHINI

ADDRESS: 94-10th Street
Staten Island NY 10306

PHONE: 718.667.5028

AFFILIATION: N/A
(if any)

COMMENTS

(continue on back of this form or append additional pages as needed)

Please see attached

ANNA MARCHINI
94 10TH ST
STATEN ISLAND NY 10306-2949

SIGNATURE: [signature]

I oppose any aquatic disposal of dredged materials. The dredge spoils are contaminated with toxic substances such as dioxins and PCBs. The only suitable disposal is upland disposal after decontamination.

The waters surrounding New York City have bounced back after many years of pollution and lax control. To agitate and relocated toxic sludge from one area in the bay to another is completely unacceptable and careless. Not only will it harm the aquatic ecosytem it will directly affect the human population surronding the waters.

Once again, I rieterate my opposition to **any** aquatic disposal of dredge spoils in the New York Harbor.

Anna Marchini

November 23,1999

C4

Anthony V. Somma
8 [illegible] Avenue
Staten Island N.Y 10306

FILE

Colonel William Pearce
Army Corps of Engineers
26 Federal Plaza
New York, New York 10017

Colonel Pierce,

After reading the draft Implementation Report, the draft Programmatic Environmental Impact Statement and the Technical Appendix of the Dredged Material Management Plan for the Port of New York and New Jersey, I have no option but to oppose dredging as outlined and oppose the subsequent disposal of the dredged materials back into the water because the documents failed to address the following significant issues:

First - During the dredging process up to 20 percent of the material removed from a channel bed will leak out of the dredge and scow reintroducing toxic contaminants into the water significantly increasing pollution levels currently found in area waters. The documents fail to address (1) what areas would be affected, (2) what the impact would be on marine life such as fish, clams, crabs, lobster, etc. (3) the dollar impact on the United States Seafood Industry when toxin levels in fish caught in the New York Bight increases, (4) the health impact on area residents who consume area marine life, (4)the dollar impact on area sportfishing, boating and water related commercial establishments, and (5) the reduced taxes States and Cities will collect from impacted food and recreational industries. C4-1

Second - Sufficient information supporting the necessity to dredge to 50 feet was not presented. If these huge tankers and cargo vessels can not fit under existing bridges, it will not be necessary to dredge to 50 feet. Today's vessels which couldn't have drafts much in excess of 30 feet just about clear area bridges. A vessel with a 50 foot draft will be higher above the water line then vessels currently using our harbors. After a vessel unloads it gets higher. Will the new super vessels fit under our bridges and if not how many bridges will have to be demolished to accommodate them? Where will the funding come from, and how will our taxes be impacted? C4-2

Third - Once the dredged materials are safely removed from the water, reintroducing toxic material back into the water will be a disaster. The toxins are in the fine silt which will become suspended for as long as six months as the materials are reintroduced into the water. Even after they settle currents, tides and storms will continue to spread them far and wide. The toxins once reintroduced into the food chain will endanger us and our children for generations to come and have a devastating negative impact on the sea food, boating and recreational fishing industries. . C4-3

As a tax payer and voter who enjoys eating toxin free healthy food, boating, swimming and fishing, I would like to see a safer, cleaner method of dredging employed to deepen the channels. Then once removed from the water, I would like to see the dredged material decontaminated and beneficially employed to remediate landfills, old industrial sights, abandoned mines and abandoned quarries.

Very truly yours,

Anthony V. Somma

Anthony V. Somma

RESPONSE TO COMMENTS

C4 Anthony V. Somma

C4-1

There is a very small loss of dredged material during the dredging, transportation, and placement. There are various procedures that can be applied to further reduce the losses even further. The loss that would be incurred would be dependent upon the equipment used, characteristics of the sediment, and the conditions at the aquatic placement suite. For material placed upland, control measures such as storm water basins would be employed to prevent sediment loss. Tests of various operations have shown that even under the worst case of fine-grained material that is placed in a fast flowing riverine environment, the loss is less than 5%.

Several factors should be taken into consideration regarding the significance of any loss of dredged material. First, there will be some loss from the dredge bucket and barge during the dredging, but the vast majority of this material will settle into the immediate vicinity of the dredging operation. Second, although a small amount of material, and any associated contaminants, will disperse from the dredging site, dredging will remove very large quantities of sediments and contaminants from the environment. This removal will reduce/eliminate continued exposure of aquatic life to contaminants and potentially future dispersion to the aquatic environment, because the dredged material will be processes or placed in a secure location. The very small loss associated with dredging and handling is more than offset by the very large reduction of contaminants left exposed to the environment by failure to dredge.

C4-2

Bridge clearance was taken into account as part of the design of the project.

C4-3

Based upon the recommended plan, material would only be placed into selected contaminant sites designed and located to avoid the concerns you raise.

Harold Langer
560 Morley Ct
Belford NJ 07718-1136

Nov. 1999

We, the undersigned, want to make our position clear in reference to the Dredged Material Management Plan (DMMP) for the Port of New York and New Jersey.

We are opposed to any plan that will include upland disposal at any sites in the Belford section of Middletown Township. We are opposed to any disposal of dredged mud in pits, the bay, ocean or the site off Sandy Hook, called the Historic Area Remediation Site.

We support the use of technology to treat this dredged material and make it safe for environmentally sound, land based alternatives.

Name	Address
Fred Gerlach	89 3rd Ave Atlantic Highlands NJ.
Eugene Wojcik	13 Ocean Blv Atlantic Highland NJ
Joseph Harrison	184 Parkview Dr. Lincroft, N.J. 07738
[illegible]	1 Beacon Ct. Holmdel, N.J. 07722
[illegible]	124 Division St. Atl. Highlands NJ 07716
[illegible]	5 L [illegible] Dr. Middletown N.J. 07748
[illegible]	[illegible] Middletown NJ 07748
L. J. Landoli	814 Kings Ct. Middletown N.J. 07748
John Malyn	15 Pearl St Middletown NJ 07748
[illegible] Malyn	113 Marvin Rd Middletown NJ 07748
Theresa Malyn	113 Marvin Rd Middletown NJ 07748
Thomas [illegible]	469 East Rd Belford NJ 07718
[illegible] M. [illegible]	479 East Rd Belford NJ
Harold Langer	560 Morley Ct Belford, NJ 07718
Cheryl Clampffer	46 Brainard ave Pt Mon NJ 07758
Mr & Mrs Richard Laguna	312 Monmouth Ave Leonardo NJ 0773
Jennifer Konrad	9 Revere Ave Leonardo NJ, 07737
Jan Armstrong	417 Bayview Union Beach NJ 07735
Stephanie [illegible]	74 Wesley Ave Atl. Highlands 07716
[illegible]	20 [illegible] Ter Middletown 0774[illegible]
Mary Cole	3 Schelly Drive Middletown, NJ 07748
Nancy [illegible]	162 Church St. Belford NJ 07718

Nov. 1999

We, the undersigned, want to make our position clear in reference to the Dredged Material Management Plan (DMMP) for the Port of New York and New Jersey.

We are opposed to any plan that will include upland disposal at any sites in the Belford section of Middletown Township. We are opposed to any disposal of dredged mud in pits, the bay, ocean or the site off Sandy Hook, called the Historic Area Remediation Site.

We support the use of technology to treat this dredged material and make it safe for environmentally sound, land based alternatives.

Name	Address
Naomi Langer	560 Morley Ct. Belford, NJ 077
Gloria Langer	560 Morley Ct Belford NJ 07718
[illegible]	221 Forest Ave Middletown NJ 077
Mary [illegible]	47 Jane St Belford NJ 07718
Kim McCuske	66 Main St Belford
Karen Byrne	79 8th St Belford NJ 07718
William Anastasi	223 Lakeside Dr Atl. Highlands, NJ
Kyle & Michael Robbins	604 DANIEL ST, NEW MONMOUTH NJ 07748
Christopher L. [illegible]	808 MAIN ST BELFORD, NJ 07718
Barbara [illegible]	555 Morley Ct Belford N.J. 07718
Larry [illegible]	19 Summit Ave Atlantic Highlands NJ 0771
Anne Smith	Atl. Highls. 07716
[illegible]	62 Ocean Ave Middletown 07748
[illegible]	250 Church St Belford 07718
Mary Esser	189 Hwy 36 MIDDLETOWN, 07748
GARY BUELL	189 Hwy 36 MIDDLETOWN, 07748
Dorothy [illegible]	849 Main St. Belford NJ 07718
[illegible] C [illegible]	I-9 Twin Lts Ct. Highlands NJ 07732
Karen [illegible]	702 Campbell Ave Port Monmouth NJ 077
Marifrances Buln	14 Crestview Dr. Middletown NJ 07748
[illegible]	560 Morley Ct. Belford NJ 07718

November 1999

To the Army Corps of Engineers:

We, the undersigned, want to make our position clear in reference to the Dredged Material Management Plan (DMMP) for the Port of New York and New Jersey.

We are opposed to any plan that will include upland disposal in the Belford section, or any other area of Middletown Township. We are opposed to disposal of dredged mud in pits, the bay, the ocean or the site off Sandy Hook - the Historic Area Remediation Site (HARS).

We support the use of technology to treat this dredged material and make it safe for environmentally sound, land based alternatives.

Name	Address
[illegible]	6 Marvin Rd Middletown NJ
Vincent J Heller	610 Turner Dr Belford NJ 0771
Cecilia May	2 Oakdale Ct #514 Middletown 07748
Helen Vogt	74 Third St. Belford NJ 07718
Bruce H Beaman	159 Wilson Ave. Port Monmouth NJ 07758
Tracy Heller	48 Wallace St Apt 3 Red Bank, NJ 07701
Dolores Heller	610 Turner Dr Belford 07718

Dominic Traina
67 Cedar Grove Ave.
Staten Island, NY 10306-5707

WRITTEN COMMENT FORM

Public Information Meeting for the
Draft Programmatic Environmental Impact Statement for the Dredged Material Management Plan for the Port of New York and New Jersey

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Mr. Robert J. Kurtz, PEIS Coordinator
New York District, Corps of Engineers
Planning Division
26 Federal Plaza, 21st Floor
New York, NY 10278-0090
(212) 264-2230

NAME: DOMINIC TRAINA

ADDRESS: 67 CEDAR GROVE AVE
S.I NY 10306 (NEW DORP BEACH)

PHONE: 718-979-6797

AFFILIATION:
(if any)

COMMENTS

(continue on back of this form or append additional pages as needed)

DON'T BE PENNY WISE + POUND FOOLISH! DON'T TAKE THE CHANCE OF CONTAMINATING OUR WATERS + BEACHES BY TAKING THE CHEAP WAY OUT. PROTECT OUR ENVIRONMENT + DISPOSE OF THE DREDGED MATERIAL USING THE MOST EFFECTIVE SITE AVAILABLE THAT WILL PROTECT OUR FUTURE AND OUR CHILDREN'S FUTURE. UTILIZE UPLAND OPTIONS

SIGNATURE: Dominic J Traina

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Mr. Robert J. Kurtz, PEIS Coordinator
New York District, Corps of Engineers
Planning Division
26 Federal Plaza, 21st Floor
New York, NY 10278-0090
(212) 264-2230

NAME: Ira Drogin

ADDRESS: 1337 E. 23 St, Brooklyn NY. 11210

PHONE:

AFFILIATION:
(if any)

COMMENTS

(continue on back of this form or append additional pages as needed)

I object to any borrow pit dumping. The dredging alone will pollute the waters, but has to be done. The dredged material should be sent to the mines in Pennsylvania

SIGNATURE: I. Drogin

Drogin
1337 E. 23rd St.
Brooklyn, NY 11210-5112

WRITTEN COMMENT FORM

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Mr. Robert J. Kurtz, PEIS Coordinator
New York District, Corps of Engineers
Planning Division
26 Federal Plaza, 21st Floor
New York, NY 10278-0090
(212) 264-2230

NAME: Richard Ciaravino

ADDRESS: 47 Center Place
New Dorp Beach
Staten Island,

PHONE: New York 10306

AFFILIATION: None
(if any)

COMMENTS

(continue on back of this form or append additional pages as needed)

What to do with Toxic Pollution That is slowly Killing us day by day. Now you want to put Toxic Chemicals in our waters That will come ashore and pollute our beaches Kill The fish and who Knows What Else. Were are all The scientist That Know what to do To save us from all This Toxic poison. They should Know instead of lies there must be a better way.

SIGNATURE: Richard Ciaravino

WRITTEN COMMENT FORM

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Mr. Robert J. Kurtz, PEIS Coordinator
New York District, Corps of Engineers
Planning Division
26 Federal Plaza, 21st Floor
New York, NY 10278-0090
(212) 264-2230

NAME: Dorothy A. Ciaravino

ADDRESS: 40 Center Place
Staten Island, N.Y. 10306

PHONE: 718-980-3346

AFFILIATION: None
(if any)

COMMENTS

(continue on back of this form or append additional pages as needed)

With All The pollution Around Staten Island it is not Necessary To Add More by Polluting it more with Toxi Chemicals To The waters That surround us. Their must be other Alternatives To This matter, of Toxic

SIGNATURE: Chemical Pollution

It is bad enough That we have The garbage dump with its foul odors, The cancer causing chemicals coming from New Jersey And Now you Are adding more Toxic Pollution. It must be stopped Now. We will not have any fun in the summer because we will be AfRAid To go To The beaches To swim, NoT EVERyone is lucky enough to have a pool, And A gReAT MAny people like The SALT WATER better Than pools. To This MATTER You must find Another solution To This MATTER before its To LATE for everyone

Dorothy A. Ciaravino

Please RESEARCH This Toxic poison more.

Thank you

ALFRED L. LAMA, IFA

NEW YORK STATE CERTIFIED RESIDENTIAL APPRAISER #45000009723

33 BARTLETT PLACE • BROOKLYN, N.Y. 11229 • (718) 368-3223 • Fax: (718) 368-3225

Mr. Robert J. Kurtz, PEIS Coordinator
New York District, Corps of Engineers Planning Division
26 Federal Plaza, 21st Floor
New York, NY 10278-0090

33 Bartlett Pl
Bklyn NY 11229

November 27, 1999

Re: Comments on the DMMP

Dear Mr. Kurtz:

On November 23rd I attended the bearing at Kingsboro College and then spoke with Mr. Bryce Wisemiller the following day. Both occasions afforded me new insights into the complicated problem of disposing of and maximizing the utility of the dredged materials. I have learned that most issues in life are not cut and dried; and certainly the dredge material management problem is highly complex. Each "solution" has its share of drawbacks. Rather than focus on the negatives, I would like to offer my support for what appear to be the best alternatives within the plan.

My first recommendation is that the greatest effort be given to utilizing the Dredged Materials for Land Remediation of landfills, quarries and mines. I will contact my local and state government officials and encourage them to overcome any difficulties with the current DEC regulatory guidelines for solid waste transfer. Based upon feedback from those in attendance at the hearing as well as members of the Army Corp, this appears to be the safest and most beneficial utilization of the dredge materials.

Perhaps the strongest point brought out by the environmental groups that spoke at the hearing is that there appears to be a discrepancy as to what constitutes "clean" dredged material. The criteria for what is truly clean and therefore safe for habitat restoration must be universally agreed to and clearly defined. Provisions for testing by independent laboratories must be allowed at random, unannounced intervals with the understanding that use of any "unclean" material will stop immediately in the event of a bad test result. I support the use of clean materials, under these guidelines only, for use for restoration of the borrow pit in Norton Basin, NY and remediation at the HARS.

Additionally, I support the disposal of dredged materials in the already constructed Newark Bay CDF site.

I oppose, however, the use of any materials for fish reef creation, saltmarsh creation, or oyster, shellfish and shorebird habitat creation. Aside from the potential problem of determining wbat is "clean" material as referenced above, each of these proposals has the potential for an adverse affect on the chosen site. These restoration/revitalization projects involve significant changes that could alter tidal flows, current direction and speed and thereby damage the area instead of improving it. No one needs to remind the Corp of the debacle caused by the Seagate jetty. Suffice it to say that my confidence in the Corps ability to successfully integrate one of these man made ecosystems into the existing environment is sorely lacking. I would encourage the Army Corp to focus on the three options above and work with the politicians and environmental groups to formulate a plan that will satisfactory insure the safest disposal and use of the dredged materials.

I look forward to continued participation in the development of the final DMMP. I am confident that if we continue to work together we will create a workable plan that will satisfy everyone.

Sincerely,

Alfred L. Lama

WRITTEN COMMENT FORM

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Mr. Robert J. Kurtz, PEIS Coordinator
New York District, Corps of Engineers
Planning Division
26 Federal Plaza, 21st Floor
New York, NY 10278-0090
(212) 264-2230

Mr. William Fink
162 St. Johns Pl.
Brooklyn, NY 11217-3402

NAME: WILLIAM FINK

ADDRESS: 162 ST. JOHNS PL.
BROOKLYN, NY 11217

PHONE: 718-638-1163

AFFILIATION (if any): BATTERY PARK CITY PARKS CONSERVANCY

COMMENTS

(continue on back of this form or append additional pages as needed)

PLEASE SEE BACK.

SIGNATURE: William Fink

For the past nine years, I have been the Marine Educaton Coordinator for Battery Park City Parks Conservancy. We offer teachers and their students an opportunity to learn about the history, geography and ecology of the Hudson River estuary and also give the students a chance to catch, and release, a fish in Upper New York Bay. Last year over 800 students from all five boroughs took part in our free program. Our program is located next to the old fireboat house, in Wagner Park.

An average class of thirty kids will catch between 40-75 fish in a three hour period. We have caught over thirty different species of fish including stripers, blackfish, seabass, porgies, flounder, weakfish, fluke and every now and then an exotic like a crevalle jack and a permit.

But as recently as twenty-five years ago, Upper New York Bay was a dead body of water. There were no crabs, snails, fish, worms--nothing! This was due to pollution, chemical discharges from factories, raw sewage going directly into the Hudson, and other reasons.

Due to public awareness and strict laws the Hudson River has made a miraculous comeback and I consider it one of Americas' most important environmental success stories. But we must not undo everything we have gained by dumping dredged material in, or near, Upper New York Bay. We have a responsibility to future generations of kids to give them a clean and pure Hudson. I urge the Army Corps of Engineers to devise a plan that will not ruin a spectacular marine habitat. All of us have worked very hard over the years to reclaim the Hudson. We will not stand idly by and permit you to turn back the clock.

WRITTEN COMMENT FORM

Public Information Meeting for the
Draft Programmatic Environmental Impact Statement for the Dredged Material Management Plan for the Port of New York and New Jersey

Please provide your written comments on the scope of work for the Draft Programmatic Environmental Impact Statement below. Your comments will be used to finalize the topics and subjects included in the evaluation of potential impacts from the Dredged Material Management Plan. This form can be copied and used by multiple individuals, or a letter containing your comments can be substituted. **Comments will be accepted through December 3, 1999,** and should be addressed to:

Mr. Robert J. Kurtz, PEIS Coordinator
New York District, Corps of Engineers
Planning Division
26 Federal Plaza, 21st Floor
New York, NY 10278-0090
(212) 264-2230

Mrs William Bugenis
36 Stryker St
Brooklyn NY 11223-5223

BROOKLYN NY 11256
PM
30 NOV
1999

NAME: Rosemarie Bugenis

ADDRESS: 36 Stryker St
Brooklyn, NY 11223

PHONE: 718-645-7826

AFFILIATION: (if any) concerned resident of Bklyn
concerned mother

COMMENTS

(continue on back of this form or append additional pages as needed)

I agree that it is necessary to dredge the channels; however, the dredge spoils must NOT be placed back into the ocean in borrow pits. The posters at the 12/3 meeting were not assuring

SIGNATURE: Rosemarie Bugenis

(over)

James R. Koenig
102 Brainand Avenue
Port Monmouth, NJ 07758
732-495-2426

December 3, 1999

Mr. Robert J. Kurtz, PEIS Coordinator
New York District, Corps of Engineers
Planning Division
26 Federal Plaza, 21st Floor
New York, NY 10278-0090

Dear Mr. Kurtz:

First I thank you for the NEPA. This at least gives us an opportunity to see what is happening. The dredging, though it may be necessary, is going to be harmful in many ways. I am opposed to a sludge island off the coast of New York and New Jersey. Both states will have bad problems as it is instated. There are many boaters and small fishing boats that will not have use of the bay for many years as the dredging begins.

The sea life in the area has just become as plentiful as it has been in twenty years. Please let it grow without the Island Dump.

There have been some great parts of the DMMP that I have noticed which include: Remediation of landfills, brownfields and mine remediation. Ocean Remediation is not a suitable option. The possible scientific benefits from the ocean biology is still one of the untapped resources in the world today. Do not pollutionize this vast resource. Beach Nourishment is not a possible benefit for the shore life unless it was a plan to protect the human population from sea level rising and even that would have minimal benefit at best.

Installing rock material, would have adverse affects by losing all of the present habitat. This is not the way to enjoy life.

The dredging is for business, big business. They have been trying to pollute the shoreline for years. The best thing to happen is the Wetlands Act of 1974 and the Natural Environmental Protection Agency. I know we can't stop business from coming to our shores. However, there is no, I repeat NO reason to dredge fifty feet when the absolute deepest boat transporting goods will only need forty feet in the channels that we now have.

Quite frankly, I don't care if they make a larger boat that carries more goods to make them more profits in less trips. If profits are the only benefits to dredging along with jobs at least lets make the extra trips equal additional jobs by keeping the channel at the current depth for the current size of boats.

Don't lose the jobs by losing the fish and wildlife because you need to dredge deeper and deeper.

NO SLUDGE ISLAND.

Consider the Life,

James R. Koenig

Mildred C. Koenig

Dear Sir/Madam

Recently I have read in Newspaper there is a big problem to clean water in the Bays around Staten Island, Brooklyn from poison lees.

The same problem we had in Ukraine on the Atomic Power Station.

I have some propositions how to solve this problem easier.

If You are interested in my proposition, please, answer me.

If need I willingly can provide more information, I can show You some drafts and explain my Idea.

I thank You for your consideration.

I don't ask from You any obligations.

I look forward hearing from You.

I ask forgivnes for my bad English.

Thank You.

Sincerely

Boris Konstantinovskiy

My address:

Boris Konstantinovskiy

2850 Ocean Ave, Apt. A 2

Brooklyn, NY 11235

Tel: (718)615-1090

SCSI Microsoft Novell. SCO ACE

To:
Dr. Raimo Liias
Main
26 Federal Plaza
New York,NY,10278

Dear Dr.Liias,

As a concerned home owner I would like to state my displeasure with the way this DMMP is being handled. I feel that our concerns (the coastal residents) are falling on deaf ears. Why is there no spending going on to create a real disposal plan for the material that is considered Type F? There has been an allocation of funds of considerable size to find a non aquatic solution for this material and none of it has been spent to do so. One would think that you as the lead individual on this project would like to use this sizeable budget to find this type of solution so that you could look like a hero. I am in business in a technology driven industry. The computer industry as such is one dictated by budgets and constraints. I know full well that if a budget is not spent by the time allotted to spend it that it is lost. So I ask you sir as a thinking individual what do you have to gain by this inaction?

I do not have the time in my day to fight this project first hand. I am 36yrs old and have a business to run. I live in a coastal community and enjoy its beauty and some of its leisure. I ask you the same question I asked one of the head engineers for the DEP, then put yourself in our positions; Would you want this material in your backyard??? Do you or would you want your children or grandchildren playing in the water anywhere near where you placed this material? There is no way to make this material inert right? So how can you say that you are going to cap these burrow pits in a timely enough fashion as to not have substantial loss of material? Then along the same line of discussion you can talk of the moneys that it would take to transport materials to the project BARK location. How about the BILLIONS that the Fed has spent to clean this particular waterway.

Sir, I am just a regular guy. I implore you look yourself in the mirror and ask the questions. Am I doing the right thing? Ask yourself if you would allow your children/grandchildren to play in this environment? Would I eat anything that has come out of these waters once this material was placed in it?

These are peoples lives that you are dealing with here Sir, not metric tons of material that need to be moved. If this ocean has proven anything to you at all it should be that it is unpredictable. This dance of material shifting is just bad science and it cannot work because there is no constant here. We both know for a method to be proven there needs to be at least one constant.

I hope that this letter finds you and your family well in this holiday season. I truly wish you and your family the very best in the coming year and I hope that you can find your way to doing what is the right thing for both the people and the environment. Finally remember this, your kids lives are dependent on your solution here just as much as mine.

Very truly yours,

Andrew Waxman

Kurtz, Robert J NAN02

From: Alex Tiethof [atiethof@atvantagecorp.com]
Sent: Friday, December 03, 1999 8:56 AM
To: robert.j.kurtz@usace.army.mil
Subject: DEIS Dump plan

Mr. Robert J. Kurtz
NY District, Corp of Engineers
Planning Division
26 Federal Plaza, 21st Floor
New York, NY 10278-0090
December 2nd, 1999

RE: DEIS DMMP
Comment

Dear Mr. Kurtz,

After thorough reading of the DEIS for the Dredge Material Management Plan for the Port of New York and New Jersey (DMMP) I have come to the conclusion that a few of the options in it are not viable options for the health and well being of the people, and the marine ecosystem of Lower New York Harbor, Jamaica Bay, and the New York Bight region of the Atlantic ocean. I am therefor requesting that certain options be removed from consideration as recipient areas for category F dredge spoils from this project. Any disposal of this material into the existing subaqueous pits and/or the future use of such pits as a contingency option and/or new pits for site specific must not be an option in the Final Environmental Impact Statement.

Raritan Bay/Lower New Harbor sits at the doorstep to the Hudson River estuary system, home to the second largest spawning stock of Striped Bass (Morone saxatilis) on the Atlantic Coast. Millions of striped bass pass thru the Verrazano Narrows twice a year, entering the Hudson River's freshwater system to winter in the fall months, then once again in the spring of the year as they head back into saltwater after spawning in the early spring.

Other species that frequent the area are Shad, Atlantic Herring, Spot, Tautog (Blackfish), Atlantic Sturgeon (an endangered species), Bluefish, Mackerel,
Flounder, Fluke, Menhaden (Bunker), Porgy, Tommy Cod, Weakfish, Whitefish, Cod, Ling, Skate, and a variety of Shark. Lobster, Blue claw crab, Stone crab, clam, oyster, and a host of other marine species are found in Raritan Bay/Lower NY Bay.

Offshore are species of Pelagic Shark, Tuna, Marlin, Swordfish, etc. Pelagic means "wide roaming" so these species are just passing thru the area.

Striped Bass, Bluefish, Winter Flounder, Fluke, Blackfish, Weakfish (Sea
Trout), Porgies, Whiting, and Ling, Cod and Crab.......... Raritan Bay/Lower
NY Harbor is one of the most productive areas of the North Atlantic. A bight is a general term for a bend or curve in the shoreline of an open coast. In
the New York region it refers to the great expanse of shallow ocean between Long Island (to the North and east) and the New Jersey Coast (to the South
and west). Because Long Island trends generally east to west in relation to
mainland of New Jersey it creates a great right angle in the general geometry
of the Atlantic coastline. The Hudson River's outer harbor and the Raritan

Bay/Lower NY Bay constitute only a fraction of the greater New York Bight region.

As you can see the area is an essential habitat for multiple species of
marine finfish and crustacean. The options listed in the DEIS for the disposal of type F (Category III) materials into this habitat will create the
possibility that the PCB's, heavy metals, arsenic's and other toxic materials
in the sediments excavated from the dredging of Newark Bay, NJ will find its
way into the fat tissue of the marine species of the Bight and the pelagic
species passing thru the area on migratory runs. Some of these species being
protected by International Treaties such as the ICCAT Agreement. The fact
that this material are too contaminated for ocean disposal give credence to
the assumption that they are also too dangerous to be disposed of in prime
fishery habitat.

New York State, and the States of Connecticut, Rhode Island and Maine are being confronted with the largest kill of marine crustacean in the recorded
history of Long Island Sound. An unidentified (December 1999) parasite or
bacteria has killed what is estimated at up to 90% of the crustaceans in the
Sound. Under investigation during the writing of this DEIS Comment is the
dredging project conducted by the city of Mamaroneck, NY and the area of
placement of the dredge spoils from this project. This area is where the
kill-off began, and moved westward thru the Sound from there, causing loss of income to thousands of fishermen in this most important fishery in the States of New York and Connecticut. The total loss in dollars will be in the
hundreds of millions of dollars before this crisis is identified and remedied.

There are viable options in the DEIS that are quite good options and should
take priority over all options of aquatic disposal and having the possibility
of having these toxic materials enter the food chain and causing irreparable
damage to the peoples of the United States of America and the peoples of
foreign countries that local seafood is exported to. The most positive option
is the shipping of this material to the abandoned coal mines of central and
western Pennsylvania where this material is a welcome solution to acidic
water entering the aquifer of this state, another potential use of this same
material by the state of Pennsylvania is the use of the dredge spoils as a
fire block to help bring fires that have been burning underground for past 30
years under control. The decontamination of this material should also be an
option high on the list of the Final EIS.

In the past 40 years the research into the beneficial uses of petrochemicals
and heavy metals for the use in consumer products in the area of

Newark Bay that is to be dredged has been allowed to flourish almost unregulated. The most inexpensive way to dispose of industrial waste from these chemical
corporations has been direct pipelines into Newark Bay, a practice that still
exist today with Federal Pollution Permits and/or SPEDES Permits. Some of the existing toxins in this dredge spoil are known carcinogens. These chemicals MUST be treated and decontaminated before any other option other then the Pennsylvania options are utilized by the Corps in the disposal of these dredged materials. The health of the people living in the areas of disposal relies on your final treatment of this material.

I would at this time like to thank you for consideration of my comments in
the Final EIS. I would also respectfully ask you to heed my warning on the
environmental catastrophe that might be the outcome of the disposal of this
material into the waters of the New York Bight should they be released in to
the inter-tidal waters of Lower New York Bay/Raritan Bay and/or, Jamaica Bay untreated and/or uncontaminated.

Sincerely,

Mr. Kerry Sullivan

Peggy Bowen, Director pegdiver@surfnj.net
New Jersey Council of Diving Clubs
http://www.ScubaNJ.org
council - PO Box 585, Manasquan, NJ 08736
Mail to home - 558 Trenton Ave, Oakhurst, NJ 07755
home - (732) 531-9668

Kurtz, Robert J NAN02

From: Ravmotd@aol.com
Sent: Friday, December 03, 1999 10:22 AM
To: robert.j.. 'rtz@usace.army.mil
Subject: DEIS DN

Dear Mr. Kurtz,

After thorough reading of the DEIS for the Dredge Material Management Plan for the Port of New York and New Jersey (DMMP) I have come to the conclusion that a few of the options in it are not viable options for the health and well being of the people, and the marine ecosystem of Lower New York Harbor, Jamaica Bay, and the New York Bight region of the Atlantic ocean. I am therefor requesting that certain options be removed from consideration as recipient areas for category F dredge spoils from this project. Any disposal of this material into the existing subaqueous pits and/or the future use of such pits as a contingency option and/or new pits for site specific must not be an option in the Final Environmental Impact Statement.

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Other species that frequent the area are Shad, Atlantic Herring, Spot, Tautog (Blackfish), Atlantic Sturgeon (an endangered species), Bluefish, Mackerel,
Flounder, Fluke, Menhaden (Bunker), Porgy, Tommy Cod, Weakfish, Whitefish, Cod, Ling, Skate, and a variety of Shark. Lobster, Blue claw crab, Stone crab, clam, oyster, and a host of other marine species are found in Raritan Bay/Lower NY Bay.

Offshore are species of Pelagic Shark, Tuna, Marlin, Swordfish, etc. Pelagic means "wide roaming" so these species are just passing thru the area.

Striped Bass, Bluefish, Winter Flounder, Fluke, Blackfish, Weakfish (Sea
Trout), Porgies, Whiting, and Ling, Cod and Crab.......... Raritan Bay/Lower
NY Harbor is one of the most productive areas of the North Atlantic. A bight is a general term for a bend or curve in the shoreline of an open coast. In
the New York region it refers to the great expanse of shallow ocean between Long Island (to the North and east) and the New Jersey Coast (to the South
and west). Because Long Island trends generally east to west in relation to
mainland of New Jersey it creates a great right angle in the general geometry
of the Atlantic coastline. The Hudson River's outer harbor and the Raritan
Bay/Lower NY Bay constitute only a fraction of the greater New York Bight region.

As you can see the area is an essential habitat for multiple species of
marine finfish and crustacean. The options listed in the DEIS for the disposal of type F (Category III) materials into this habitat will create the
possibility that the PCB's, heavy metals, arsenic's and other toxic

materials in the sediments excavated from the dredging of Newark Bay, NJ will find its way into the fat tissue of the marine species of the Bight and the pelagic species passing thru the area on migratory runs. Some of these species being protected by International Treaties such as the ICCAT Agreement. The fact that this material are too contaminated for ocean disposal give credence to the assumption that they are also too dangerous to be disposed of in prime fishery habitat.

New York State, and the States of Connecticut, Rhode Island and Maine are being confronted with the largest kill of marine crustacean in the recorded history of Long Island Sound. An unidentified (December 1999) parasite or bacteria has killed what is estimated at up to 90% of the crustaceans in the Sound. Under investigation during the writing of this DEIS Comment is the dredging project conducted by the city of Mamaroneck, NY and the area of placement of the dredge spoils from this project. This area is where the kill-off began, and moved westward thru the Sound from there, causing loss of income to thousands of fishermen in this most important fishery in the States of New York and Connecticut. The total loss in dollars will be in the hundreds of millions of dollars before this crisis is identified and remedied.

There are viable options in the DEIS that are quite good options and should take priority over all options of aquatic disposal and having the possibility of having these toxic materials enter the food chain and causing irreparable damage to the peoples of the United States of America and the peoples of foreign countries that local seafood is exported to. The most positive option is the shipping of this material to the abandoned coal mines of central and western Pennsylvania where this material is a welcome solution to acidic water entering the aquifer of this state, another potential use of this same material by the state of Pennsylvania is the use of the dredge spoils as a fire block to help bring fires that have been burning underground for past 30 years under control. The decontamination of this material should also be an option high on the list of the Final EIS.

In the past 40 years the research into the beneficial uses of petrochemicals and heavy metals for the use in consumer products in the area of Newark Bay that is to be dredged has been allowed to flourish almost unregulated. The most inexpensive way to dispose of industrial waste from these chemical corporations has been direct pipelines into Newark Bay, a practice that still exist today with Federal Pollution Permits and/or SPEDES Permits. Some of the existing toxins in this dredge spoil are known carcinogens. These chemicals MUST be treated and decontaminated before any other option other then the Pennsylvania options are utilized by the Corps in the disposal of these dredged materials. The health of the people living in the areas of disposal relies on your final treatment of this material.

I would at this time like to thank you for consideration of my comments in
the Final EIS. I would also respectfully ask you to heed my warning on the
environmental catastrophe that might be the outcome of the disposal of this
material into the waters of the New York Bight should they be released in to
the inter-tidal waters of Lower New York Bay/Raritan Bay and/or, Jamaica Bay untreated and/or uncontaminated.

Sincerely,

Mr. Ronald Vaccaro

Kurtz, Robert J NAN02

From: Malizia@nan26.nan.usace.army.mil
Sent: Friday, December 03, 1999 2:17 PM
To: DMMP-EIS
Subject: SITC DMMP Comments

Mr. Robert J. Kurtz
NY District, Corp of Engineers
Planning Division
26 Federal Plaza, 21st Floor
New York, NY 10278-0090

December 3nd, 1999
RE: DEIS DMMP Comment

Dear Mr. Kurtz,

As a fishing organization and involved in the water environment and conservation of the fishery, The Staten Isand Tuna Club, definitely is against any dumping of contaminated/toxic dredge materials in the aquatic environment.

We have been involved in this process for many years supporting the Lou Figurelli and the NRPA on this subject of where to put the Dredge Materials from NY/NJ channels.

We support decontamination, upland disposal (PA mines) and capping of landfills, pollution prevention and enforcement of the above.

This is not only a New York Harbor problem rather a national problem affecting all ports.

We have natural disasters like Hurricane Floyd that has left a dead zone from North Carolina to Florida that is from the shore to one mile out t sea.

We don't need any help from man to cause the same type of problem.

Let's take the water disposal options out of the DMMP.

Let's listen to Staten Island's elected representatives that have stated and demanded the same proposal.

Let's listen to the Civic groups from South Brooklyn and the NJ Bayshore and Staten Island communities take the water disposal options out of the DMMP.

Sincerely,
John Malizia
Environmental Director
Staten Island Tuna Club

referer -> http://www.nan.usace.army.mil/business/prjlinks/dmmp/contacts.htm

Kurtz, Robert J NAN02

From: John Malizia [jmalizia@lsa.net]
Sent: Friday, December 03, 1999 2:01 PM
To: DMMP-EIS

Mr. Robert J. Kurtz
NY District, Corp of Engineers
Planning Division
26 Federal Plaza, 21st Floor
New York, NY 10278-0090

December 2nd, 1999

RE: DEIS DMMP
Comment

Dear Mr. Kurtz,

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I would at this time like to thank you for consideration of my comments in the Final EIS. I would also respectfully ask you to heed my warning on the environmental catastrophe that might be the outcome of the disposal of this material into the waters of the New York Bight should they be released in to the inter-tidal waters of Lower New York Bay/Raritan Bay and/or, Jamaica Bay untreated and/or uncontaminated.

Sincerely,
John Malizia
Rear Commodore Staten Island Yacht Club

referer -> http://www.nan.usace.army.mil/business/prjlinks/dmmp/contacts.htm

Mrs William Bugenis
36 Stryker St
Brooklyn NY 11223-5223

BROOKLYN, NY 11256
PM
30 NOV
1999

11/27/99

Rosemarie Bugenis
36 Stryker St
Brooklyn, NY 11223

Col. William Pearce
Army Corps of Engineers
26 Federal Plaza
NY, NY 10278

Dear Col. Pearce,

I attended the meeting on 12/3/99 about the Dredge Material Management Plan, and I agree that it is necessary to make the channel to New York's harbor deeper.

However, I find it disturbing that putting the dredge spoils into borrow pits is even an option. The information on the posters at the meeting was not assuring: the spoils can still be ingested by sea life; and there is still possibility of it being disturbed and dispersed.

It is important that we spend the necessary amount of money to take care of this problem

(over)

in an environmentally sound way so that this problem will not haunt us or our posterity.

Rosemarie Bugenis

The Bike Shop of Staten Island, Inc.
4026 Hylan Boulevard
Staten Island, New York 10308
(718) 948-5080

Nov. 23, 1999

Col. William Pearce,

Please be advised that I am 100% against the disposal of dredge materials of any kind into Staten Island waters. Upland disposal is the only sane option.

Michael A [illegible]

Subject: Comments on the Corps' Dredged Material Management Plan (DMMP) and dPEIS for the Ports of New York and New Jersey

Eugene W. Geer
558 Beers Street
Hazlet, NJ 07730
30 November 1999

Mr. Robert J. Kurtz
Department of the Army
US Army Corps of Engineers
Jacob J. Javits Federal Building
New York, NY 10278-0090

Dear Mr. Kurtz:

I have read the DMMP (dated September 1999) and attended the meeting you held on this subject 16 November 1999 in Hazlet, NJ. I would like to offer some comments on the DMMP and the dPEIS.

My background is that of a SCUBA diver who has been active off the coast of New Jersey, operating out of Manasquan Inlet, since 1969. I have been strongly involved in ocean dumping issues, and have been a leader in such areas as reporting on low dissolved oxygen incidents, in training divers to report environmental conditions they encounter, and providing testimony in other hearings regarding ocean dumping.

<u>General comments</u> include the following:

1. I believe that the plan, as currently proposed, will not meet the stated objectives of protecting the marine environment. This includes the health of aquatic creatures themselves, those people who consume seafood obtained in this environment, and those that swim in, or otherwise immerse themselves in the environment.
2. The plan contains much pro-environment rhetoric, but there are too many loopholes in it to expect achievement of that end.
3. This plan appears to be "one sided," in New York's favor. New Jersey has taken steps to develop methods to treat "toxic" dredged materials so they can be disposed-of beneficially on land to remediate existing conditions. New York, however, seems to be taking an approach of doing nothing that will alter the condition of the mud. Yet, they expect that they will be allowed to dump this material in New Jersey's waters. The State of New York has had ample funds on hand (I believe the figure is greater than 45 million dollars) to begin development of alternatives to ocean dumping of contaminated mud. This is a grossly unfair situation, but it looks like the direction in which we will go if nothing is done to handle New York's mud more responsibly. C22-1
4. Material used for "remediation" of a polluted site should be orders of magnitude cleaner than the material that already exists at the site. I don't see this principle developed clearly enough in the DMMP and dPEIS (e.g., with respect to HARS). The

documents will not be satisfactory until this is accomplished. It seems that we will be dumping polluted mud on top of only slightly more polluted mud. (Except that in the Castle Astoria case, which was the subject of another recent hearing, it looks like the newly dumped mud will be "dirtier" than the capped material). **C22-2** **C22-3**

5. The proposed mud to be dumped will contain much material that has a specific gravity close to that of seawater (e.g., see page 11, first sentence of Section 2), and will thus be subject to substantial movement out of the dumping area. At the Hazlet meeting, I heard estimates as high as 20% for this type of material. Therefore, this "fluff," and its contaminants, will not "cap" the existing, verifiably contaminated material, but rather will drift off to who-knows-where with the currents. **C22-4**
6. If ocean dumping of dirty mud is continued, New Jersey will retain its "soiled" image, economically damaging many interests that could thrive with a clean ocean environment. Thus, New Jersey will suffer the penalties while New York sits on its hands and does little or nothing.
7. Cost is always a consideration, and the principle of "the polluter pays" appears to be a sound one. Therefore, I suggest that the Port Authority (or whoever else has the right to do this) sue the General Electric Company along the same lines as the state of New York has done. Referring to an article published in the New York Times on November15, 1999, the New York State Attorney General, in suing GE, wrote: "With this initiative, we intend to bring an end to more than a quarter century of delay in addressing PCB contamination of the Hudson River." The concern has to do with the inability to dredge waterways because they are so badly polluted by GE's actions, and this has caused a severe economic burden on several interests. This is also a concern in the Bight area, where the cost of handling contaminated dredge material is inflated because of pollutants that, at least in part, have been created in GE's manufacturing processes. You should go after GE, and make them pay the full amount that will be added to the dredging bill because of their arrogant misdeeds.
8. It is clear that the ocean waters and its marine life in the New York Bight are already heavily "stressed," and continued mud dumping will add still more stress via lower sunlight penetration and toxic bioaccumulation. For example, as reported in the Asbury Park Press on October 20, 1999, we are still seeing almost yearly incidents of low dissolved oxygen (DO), with SCUBA divers reporting dead and dying marine life (e.g., ocean pout and scallops) in late September and early October. In areas about 60 to 90 feet deep off Belmar, Manasquan and Bay Head, DO levels as low as 2.3 parts per million and 2.7 ppm at specific sites were measured. Additional stress is also caused by the heavy load of plastics in the Bight waters that kills whales, turtles, mola molas, etc. **C22-5**

<u>Specific comments</u> I have on the plan include:

1. Page 3, Section 1.3, last paragraph: It is noted there that perhaps three quarters of the maintenance material might be unsuitable for HARS.

    - Comment: If that is so, than we don't have much of a plan when only one player (i.e., New Jersey) is willing to do something about cleaning up the material.

Also, on page 35, second last paragraph, a statement is made regarding each state (NY or NJ) not relying on each other's options for material disposal. If any NY mud goes to HARS that principle will be violated.

2. Page 9, Section 1.6, second paragraph: A comment is made that "There exists a genuine commitment in the region to support and fund efforts to reduce contaminant inputs --- and treat what is already contaminated":

   - Comment: This is not true. New York is doing nothing in this regard. The entire plan fails on just this statement alone. C22-6

3. Page 25, Section 2.5 re CAD facilities:

   - Comment: Creating new CADs appears to be an environmentally destructive activity, since there are few, if any, areas in the New York Bight that are not aquatically productive. Creating CADs destroys fertile areas to "remediate" perhaps much smaller areas;

   - Also, some existing subaqueous pits are "defined" to be degraded, but my understanding is that this claim does not have general agreement among all interests (e.g., environmental scientists, sportsmen that fish or otherwise use these sites on a regular basis); C22-7 C22-8 C22-9

   - The idea of using CADs as repositories for dredged material should be abandoned;

   - Perhaps the idea of using sub-channel placement (as noted on page 26) might have some merit because actively dredged channels will have low aquatic productivity anyhow, and the deeply dug material might truly be of "beach sand" quality. It could then be used as a HARS cap. However, filling the deepened channels with other dredged material could lead to pluming of the low-density mud.

4. Page 29 regarding Island CDFs:

   - Comment: Please remove any mention of this alternative in future releases of the DMMP; except possibly to put it into a category labeled as "previously proposed but was found totally without merit. Period." C22-10

5. Page 30, second paragraph: It is stated: "---designation of a new long-term ocean placement site may be necessary."

   - Comment: Ocean dumping is against the law. How can we forget that? How can it even be mentioned that dumping in a new spot should be considered? There are no unproductive areas in the ocean where dumping of dredged mud is "suitable." C22-11

This concept (of designating new site(s)) should be grouped with CDFs, and not brought up again.

6. Page 30, Contract Disposal (also, last paragraph on page 37):

- Comment: This concept is ill defined and is likely to (or, more accurately, WILL) lead to mischief by the contractors. Where are these "permitted sites of the contractor's choosing"? If these sites are in the New York Bight, or adjacent Atlantic Ocean, they are illegal by definition. If the sites are on land, what protection of the public can be assured? It appears that the dredged material will be given over to the care to the contractor, and the Army Corps, New York, New Jersey, the Port Authority, etc. will say: "Don't tell us what you will do with this stuff; we don't want to know. Otherwise, we will be as guilty as you when it is proved in the future that the material caused real harm to somebody." C22-12

Thank you for consideration of these comments.

Sincerely,

Eugene W. Geer
558 Beers Street
Hazlet, NJ 07730
Phone: 732-264-3129
Fax: 732-203-0165
Email: pansegene@monmouth.com

RESPONSE TO COMMENTS

C22 **Eugene W. Geer**

C22-1

To work, the plan will require the full cooperation of all parties. These parties have and continue to be committed to seeing the Plan to fruition. You have correctly identified the efforts taken by New Jersey to address the dredging issues, where the majority of the dredging is needed. New York too, has taken an active role, initiating the use of HARS and non-HARS suitable material to close landfills and potentially restore degraded pits in dead-end basins, e.g., Jamaica Bay.

C22-2

The material that had been placed at the Mud Dumps (now the HARS), prior to September 1997 was shown through testing to be toxic to aquatic life and/or to have the potential for biomagnification through the food web. The material that would be used in the remediation at HARS must be shown to be non-toxic and must not have biomagnification potential. thus, while some of the remediation material may contain various contaminants at low levels, it will improve conditions at HARS by isolating material that is known to have contaminants or safety isolate them from the environment.

C22-3

The purpose of the DMMP is implement plan to safely manage dredged material, not determine how to classify it. The EPA, in cooperation with the Corps determines the appropriate use of materials. The DMMP uses those criteria to determine how best to manage each type of material.

C22-4

There continues to be a misunderstanding regarding the loss of dredged material during placement, such as remediation of the HARS. Soft mud forms a cohesive mass while being transported in the scow to the placement site. When the dredged material is released from the bottom of the scow the material falls to the bottom as a mass, with only a small loss of material to the water column. This has been demonstrated repeatedly at operations nationwide, where loss rates under worse case scenarios (active river flow) never reached 5%.

C22-5

With regard to the loss of sunlight penetration, please see comment C22-D directly above about the cohesiveness of the material.

With regard to toxic bioaccumulation, please see comment C22-B above regarding biomagnification.

C22-6

There is an ongoing bistate program (trackdown program) to locate upland sources of pollution which are contributing contaminants to Harbor waters and its tributaries. this major has received a strong commitment from both states and is considered an essential element of the DMMP.

C22-7

The use of CAD's for dredged material placement is characterized in the Implementation Report and PEIS as a contingency (fallback) option, not a primary management option. New pits in the Lower Bay are either no longer under consideration (Zone 1), or would require extensive evaluation and design (Zone 2) before they would be proposed for implementation, and then only if other options were not available.

With regard to the use of existing pits, the Implementation Report and PEWIS clearly state that existing pits would only be subject to restoration only after undergoing testing to establish the current status of the habitat and are not included among the potential sites.

With regard to the subchannel cells, the existing Newark Bay Confined Disposal Facility has been functioning as predicted with no loss of material during placement operations. The pit is in shallow water and thus has an existing confined structure. Cells in subchannel areas would require placement through water column. Because dredged material does not disperse in significant quantities during open water placement operations, placement into cells in a channel can be expected to result in a small loss of dredged material and any associated contaminants into the same water body from which the material was initially removed.

C22-8

Please see response C22-A on the previous page. Also please note that the HARS site is not within the New Jersey State waters.

C22-9

Please see response C22-A previous page.

C22-10

The Corps is required to identify all alternatives (options) that have engineering economic and environmental feasibility. Upon identification they may be actively pursued or may not be considered for implementation. Note that the Recommended Plan does not contain CDFs.

C22-11

Please note that ocean dumping per se is not against the law. The Ocean Dumping Act of 1972, creates a regulatory function. Section 1412 addresses the ocean dumping permit program, which is administered by the US Environmental Protection Agency. Subsection 1412(b)(3) specifically addresses permitting for dredged material placement.

C22-12

If implemented with sufficient controls and oversight, the concerns you raise could be successfully addressed on a case-by-case basis. However, it is not a suitable long-term remedy for the Port and, as such, is not included in the Recommended Plan.

Kurtz, Robert J NAN02

From: Cherbub@aol.com
Sent: Friday, December 03, 1999 8:27 PM
To: robert.j.kurtz@usace.army.mil
Subject: Letter in by 12/3/99 - DEIS Dump plan

Dear Mr. Kurtz,

After thorough reading of the DEIS for the Dredge Material Management Plan for the Port of New York and New Jersey (DMMP) I have come to the conclusion that a few of the options in it are not viable options for the health and well being of the people, and the marine ecosystem of Lower New York Harbor, Jamaica Bay, and the New York Bight region of the Atlantic ocean. I am therefor requesting that certain options be removed from consideration as recipient areas for category F dredge spoils from this project. Any disposal of this material into the existing subaqueous pits and/or the future use of such pits as a contingency option and/or new pits for site specific must not be an option in the Final Environmental Impact Statement.

Raritan Bay/Lower New Harbor sits at the doorstep to the Hudson River estuary system, home to the second largest spawning stock of Striped Bass (Morone saxatilis) on the Atlantic Coast. Millions of striped bass pass thru the Verrazano Narrows twice a year, entering the Hudson River's freshwater system to winter in the fall months, then once again in the spring of the year as they head back into saltwater after spawning in the early spring.

Other species that frequent the area are Shad, Atlantic Herring, Spot, Tautog (Blackfish), Atlantic Sturgeon (an endangered species), Bluefish, Mackerel,
Flounder, Fluke, Menhaden (Bunker), Porgy, Tommy Cod, Weakfish, Whitefish, Cod, Ling, Skate, and a variety of Shark. Lobster, Blue claw crab, Stone crab, clam, oyster, and a host of other marine species are found in Raritan Bay/Lower NY Bay.

Offshore are species of Pelagic Shark, Tuna, Marlin, Swordfish, etc. Pelagic means "wide roaming" so these species are just passing thru the area.

Striped Bass, Bluefish, Winter Flounder, Fluke, Blackfish, Weakfish (Sea
Trout), Porgies, Whiting, and Ling, Cod and Crab.......... Raritan Bay/Lower
NY Harbor is one of the most productive areas of the North Atlantic. A bight is a general term for a bend or curve in the shoreline of an open coast. In
the New York region it refers to the great expanse of shallow ocean between Long Island (to the North and east) and the New Jersey Coast (to the South
and west). Because Long Island trends generally east to west in relation to
mainland of New Jersey it creates a great right angle in the general geometry
of the Atlantic coastline. The Hudson River's outer harbor and the Raritan
Bay/Lower NY Bay constitute only a fraction of the greater New York Bight region.

As you can see the area is an essential habitat for multiple species of
marine finfish and crustacean. The options listed in the DEIS for the disposal of type F (Category III) materials into this habitat will create the
possibility that the PCB's, heavy metals, arsenic's and other toxic

materials
in the sediments excavated from the dredging of Newark Bay, NJ will find its
way into the fat tissue of the marine species of the Bight and the pelagic
species passing thru the area on migratory runs. Some of these species being
protected by International Treaties such as the ICCAT Agreement. The fact
that this material are too contaminated for ocean disposal give credence to
the assumption that they are also too dangerous to be disposed of in prime
fishery habitat.

New York State, and the States of Connecticut, Rhode Island and Maine are being confronted with the largest kill of marine crustacean in the recorded
history of Long Island Sound. An unidentified (December 1999) parasite or
bacteria has killed what is estimated at up to 90% of the crustaceans in the
Sound. Under investigation during the writing of this DEIS Comment is the
dredging project conducted by the city of Mamaroneck, NY and the area of
placement of the dredge spoils from this project. This area is where the
kill-off began, and moved westward thru the Sound from there, causing loss of income to thousands of fishermen in this most important fishery in the States of New York and Connecticut. The total loss in dollars will be in the
hundreds of millions of dollars before this crisis is identified and remedied.

There are viable options in the DEIS that are quite good options and should
take priority over all options of aquatic disposal and having the possibility
of having these toxic materials enter the food chain and causing irreparable
damage to the peoples of the United States of America and the peoples of
foreign countries that local seafood is exported to. The most positive option
is the shipping of this material to the abandoned coal mines of central and
western Pennsylvania where this material is a welcome solution to acidic
water entering the aquifer of this state, another potential use of this same
material by the state of Pennsylvania is the use of the dredge spoils as a
fire block to help bring fires that have been burning underground for past 30
years under control. The decontamination of this material should also be an
option high on the list of the Final EIS.

In the past 40 years the research into the beneficial uses of petrochemicals
and heavy metals for the use in consumer products in the area of Newark Bay that is to be dredged has been allowed to flourish almost unregulated. The most inexpensive way to dispose of industrial waste from these chemical
corporations has been direct pipelines into Newark Bay, a practice that still
exist today with Federal Pollution Permits and/or SPEDES Permits. Some of the existing toxins in this dredge spoil are known carcinogens. These chemicals MUST be treated and decontaminated before any other option other then the Pennsylvania options are utilized by the Corps

in the disposal of these dredged materials. The health of the people
living in the areas of disposal relies on your final treatment of this
material.
I don,t understand why people in your position insist on dumping in the
ocean. There are 51 states most of which don,t have an ocean maybe you and
people like you should go to West Virginia or Ohio Nebraska or Missiisppi
and take leasons on how to get ride of waist The states that have steel
mills build mountains and roads with the waist Look somewhere else to put
the waist not the ocean
I would at this time like to thank you for consideration of my
comments in
the Final EIS. I would also respectfully ask you to heed my warning on
the
environmental catastrophe that might be the outcome of the disposal of
this
material into the waters of the New York Bight should they be released
in to
the inter-tidal waters of Lower New York Bay/Raritan Bay and/or,
Jamaica Bay untreated and/or uncontaminated.

Sincerely,
Anthony Cianci
162 Lake ave
Manasquan NJ 08736

u I oppose storing toxic & Detoxic mater-
ial at the bottom of the Bklyn & Jersey
coastline on the ~~oceans~~ ocean floors.
You should get rid of them by the
channels & burn them up or use
agents to ~~lower~~ lower their radioactivity
Yours truly
Lee Gelfand

ST. JOHN'S CHURCH

(EPISCOPAL / ANGLICAN)

FOUNDED 1706

61 BROAD STREET, ELIZABETH, NEW JERSEY 07201-2205

PHONE & FAX (908) 352-1218

THE REV. JOSEPH R. PARRISH, JR.
RECTOR

COMMENTS ON THE PROGRAMMATIC DRAFT ENVIRONMENTAL IMPACT STATEMENT OF THE DREDGED MATERIAL MANAGEMENT PLAN DOCUMENTS PREPARED BY ARMY CORPS OF ENGINEERS

Colonel William H. Pearce
U.S. Army Corps of Engineers
26 Federal Plaza
New York NY 10278
November 30, 1999

Dear Colonel Pearce,

Following are our comments on the Draft Environmental Impact Statement of the Dredged Material Management Plan Documents prepared by the Army Corps of Engineers.

We are especially concerned about dredge and dump issues, particularly in view of recent publications from the State University of New York at Oswego and in the current Army Corps of Engineer plan for such possible placement of dredge spoils upland. The Louisiana State University and Waterways Experiment Station have confirmed that as concerns volatile contaminants that "Flux rates are typically highest during initial sediment placement (up to 1-2 days)", per the ACOE Dredged Material Management Plan for the Port of New York and New Jersey, Draft of September 1999, Page 5-28. These findings agree in kind with the results of the SUNY group which found in laboratory tests that 75 percent of PCBs in sediments are released within 8 hours of the drying of PCBs contaminated sediments. As sediments are naturally dechlorinated in underwater sediments, lower chlorinated PCBs are formed that are much more volatile than the PCBs of the original material released into waterways. We pointed this out in meetings with the EPA and ACOE, and the dredge spoil dumping onto Kearny, NJ, was stopped. Others need to be warned about these dangerous upland disposal schemes. No studies showing addition of concrete reduces these emissions have been done.

Sincerely,

Joseph R. Parrish, Jr.

(The Rev.) Joseph R. Parrish, Jr.
Rector, St. John's Church
and 300 East 56th Street, New York, NY 10022
NJ/NY Environmental Watch

Printed on recycled paper which has no chlorine rebleaching

November 30th, 1999

Colonel William Pearce
U.S. Army Corps of Engineers
26 Federal Plaza
New York, N.Y. 10278-0900

Dear Colonel Pearce:

This communication is directed to your attention in order to afford us the personal opportunity of expressing our horrific outrage relative to "The Army Corps. of Engineers" current (DMMP) Dredged Material Management Plan Project). As concerned residents, and property owners, of shore-front cooperative apartments situated in the Brighton Beach area of Brooklyn, N.Y., listed below for your perusal, and kind consideration, are multiple issues of enormous concerns, which to-date deliberately remain unaddressed by "The Army Corps. of Engineers".

1) Environmental Issues: Recently "The Army Corps of Engineers" implemented a project which promoted the additional pollution of our environment, and the enormous devaluation of Brooklyn's "Seagate shore- front private community". The Beach Reclaimation Project when completed created a rip tide which eroded the last two bays in Coney Island. As a result of that misguided endeavor, public lavatories became unaccessible due to the several block long twenty foot height portion of new beach. The last two bays of West 37th Street are environmentally unhealthy relative to the constant barage of "garbage" which now graces the shore line. As a direct result we have permanently lost our legal access to publically enjoy our freedom to swim in that specific area. Furthermore, this unsightly condition has devaluated property values in the private shore-front community of Seagate, and thus, in addition has created additional security problems for that specifc area relative to the above aforementioned project.

2) Toxic Materials: When the earth was created it was "loaned" to all mankind as a gift to enjoy freely and responsibly. It was not given with the intention of "deliberate environmental destruction". Our surrounding areas of Manhattan Beach, Brighton Beach and "World Famous Coney Island" have always attracted millions of visitors each year. The main attraction , of course, is the enjoyment of our beaches and ocean. People swim in our ocean through out the year. The Polar Bear Club enjoys that freedom along with many other bathers year round. Our shore- front areas attract many individuals from all walks of life. Revenue is generated relative to bathing, fishing, restaurants, and all other business related ventures. Area restaurants and shops have employed thousands of taxpayers, along with the employment of lifeguards, including but not limited to the additional personnel which oversee the smooth opeation of our Coney Island Amusement Park. The younger generation employed through out our shore- front areas rely on their income towards their college educational endeavors.

All other age groups rely on their income in order to realize their God given rights and dreams. The right to publically utilize and enjoy our beaches and oceans without the threats of health hazards, toxic waste, environmental decay and contaminated pollution of our marine echo system. Taking the above aforementioned issues under dire consideration, and advisement, we vehemently oppose any, and all proposals relative to the water disposal of contaminated sediments into pits in Jamaica Bay and in addition, in to the lower N.Y. Bay areas, as this horrific proposal will destroy our community. We are in agreement that there is a definitive requirement to improve and expand our waterways relative to "monetary progress and future domestic/international commerce." But we are not willing to sacrifice our health, public beaches, and property values in order to have this goal attained. The utilization of dredged materials as remediation for the HARS should most definitivly be postponed until all controversy relative to the antiquated EPA testing standards for sediments have once and for all been resolved. We are of the opinion that the utilization of pits for disposal, and/or storage of contaminated material dumping is not remediation, nor restoration. The rearrangement and relocation of moving contaminated materials from one underwater area to another certainly does not consititute any terminology relative to the "cleaning up" of toxic materials. In laymans terms Colonel Pearce, placing all rhetoric aside, this action is under proposal because it is much more "cost effective" (cheaper and easier) to literally dump toxic dredge spoils in to the sea, than to pursue other viable avenues and options. We are extremely concerned about the environmental conditions of the ocean we swim in, and equally concerned relative to the fish we consume as shore-front residents. .These issues pose paramount health concerns (food for thought), which require immediate government/public/private considerations and advisement.

We are of the unanimous opinion that the only "responsible and environmentally sensible" proposal would be to benefically re-use the dredged spoils. It is our understanding that the spoils can be compounded with other materials which can be utilized to stop acid leakage relative to Brooklyn' s Pennsylvania Avenue (Fountain Avenue) land fills. Another environmentally sound proposal would be the mass production of building material relative to glass products.

Colonel Pearce, there seems to be a massive consensus from past history, and present attitudes that "The Army. Corps. of Engineers" are of the opinion that our water ways, oceans, and beaches are their own private domain to do with as they please. We are of the opinion that irresponsibility in conjunction with monetary gain does not condone, justify nor constitute the right of any embodiment of the government, personal or private sectors to willfully promote current and future health hazards, endanger our marine echo environment, devaluate our shore front properties, nor destroy our surrounding communities relative to any unforseen and unexpected accidents. Our communities do not wish to be placed in a situation of playing "russian roulette" with the lives and health of our children and their children's children. We pray that our shore- front communities, and others alike both present , and future, will not suffer a disaster of biblical proportions as direct result stemming from "attitudes" reflective of irresponsibility, indifference and monetary greed. We are all in agreement that improvements and technologies must be implemented relative to "progress", and that the mutually responsible actions performed today, will ultimately become "the new millenium(s)" deciding factors, regarding the environment, marine echosystem, and our numerous health concerns. Yes Colonel Pearce, we all agree technological advancements must prevail, but at what price? What will the future cost be of ill fated irresponsible ventures? Is unsound, unsafe technology and relative cost effectiveness more valuable than our children and their decendants? Isn't the preservation of our beautiful planet Earth more precious than monetary greed? We most certainly think it is, and as such, "should be respected, cherished and preserved for all future generations".

On 11/23/99 I attended the public meeting hosted by The U.S.Army Corps. of Engineers at Kingsboro Community College relative to the "Dredged Material Management Plan (DMMP)". Colonel Pearce, I was literally appalled to be publically advised by some of our elected officials that the "U.S. Army Corps. of Engineers" once again, deliberately negated to notify them of the upcoming public event. Furthermore, Colonel Pearce, when other concerned individuals notified our elected officials, our officials directly contacted the "U.S. Army Corps. of Engineers" via telecommunications, requesting documentation and information regarding the meeting relative to the DMMP. They were promised documentation via fax, but never received any written correspondence from "The U.S. Army Corps. of Engineers". Please note Colonel Pearce, some of our elected officials additionally stated that this unfortunate deceptive practice was also exhibited during previous shore-front projects. Needless to say, and I'm sure you are in complete agreement, that this sort of deceptive practice must cease to prevail. Deceptive practices only compound the issues reinforcing community suspicion and distrust.

In summation Colonel Pearce, having taken all the aforementioned issues to heart, we as public taxpayers/property owners and residents of our shore-front community strongly voice our objections at this time to the current proposal and implementation, of the DMMP project. Additionally we request that immediate attention, advisement and implementation be thoroughly given to the complete utilization of environmentally safer options, as outlined within this communication. We wish to conserve and safeguard all of our shore-front communities for all present, and future generations. As we are all members of society, and the human race, we hope that it is also your intention to fully investigate and take under advisement a completely responsible, and environmentally safer solution, other than the one that is being currently proposed by your respective organization. Since additional aforementioned viable safer options have been addressed at the Kingsboro Community College DMMP hearing, they should be strongly considered. Colonel Pearce this precious planet earth was "loaned to mankind". No one, with affiliations to government/ personal/ private sectors have the right, (legal or otherwise) to willfully promote any proposals which may result in the destruction of mankind's environment, with the direct intent of contaminating,our most precious gift from God, "Our Planet Earth" and thus, willfully endangering the future of all mankind.

Respectfully,

Eva Tsoukalas

Eva Tsoukalas

Bessie Velonis

Bessie Velonis

Harold Weisshart

Harold Weisshart

Ilene Woloz

Ilene Woloz

cc: Congressman Jerrold Nadler
Congressman Anthony Weiner
Govenor George Pataki
Senator Charles Schumer
Senator Daniel Moynihan

PL

The Hon. Rudy Giuliani
Office Of the Mayor
City Hall
New York, NY 10007

Dear Mayor Giuliani:

We/I reside in College Point, Queens...a community whose unique feature...has always been it's waterfront, bristling with marinas, boat yards and vibrant businesses. Today, we still have the waterfront we've always cherished , but the vibrancy and the successful shorefront businesses once experienced , has withered...due to low water. What does remain, is the spirit among our town's citizens , who enjoyed our waterfront in it's hey-day and applaud the efforts of today's generation to revitalize it today.

We/I seek you help in finding a solution to the dredging and dredged material disposal needs of College Point, which is a matter of grave importance to it's waterfont community. We/I respecfully request that New York City consider supporting the College Point Community's request for aid in resolving it's dredging and dredged material disposal problem. It is our/my understanding that New York City Department of Environmental Protection is a project sponsor for the United States Corps of Engineers Study, Flushing Bay and Creek, Ecosystem Restoration Project. Unfortunately, this study fails to address the sedimentation issues the College Point Community is facing.

Without your intervention, College Point will continue to suffer the deterioration of it's waterfront facilities, which leads to loss of jobs and economic activity. Presently, the high cost of testing dredged material and the extremely high cost for dredged material disposal makes it impossible for small businesses and marinas to continue to function. College Point is faced with serious environmental and navigation safety issues that require the attention and support from our city's government.

Thank you for your consideration of this important matter.

Respectfully yours,

[signature] 121-26 6th AVE CPt
address

[signature] BENNET

cc: Congressman Joseph Crowley Mr. Seth Kaye, NYCEDC
Col. Pearce, USACOE

61-7

Dear Colonel,

I and my family vigorously protest the dumping activities off Sandy Hook and urge your cooperation in our efforts to preserve our precious natural resources by stopping this practice. The Clean Water Act points us toward a better process.

Sincerely
Elizabeth M. Kosich

Elizabeth McTamney Kosich
3 East Bergen Ave
Harvey Cedars NJ 08008-5710

TL

Larrell R. Brown
9501 Long Beach Blvd.
Peahala Park NJ 08008
Dec. 26, 1999

Col H William Pierce
New York Districts Engineers
Army Core of Engineers
26 Federal Plaza
New York, NY 10278-0090

Dear Col Pierce,

I am writing to you to express my outrage at the recent dredged dumping activities that took place off Sandy Hook. Not only did this assault on to our environment occur - it was done without notification to US Senators and Representatives. It goes without saying that the environmental groups and concerned citizens were also left in the dark. C30-1

Recently the public has let it be know in no uncertain terms that it did not want this dumping to take place in any way shape or from. There have been letter writing campaigns and petitions signed by thousands yet these were all ignored. Well take heed, the citizens of New Jersey are outraged, we will continue to protest to you and to our government. At a time when our ocean is seeing a return to healthy clean waters this could not have come at a worse time - it represents a terrible step back in the WRONG direction!! . The folks that have fought so hard to reclaim our ocean to the unpolluted state it should be have worked to long and hard to take this lying down. I suggest you consider disposing of this waste in another more efficient way even if that means spending more money. Our ocean is not the garbage bin of the East Coast - It is one of our most precious natural resources!!!!

I look forward to hearing your response on this situation

Sincerely,

Larrell R. Brown

Larrell R Brown

[redacted]

RESPONSE TO COMMENTS

C30 **Larrell R. Brown**

C30-1

The Dredged Material Management Plan has been under development since 1996. Since that time there have been Interim and Progress Reports, as well as numerous public meetings at which elected officials were given an opportunity to comment on the developing plans. In addition, written comments were received from these officials, as well as environmental protection organizations and individual citizens. The issue of dredging and dredged material management has been in the environmental forefront for many years. All of the elected officials in New York and New Jersey have received public notices related to this issue many times. The Implementation Plan for the DMMP includes annual status reports which will be made available to elected officials and the public. This will provide and opportunity for interested parties to have ongoing input on this issue.

PV 12-27-99

Dear Sir,

Charles A. Munro, III
200 West 18th Street
Surf City, N.J. 08008

I am writting you today to inform you of my concern of the dredge dumping activites off of Sandy Hook, N.J. Why wasn't the U.S. senators and the representatives of New Jersey given public notice of the for mentioned dredging activites? Is this the manner in which you generally conduct your operations or is it because the dredge dumping is happening of the New Jersey Coast and not New York?

C31-1

Please explain yourself and your

intentions toward the people, senators, representatives of the State of New Jersey. If you do not, all we can be left to think is that your attitude is one of let the public be damed. And if this is the case, it will be yet one more case of New York victimizing the people of New Jersey and guarantee hostile opposition to your activites

Respectfully,

Charles A. Munro

RESPONSE TO COMMENTS

C31 **Charles A. Munro, III**

C31-A

See response to C30

Dec 28, 1999

Dear Col. Pearce,

We have been on Long Beach Island since 1946.

The ocean has been clean and beautiful since the dumping has stopped.

Please find another way to dump the sludge + toxins.

We should leave our children + grandchildren a clean, clear ocean water

Sincerely

Eleanor + Steve Romaine
2210 Atlantic Ave.
Spray Beach
Long Beach Island N.J.
08008

APPENIX E

TABLES

Table 1-1. Relationship of Options to Environmental Statutes

FEDERAL ENVIRONMENTAL LAWS AND EXECUTIVE ORDERS	COMPLIANCE
Abandoned Shipwreck Act of 1987	Pending (1)
Anadromous Fish Conservation Act	Pending (1)
Archaeological and Historic Preservation Act of 1974, as amended	Pending (1)
Clean Air Act, as amended	Pending (1)
Coastal Barrier Resources Act	Pending (1)
Coastal Zone Management Act of 1972, as amended	Pending (1)
Comprehensive Environmental Response, Compensation and Liability Act of 1980	Pending (1)
Endangered Species Act of 1973, as amended	Pending (1)
Estuary Protection Act (PL90-454)	Pending (1)
Federal Migratory Bird Treaty Act	Pending (1)
Federal Water Pollution Control Act (Clean Water Act, 1977)	Pending (1)
Federal Water Project Recreation Act, as amended	Pending (1)
Fish and Wildlife Coordination Act of 1934, as amended	Pending (1)
Land and Water Conservation Fund Act of 1965, as amended	Pending (1)
Marine Mammals Protection Act of 1972	Pending (1)
Marine Protection, Research, and Sanctuaries Act of 1972, as amended	Pending (1)
Magnuson-Stevens Fishery Conservation and Management Act of 1996	Pending (1)
National Environmental Policy Act of 1969, as amended	Pending (1)
National Historic Preservation Act of 1966, as amended	Pending (1)
Outer Continental Shelf Lands Act	Pending (1)
Resources Conservation and Recovery Act	Pending (1)
Rivers and Harbors Appropriation Act of 1899, as amended: Section 10	Pending (1)
Rivers and Harbors Act of 1970, Section 122	Pending (1)
Watershed Protection and Flood Protection Act, as amended	Pending (1)
Wild and Scenic Rivers Act	Pending (1)
Executive Order 11988, Floodplain Management	Pending (1)
Executive Order 11990, Protection of Wetlands	Pending (1)
Executive Order 12114, Environmental Effects of Major Federal Actions	Pending (1)
Executive Order 12898, Environmental Justice	Pending (1)

APPLICABLE STATE LAWS OF NEW JERSEY	COMPLIANCE
Coastal Area Facility Review Act	Pending (1)
New Jersey Green Acres Land Acquisition Act of 1961	Pending (1)
Wetlands Act of 1970	Pending (1)
Waterfront Harbors Facility Law	Pending (1)
Coastal Zone Management Act (State Administered)	Pending (1)
New Jersey Water Pollution Control Act	Pending (1)
Riparian Interests	Pending (1)
Flood Hazard Area Control Act	Pending (1)
Freshwater Wetlands Protection Act	Pending (1)

Table 1-1. Relationship of Options to Environmental Statutes (continued)

APPLICABLE STATE LAWS OF NEW YORK	COMPLIANCE
Agricultural District Law (1971)	Pending (1)
Coastal Zone Consistency	Pending (1)
Coastal Zone Management Act	Pending (1)
Environmental Conservation Law, as amended	Pending (1)
Environmental Quality Review Law (1976)	Pending (1)
Fish and Wildlife Code (Title Three)	Pending (1)
Floodplain Protection Law (1974)	Pending (1)
Freshwater Wetland Protection Act (Article 24) (1975)	Pending (1)
Local Zone Enable	Pending (1)
New York State Environmental Laws (Local Admin)	Pending (1)
Open Space (ATRT13, Stat 247)	Pending (1)
Port District Enabling Law	Pending (1)
Soil Conservation District Law	Pending (1)
Stream Protection Law	Pending (1)
Tidal Wetlands Act	Pending (1)
Waterfront Revitalization and Coastal Resources Act	Pending (1)
Wildland Protection Law	Pending (1)
Wild, Scenic and Recreational Rivers System	Pending (1)

(1) Pending, because this is a programmatic EIS and final selection of options and sites have not been determined. Compliance with law depends on the outcome of the selection process and analysis of site-specific alternatives.

Table 4-1. Taxonomic Listing and Frequency of Occurrence in the New York Bight Apex Macrofauna Study Area, Sampled September 6-8, 1995

TAXA	PHYLUM	CLASS	NO. INDIVIDUALS	DENSITY (no./m2)	% TOTAL	CUMULATIVE	STATION OCCURRENCE †	% STATION OCCURRENCE
Polygordius (LPIL) *	A	Arch	21144	211440	42.9	42.9	36	100.0
Nucula proxima	M	Pele	8194	81940	16.6	59.5	32	88.9
Pseudunciola obliqua	Ar	Mala	2470	24700	5.0	64.5	30	83.3
Cirratulidae (LPIL)	A	Poly	2069	20690	4.2	68.7	34	94.4
Exogone hebes	A	Poly	1498	14980	3.0	71.8	26	72.2
Ampelisca verrilli	Ar	Mala	1237	12370	2.5	74.3	13	36.1
Oligochaeta (LPIL)	A	Olig	1167	11670	2.4	76.6	31	86.1
Prionospio steenstrupi	A	Poly	725	7250	1.5	78.1	12	33.3
Tellina agilis	M	Pele	671	6710	1.4	79.5	32	88.9
Magelona papillicornis	A	Poly	599	5990	1.2	80.7	15	41.7
Tanaissus psammophilus	Ar	Mala	596	5960	1.2	81.9	28	77.8
Monticellina dorsobranchialis	A	Poly	573	5730	1.2	83.1	26	72.2
Rhepoxynius hudsoni	Ar	Mala	561	5610	1.1	84.2	16	44.4
Levinsenia gracilis	A	Poly	513	5130	1.0	85.2	6	16.7
Spisula solidissima	M	Pele	510	5100	1.0	86.3	30	83.3
Aricidea catherinae	A	Poly	484	4840	1.0	87.3	33	91.7
Euclymene sp.D	A	Poly	421	4210	0.9	88.1	4	11.1
Echinarachnius parma	E	Echi	404	4040	0.8	88.9	27	75.0
Caulleriella sp.J	A	Poly	395	3950	0.8	89.7	26	72.2
Rhynchocoela (LPIL)	R		392	3920	0.8	90.5	33	91.7
Scoletoma impatiens	A	Poly	347	3470	0.7	91.2	15	41.7
Goniadella gracilis	A	Poly	330	3300	0.7	91.9	15	41.7
Tharyx acutus	A	Poly	316	3160	0.6	92.5	23	63.9
Maldanidae (LPIL)	A	Poly	289	2890	0.6	93.1	14	38.9
Spio setosa	A	Poly	282	2820	0.6	93.7	8	22.2
Unciola irrorata	Ar	Mala	277	2770	0.6	94.3	17	47.2
Ostracoda (LPIL)	Ar	Ostr	276	2760	0.6	94.8	29	80.6
Leptocheirus pinguis	Ar	Mala	272	2720	0.6	95.4	7	19.4
Lumbrinerides acuta	A	Poly	218	2180	0.4	95.8	14	38.9
Ninoe nigripes	A	Poly	191	1910	0.4	96.2	5	13.9
Scoletoma acicularum	A	Poly	169	1690	0.3	96.5	17	47.2
Protohaustorius wigleyi	Ar	Mala	161	1610	0.3	96.9	11	30.6
Spiophanes bombyx	A	Poly	159	1590	0.3	97.2	25	69.4
Ampharetidae (LPIL)	A	Poly	139	1390	0.3	97.5	10	27.8
Phoxocephalus holbolli	Ar	Mala	139	1390	0.3	97.8	16	44.4
Ampelisca (LPIL)	Ar	Mala	125	1250	0.3	98.0	13	36.1
Aricidea wassi	A	Poly	117	1170	0.2	98.2	19	52.8
Glycera dibranchiata	A	Poly	111	1110	0.2	98.5	20	55.6
Aricidea (LPIL)	Ar	Mala	104	1040	0.2	98.7	15	41.7
Byblis (LPIL)	A	Poly	94	940	0.2	98.9	6	16.7
Parapionosyllis longicirrata	Ar	Mala	93	930	0.2	99.1	7	19.4
Paraonis pygoenigmatica	A	Poly	89	890	0.2	99.2	16	44.4
Byblis serrata	A	Poly	80	800	0.2	99.4	8	22.2
Unciola serrata	Ar	Mala	78	780	0.2	99.6	3	8.3
Pherusa affinis	Ar	Mala	77	770	0.2	99.7	5	13.9
Nephtys picta	A	Poly	73	730	0.1	99.9	10	27.8
Echinoidea (LPIL)	E	Echi	72	720	0.1	100.0	12	33.3

TAXA KEY

A = Annelida
- Arch = Archiannelida
- Poly = Polychaeta
- Olig = Oligochaeta

Ar = Arthropoda
- Mala = Malacostraca
- Ostr = Ostracoda

E = Echinodermata
- Echi = Echinoidea

M = Mollusca
- Pele = Pelecypoda

R = Rhynchocoela

* (LPIL) = Lowest Practical Identification Level

† Occurrence by a taxon is determined by the presence of at least one individual in one replicate collected at each station.

Table 4-2. Assemblage Statistics for the New York Bight Apex Macroinfauna Stations, Sampled September 6-8, 1995

Station	Total No. Taxa	Total No. Individuals	Mean Density (no/m^2)	Density (std. dev.)	H'	J'	D
1	47	3334	16670	1259	1.66	0.43	5.67
2	36	568	2840	523	1.47	0.41	5.52
3	31	465	2325	573	1.83	0.53	4.88
4	28	455	2275	290	2.15	0.64	4.41
5	30	135	675	50	2.65	0.78	5.91
7	35	883	4415	3033	1.39	0.39	5.01
8	40	7488	37440	9970	0.65	0.18	4.37
9	46	1761	8805	6017	2.25	0.59	6.02
10	47	1375	6875	2878	1.66	0.43	6.36
11	45	519	2595	544	2.55	0.67	7.04
12	56	1414	7070	7354	1.69	0.42	7.58
13	35	606	3030	3182	2.03	0.57	5.29
14	32	925	4625	7	1.13	0.33	4.54
15	33	673	3365	2298	1.98	0.57	4.89
16	34	2334	11670	170	0.92	0.26	4.26
17	47	828	4140	3493	2.15	0.56	6.85
18	67	1414	7070	6251	2.38	0.56	9.10
19	70	773	3865	742	3.16	0.74	10.38
20	58	569	2845	856	3.07	0.76	8.99
21	73	2077	10385	2128	3.02	0.70	9.43
22	24	175	875	516	2.48	0.78	4.45
23	35	534	2670	184	2.41	0.68	5.41
24	39	401	2005	1591	2.66	0.73	6.34
25	26	255	1275	163	2.13	0.65	4.51
26	65	4042	20210	3069	1.63	0.39	7.71
27	56	3363	16815	6880	1.25	0.31	6.77
28	53	4146	20730	12685	1.56	0.39	6.24
29	54	600	3000	1032	2.82	0.71	8.29
30	60	949	4745	346	2.77	0.68	8.61
31	53	1527	7635	92	2.02	0.51	7.09
35	50	1179	5895	5070	1.57	0.40	6.93
36	48	1062	5310	240	1.84	0.48	6.75
37	53	2686	13430	6491	2.12	0.53	6.59
38	42	655	3275	2128	2.19	0.59	6.32
39	62	778	3890	57	3.26	0.79	9.16
40	38	1208	6040	721	1.13	0.31	5.21

Table 4-3. Preliminary List to Fish and Megainvertebrates of the New York Bight Apex under Fisheries Management Plans

INVERTEBRATES	
Atlantic Rock Crab	*Cancer irroratus*
Blue crab	*Calinectes sapidus*
Lady Crab	*Ovalipes ocellatus*
American Lobster	*Homarus americanus*
Atlantic sea scallop	*Placopecten magellanicus*
Surf clam	*Spisula solidissima*
Longfinned squid	*Loligo pealei*
Short finned squid	*Illex illecebrosus*
FISH	
Clearnosed Skate	*Raja eglanteria*
Little Skate	*Raja erinacea*
Skate	*Raja ocellata*
Spiny dogfish	*Squalus acanthias*
Blueback herring	*Alosa aestivalis*
Alewife	*Alosa pseudoharengus*
American shad	*Alosa sapidissimaa*
Atlantic menhaden	*Brevoortia tyrannus*
Atlantic herring	*Clupea harengus*
Atlantic salmon	*Salmo salar (1)*
Atlantic cod	*Gadus morhua*
Pollock	*Pollachius virens*
Haddock	*Melanogrammus aeglefinus(1)*
Red hake	*Urophycis chuss*
Spotted hake	*Urophycis regius*
Silver hake	*Merluccius bilinearis*
Black sea bass	*Centropristis striata*
Bluefish	*Pomatomus saltatrix*
Scup	*Stenotomus chrysops*
Atlantic Butterfish	*Peprilus triacanthus*
Atlantic mackerel	*Scomber scombrus*
Summer flounder	*Paralichthys dentatus*
Winter flounder	*Pleuronectes americanus*
Windowpane	*Scophthalmus aquosus*
Witch flounder	*Glyptocephalus cynoglossus(1)*
Yellowtail flounder	*Limanda ferruginea (1)*
Atlantic halibut	*Hippoglossus hippoglossus(1)*
American plaice	*Hippoglossoides platessoides(1)*
Goosefish	*Lophius americanus*
Ocean pout	*Macrozoarces americanus*
Redfish	*Sebastes marinus (1)*
Northern searobin	*Prionotus carolinus*
Striped searobin	*Prionotus evolans*

Table 4-4. Federally Listed Species in the New York Bight Watershed

COMMON NAME	*SCIENTIFIC NAME*	FEDERAL [1] STATUS	NYS[2] STATUS	YEAR IDENTIFIED	NJ[3] STATUS	YEAR IDENTIFIED
BIRDS						
Peregrine falcon	*Falco peregrinus*		E	1991	E	1994
Piping plover	*Charadrius melodus*	T	E	1995	E	1997
Bald Eagle	*Haliaeetus leucocephalus*	T	T		E	
Roseate tern	*Sterna dougallii dougallii*	E	E	1995	E	
Black skimmer	*Rynchops niger*		Protected	1995	E	1986
Least tern	*Sterna antillarum*		T	1995	E	1996
Common tern	*Sterna hirundo*		T	1995		
Short-eared owl	*Asio flammeus*		E	1995	E	
Black rail	*Laterallus jamaicensis*		E	1999	T	
Black tern	*Chlidonias niger*		E	1999		
King rail	*Rallus elegans*		T			
Least bittern	*Ixobrychus exilis*		T			
Red knot	*Calidris canutus*				T	
Black-crowned night heron	*Nycticorax nycticorax*				T	
Savannah sparrow	*Passerculus sandwichensis*				T	1940
Black-crowned night heron	*Nycticorax nycticorax*				T	
Yellow-crowned night heron	*Nyctanassa violacea*		Protected		E	1996
Osprey	*Pandion haliaetus*				T	1987
Pied-billed grebe	*Podilymbus podiceps*		T		E	1994
American bittern	*Botaurus lentiginosus*		Protected		E	
Grasshopper sparrow	*Ammodramus savannarum*				T	1971
Northern harrier	*Circus cyaneus*		T		E	1986
Sedge wren	*Cistothorus platensis*		T		E	1963
American coot	*Fulica americana*				D	1986
Cooper's hawk	*Accipiter cooperii*				T	1982
Red-shouldered hawk	*Buteo lineatus*				Breed,E Non-Brd, T	1996
Red-headed woodpecker	*Melanerpes erythrocephalus*				T	1985
Upland sandpiper	*Bartramia longiauda*		T		E	
Vesper sparrow	*Pooecetes gramineus*				E	
Barred Owl	*Strix varia*				T	
Long-eared owl	*Asio otus*				T	
Bobolink	*Dolichonyx oryzivorus*				T	
Henslow's sparrow	*Ammodramus henslowii*		T		E	
Loggerhead shrike	*Lanius ludovicianus migrans*		E		E	
Northern goshawk	*Accipiter gentilis*				E	
REPTILES						
Kemp's ridley turtle	*Lepidochelys kempii*	E	E		E	
Green turtle	*Chelonia mydas*	E	E		E	
Leatherback turtle	*Dermochelys coriacea*	E	E		E	
Loggerhead turtle	*Caretta caretta*	T	T		E	
Bog turtle	*Clemmys muhlenbergii*	T	T		E	1966
Wood turtle	*Clemmys insculpta*				T	1992
Timber Rattlesnake	*Crotalus horridus horridus*		T		E	
Northern pine snake	*Pituophis melanoleucus*				T	

Table 4-4. Federally Listed Species in the New York Bight Watershed

COMMON NAME	*SCIENTIFIC NAME*	FEDERAL [1] STATUS	NYS[2] STATUS	YEAR IDENTIFIED	NJ[3] STATUS	YEAR IDENTIFIED
AMPHIBIANS						
Pine barrens treefrog	*Hyla andersonii*				E	
Blue-spotted salamander	*Ambystoma laterale*				E	
Longtail Salamander	*Eurycea longicauda longicauda*				T	
MAMMALS						
Indiana bat	*Myotis sodalis*	E	E		E	
Allegheny woodrat	*Neotoma magister*	E			E	1984
Eastern small-footed myotis	*Myotis leibii*				U	
Southern bog lemming	*Synaptomys cooperi*				U	
FISH						
Shortnose Sturgeon	*Acipenser brevirostrum*	E	E		E	
INVERTEBRATES						
American burying beetle	*Nicrophorus americanus*	E			E	
Giant swallowtail	*Ppilio cresphonetes*				Rare	1937
Northeastern beach tiger beetle	*Cicindela dorsalis dorsalis*	T			E	
Henry's elfin	Incisalia henrici				Rare	1991
Dwarf wedgemussel	*Alasmidonta heterodon*				E	
PLANTS						
Small whorled Pogonia	*Isotria medeoloides*	T				
Swamp pink	*Helonias bullata*	T**			E	1892
Seabeach amaranth	*Amaranthus pumilus*	T				
Coastal flat sedge	*Cyperus polystachyos*				E	
Heartleaf plantain	*Plantago cordata*		T	1894		
Bluegrass	*Poa cuspidata*			1897		
Saltmarsh bulrush	*Scirpus maritimus*		E	1891	E	1971
Maple-leaved goosefoot	*Chenopodium simplex*				Rare	1916
Silver Plumegrass	*Erianthus alopecuroides*				Rare	1936
Featherfoil	*Hottonia inflata*				E	1898
Mudweed	*Limosella subulata*				E	1920
Torrey's Mountain Mint	*Pycnanthemum Torrei*				E	1916
Three Birds Orchid	*Triphora Trianthopohora*				E	1980
Minute duckweed	*Lemna perpusilla*				E	1869
Barratt's sedge	*Carex barrattii*				LP	1916
Willdenow's sedge	*Carex willdenowii*				Rare	1919
Virginia bunchflower	*Melanthium Virginicum*				E	1889
Southern arrow head	*Sagittaria australis*				E	1918
Wild wormwood	*Artemisia campestris ssp caudata*				Rare	1980
Pear Hawthorn	*Crataegus calpodendron*				E	1900
Sea-beach knotweed	*Polygonum glaucum*				E	1993
Eaton's beggarstick	*Bidens eatonii*				E	1994
Beaked Sedge	*Carex rostrata*				Rare	1961
Carolina whitlow grass	*Draba reptans*				E	1888
Southern Rein orchid	*Plantanthera falva var flava*				E	1916
Sea-side arrow grass	*Triglochin maritimum*				E	1945
Narrow-leaved vervain	*Verbena simplex*				E	1950

Table 4-4. Federally Listed Species in the New York Bight Watershed

COMMON NAME	*SCIENTIFIC NAME*	FEDERAL [1] STATUS	NYS[2] STATUS	YEAR IDENTIFIED	NJ[3] STATUS	YEAR IDENTIFIED
PLANTS (cont.)						
Oceanorus	*Zigadenus leimanthoides*				E	1985
Cyperus-like sedge	*Carex pseudocyperus*				E	1894
Tuckerman's sedge	*Carex Tuckermanii*				E	18__
Canada hawkweed	*Hieracium kalmii*				E	1936
Larger Canadian St. John's-wort	*Hypericum jajus*				E	1897
Virginia false-gromwell	*Onosmodium virginianum*				E	1865
Sea-side plantain	*Plantago maritima*				Rare	1894
Smooth rattlesnake root	*Prenanthes racemosa*				E	1894
Shining willow	*Salix lucida*				Rare	1866
New England grape	*Vitis nova-angliae*				E	1958
Allegheny vine	*Adlumia fungosa*				Rare	1920
Round-leaved serviceberry	*Amelanchier sanguinea*				E	18__
Puttyroot	*Aplectrum hyemale*				E	1867
Side-oats gramma grass	*Bouteloua curteipendula*				E	1903
Leatherwood	*Equisetum pratense*				E	1880
Meadow horsetail	*Eriophorum gracile*				E	1878
Slender cottongrass	*Gnaphlium macounii*				E	1897
Clammy everlasting	*Hypericum adpressum*				E	1880
Barton's St. John's wort	*Lemna valdiviana*				E	1864
Pale duckweed	*Linum sulcatum*				E	1864
Grooved yellow flax	*Nuphar microphyllum*				E	1864
Small yellow pond lilly	*Poa autumnalis*				E	1980
Autumn bluegrass	*Solidago rigida*				E	1915
	Thuja occidentalis				E	1865
Northern white cedar	*Tiarella cordifolia*				E	1884
Foamflower	*Viola canadensis*				E	1860
Canada violet	*Viola septentrionalis*				E	1918
Northern blue violet	*Ammannia latifolia*				E	
Koehn's tooth-cup	*Athyrium pycnocarpon*				E	
Glade fern	*Carex haydenii*				E	
Cloud sedge	*Cercis canadensis*				E	
Redbud	*Cryptogramma stelleri*				E	
Slender rock-brake	*Cypripedium reginae*				E	
Showy Lady's-slipper	*Hemicarpha micrantha*				E	
Hemicarpha	*Luzula acuminata*				E	
Hairy woodrush	*Mimulus alatus*				Rare	
Winged monkey flower	*Nuphar microphyllum*				E	
Small yellow pond lily	*Prenanthes racemosa*				E	
Smooth rattlesnake root	*Salix pedicellaris*				E	
Bog willow	*Schoenoplectus torreyi*				E	
Torrey's bulrush	*Scleria verticillata*				E	
Whorled nut rush	*Trollius laxus ssp laxus*				E	
Spreading globe flower	*Alisma triviale*				E	
Large-water plantain	*Calystegia spithamaea*				E	
Erect bindweed	*Muhlenbergia capillaris*				E	
Long-awned smoke grass	*Penstemon laevigatus*				E	
Smooth beard tongue	*Phlox pilosa*				E	

Table 4-4. Federally Listed Species in the New York Bight Watershed

COMMON NAME	SCIENTIFIC NAME	FEDERAL [1] STATUS	NYS[2] STATUS	YEAR IDENTIFIED	NJ[3] STATUS	YEAR IDENTIFIED
PLANT (cont'd)						
Downy phlox	*Sanicula trifoliata*				E	
Large-fruited sanicle	*Chenopodium rubrum*				E	
Red goosefoot	*Clitoria mariana*				E	
Butterfly pea	*Gaultheria hispidula*				E	
Creeping snowberry	*Linnea borealis*				E	
Twin-flower	*Polymnia Uvedalia*				E	
Bearsfoot	*Aster radula*				E	
Low rough aster	*Bidens bidentoides*				E	
Bur-marigold	*Carex Louisianica*				E	
Louisiana sedge	*Carex ploymorpha*				E	
Variable sedge	*Crataegus calpodendron*				E	
Pear hawthorn	*Hydrocotyle ranunculoides*				E	
Floating pennywort	*Lathyrus*				E	
Pale vetchling peavine	*Liatris scariosa var*				E	
Northern Blazing Star	*Micranthemum micranthemoides*				E	
Nuttall's mudwort	*Myriophyllum tenellum*				E	
Slender water-milfoil	*Myriophyllum verticillatum*				E	
Whorled water-milfoil	*Platanthera peramoena*				E	
Purple fringeless orchid	*Rhododendron canadense*				E	
Rhodora	*Scutellaria leonardii*				E	
Small skullcap	*Amaranthus pumilus*				E	
Sea-beach pigweed	*Cacalia atriplicifolia*				E	
Pale Indian plantain	*Calamagrostis pickeringii*				E	
Pickering's reedgrass	*Carex cumulata*				E	
Clustered sedge	*Ceratophyllum echinatum*				E	
Spiny coontail	*Crataegus succulenta*				E	
Fleshy hawthorne	*Crataegus*					
Downy phlox	*Sanicula trifoliata*				E	
Large-fruited sanicle	*Chenopodium rubrum*				E	
Red goosefoot	*Clitoria mariana*				E	
Butterfly pea	*Gaultheria hispidula*				E	
Creeping snowberry	*Linnea borealis*				E	
Twin-flower	*Polymnia Uvedalia*				E	
Bearsfoot	*Aster radula*				E	
Low rough aster	*Bidens bidentoides*				E	
Bur-marigold	*Carex Louisianica*				E	
Louisiana sedge	*Carex ploymorpha*				E	
Variable sedge	*Crataegus calpodendron*				E	
Pear hawthorn	*Hydrocotyle ranunculoides*				E	
Floating pennywort	*Lathyrus*				E	
Pale vetchling peavine	*Liatris scariosa var*				E	
Northern Blazing Star	*Micranthemum micranthemoides*				E	
Nuttall's mudwort	*Myriophyllum tenellum*				E	
Slender water-milfoil	*Myriophyllum verticillatum*				E	
Whorled water-milfoil	*Platanthera peramoena*				E	
Purple fringeless orchid	*Rhododendron canadense*				E	
Rhodora	*Scutellaria leonardii*				E	

Table 4-4. Federally Listed Species in the New York Bight Watershed

COMMON NAME	*SCIENTIFIC NAME*	FEDERAL [1] STATUS	NYS[2] STATUS	YEAR IDENTIFIED	NJ[3] STATUS	YEAR IDENTIFIED
PLANT (cont'd)						
Small skullcap	*Amaranthus pumilus*				E	
Sea-beach pigweed	*Cacalia atriplicifolia*				E	
Pale Indian plantain	*Calamagrostis pickeringii*				E	
Pickering's reedgrass	*Carex cumulata*				E	
Clustered sedge	*Ceratophyllum echinatum*				E	
Spiny coontail	*Crataegus succulenta*				E	
Fleshy hawthorne	*Cyperus polystachyos*				E	
Coast flatsedge	*Desmodium humifusum*				E	
Trailing Tick-trefoil	*Diodia virginiana*				E	
Larger buttonweed	*Fraxinus profunda*				E	
Pumpkin ash	*Glaux maritima*				E	
Sea-beach milkwort	*Juncus caesariensis*				E	
New Jersey Rush	*Linum intercursum*				E	
Sandplain Flax	*Pyrola chlorantha*				E	
Greenish-flowered Wintergreen	*Ranunculus cymbalaria*					
Sea-side Crowfoot	*Rhynchospora globularis*				E	
Grass-like Beaked Rush	*Rhynchospora knieskenii*				E	
Knieskern's Beaked Rush	*Uvularia puerula var nitida*				E	
Pine Barren Bellwort	*Andromeda glaucophylla*				E	
Bog Rosemary	*Cardamine longii*				E	
Long's bitter cress	*Carex brunnescens*				E	
Brownish sedge	*Carex deweyana*				E	
Dewey's sedge	Carex foenea				E	
Dry-spiked sedge	*Carex limosa*				E	
Mud Sedge	*Elymus trachycaulus*				E	
Slender wheatgrass	*Equisetum variegatum*				E	
Variegated Horsetal	*Gaultheria hispidula*				E	
Creeping snowberry	*Gentiana linearis*				E	
Narrow-leaved gentian	*Ilex montana*				E	
Mountain Holly	*Lechea tenuifolia*				E	
Slender Pinweed	*Lonicera canadensis*				E	
Fly Honeysuckle	*Monarda clinopodia*				E	
Basil bee-balm	*Panicum boreale*				E	
Northern Panic Grass	*Platanthera hookeri*				E	
Hooker's orchid	*Rubus canadensis*				E	
Smooth Blackberry	*Spiranthes laciniata*				E	
Lace-lip Ladies' Tresses	*Stellaria borealis*				E	
Northern stitchwort	*Streptopus roseus*				E	
Rosy Twisted-stalk	*Trollius laxus*				E	
Spreading Globe Flower	*Viburnum alnifolium*				E	
Witch Hobble	*Wolffiella floridana*				E	
Florida bogmat	*Xyris montana*				E	
Northern yellow-eyed grass	*Xyris*					

* Probably extinct
** Presumed extirpated
LP = Indicates taxa listed by the Pinelands Commission as endangered or threatened within their legal jurisdiction.
E = endangered species T = threatened species D =declining species
[1] = U.S. Dept of the Interior – Fish and Wildlife Service
[2] = NYS Dept. of Environmental Conservation – Wildlife Resources Center – Natural Heritage Database
[3] = NJ Dept. of Environmental Protection – Division of Parks and Forestry –Natural Heritage Database

Table 4-5. List of Managed Species for Which Essential Fish Habitat has been Designated (1)(2)

NEW ENGLAND MANAGEMENT COUNCIL	
Atlantic sea scallop	*Placopecten magellanicus*
Atlantic herring	*Clupea harengus*
Atlantic salmon	*Salmo salar*
Atlantic cod	*Gadus morhua*
Pollock	*Pollachius virens*
Haddock	*Melanogrammus aeglefinus*
Red hake	*Urophycis chuss*
Spotted hake	*Urophycis regius*
White hake	*Urophycis tenuis*
Silver hake	*Merluccius bilinearis*
Offshore hake	*Merluccius alibidus*
Winter flounder	*Pleuronectes americanus*
Windowpane	*Scophthalmus aquosus*
Witch flounder	*Glyptocephalus cynoglossus*
Yellowtail flounder	*Limanda ferruginea*
Atlantic halibut	*Hippoglossus hippoglossus*
American plaice	*Hippoglossoides platessoides*
Goosefish	*Lophius americanus*
Ocean pout	*Macrozoarces americanus*
Redfish	*Sebastes marinus*
MID-ATLANTIC FISHERIES MANAGEMENT COUNCIL	
Surf clam	*Spisula solidissima*
Ocean quohog	*Arctica islandica*
Longfinned squid	*Loligo pealei*
Short finned squid	*Illex illecebrosus*
Spiny dogfish	*Squalus acanthias*
Atlantic Butterfish	*Peprilus triacanthus*
Atlantic mackerel	*Scomber scombrus*
Black sea bass	*Centropristis striata*
Bluefish	*Pomatomus saltatrix*
Scup	*Stenotomus chrysops*
Summer flounder	*Paralichthys dentatus*
Tilefish	*Lopholatilus chamaeleonticeps*
SOUTH ATLANTIC FISHERIES MANAGEMENT COUNCIL	
Cobia	*Rachycentron canadum*
Golden crab	*Chaeceon fenneri*
King mackrel	*Scomberomorus cavalla*
Spanish mackrel	*Scomberomorus maculatus*
Red drum	*Sciaenops ocellatus*

Table 4-5. List of Managed Species for Which Essential Fish Habitat has been Designated (continued)

NATIONAL MARINE FISHERIES SERVICE HIGHLY MIGRATORY SPECIES

Skate	
Clearnosed Skate	*Raja eglanteria*
Little Skate	*Leucoraja erinacea*
Winter Skate	*Leucoraja ocellata*
Sharks	
Atlantic angel	*Squatina dumerili*
Tiger	*Galeocerdo cuvieri*
Scalloped hammerhead	*Sphryna lewini*
Sandbar	*Carcharhinus obscurus*
Dusky	*C. plumbeus*
Silky	*C. falciformes*
Shortfin mako	*Isurus oxyrhincus*
Longfin mako	*I. paucus*
Porbeagles	*Lamma nasus*
White	*Carcharodon carcharias*
Sand tiger	*Odontaspis tausus*
Atlantic sharpnose	*Rhizoprionodon terraenovae*
Thresher	*Alopias vulpinus*
Blue	*Prionace glauca*
Basking	*Cetofhinus maximus*
Tuna	
Albacore	*Thunnus alalunga*
Bigeye tuna	*Thunnus obesus*
Bluefin tuna	*Thunnus thynnus*
Yellowfin tuna	*Thunnus albacres*
Billfish	
Swordfish	*Ziphias gladius*
Blue marlin	*Makaira nigricans*
White marlin	*Tetrapturus albidus*

(1) Source NMFS 1999
(2) Please note that this list may not be final, and that some species (e.g. Atlantic salmon) listed do not occur in the area being studied for options for the placement of dredged material.

Table. 4-6. Recent Total Metal Concentrations Measured in the Water Column of the New York Bight Apex and HARS (Concentrations in ug/l)

Year/ Location	Ag	AS	Cd	Cu	Ni	Hg	Pb	Zn
1988/ Bight Apex	NA	NA	0.034-0.087	0.39-2.3	0.35-1.9	0.0011-0.010	0.045-0.87	1.7-9.3
1991/ Bight Apex	0.0004-0.012	1.4-1.7	0.025-0.087	0.37-0.70	0.25-0.29	0.005-0.009	0.046-0.11	1.0-2.0
1992 HARS	NA	NA	NA	0.33-0.51	0.30-0.39	NA	NA	NA

Table taken from EPA HARS (1997)

Table 4-7. Fish and Megainvertebrates of the Lower Bay Complex Collected During the 1992-1997 NMFS Survey and Comprised~90% of the Catch by Numbers and Weight

INVERTEBRATES	
Atlantic Rock Crab	*Cancer irroratus*
Blue crab	*Calinectes sapidus*
Lady Crab	*Ovalipes ocellatus*
Longfin Squid	*Loligo pealei*
FISH	
Clearnosed Skate	*Raja eglanteria*
Little Skate	*Raja erinacea*
Skate	*Raja ocellata*
Alewife	*Alosa pseudoherengus*
Atlantic herring	*Clupea harengus*
Bay Anchovy	*Anchoa mitchilli*
Silver hake	*Merluccius bilinearis*
Red Hake	*Urophycis chuss*
Spotted hake	*Urophycis regia*
Northern Searobin	*Prionotus carolinus*
Striped Searobin	*Prionotus evolans*
Striped Bass	*Morone saxatilis*
Black Sea Bass	*Centropristis striata*
Bluefish	*Pomatomus saltatrix*
Scup	*Stenotomus chrysops*
Weakfish	*Cynscion regalis*
Spot	*Leistomus xanthurus*
Tautog	*Tautoga onitis*
Butterfish	*Peprilus tricanthus*
Summer Flounder	*Paralicthys dentatus*
Windowpane	*Scophthalmus aquosus*
Winter Flounder	*Pleuronectes americanus*

Table 4-8. New York State Hard Clam Production, Lower Bay, Staten Island

YEAR	STATUS	QUANTITY (BUSHELS)
1979	Depuration	4,168.0
1980	"	11,188.0
1981	"	18,054.0
1982	"	12,864.0
1983	"	9,894.0
1987	Transplant	3,670.0
1988	"	3,155.0
1989	"	55,639.0
1990	"	47,910.0
1991	"	25,185.0
1992	"	31,103.0
1993	"	40,946.0
1994	"	56,463.0
1995	"	36,594.0
1996	"	57,951.5
1997	"	68,739.0
1998	"	76,256.0
1999	"	82,176.5

Table 4-9. Vehicular Noise Levels - Middletown Township, Monmouth County, NJ
(Sound level in dBA at 50 feet from center line of vehicle travel)

	Speed Limit		
Vehicle Class	**35 mph or less**	**Over 35 mph**	**Stationary**
Motor carrier vehicle of 10,000 lbs or more Engaged in interstate commerce	86	90	86
Motor vehicles of 10,000 lbs or more	86	90	
Any motorcycle	82	86	
Any other motor vehicle combination or vehicles towed by any motor vehicle	76	82	

Table 4-10. Water Quality Concentrations in the Kill Van Kull at Shooters Island

Parameter	Value	1991	1992	1993	1994
DO	mg/l	5.o	5.9	8.5	7.0
TSS	mg/l	15		2.0	13
Secchi disk	ft	4.4	4.8	5.0	4.3
Dissolved ammonia	mg/l	0.54	0.49	0.49	0.50
Nitrate & nitrite nitrogen	mg/l	0.49	0.57	0.68	0.55
Total phosphorus	mg/l	0.23	0.17	0.18	0.20
Ortho phosphate	mg/l	0.16	0.16	0.12	0.15
BOD 5-day	mg/l	1.3	1.4	1.5	1.2

Source NYCEP (1993, 1994, 1995)

Table 4-11. Waterbody Locations Where Toxics are Suspected of Impairing Waters Based Upon Discharges From Point Sources

WATERBODY NAME	WATERBODY DESCRIPTION
Hackensack River	From the Oradell Reservoir to the confluence with Newark Bay. (Reach #:02030103001)
Upper New York Bay	From the confluence of the East River to the confluence with the Kill Van Kull.
Newark Bay/Arthur Kill	From the confluence with the Passaic and Hackensack Rivers to the confluence with the Rahway River and the confluence with the Upper New York Bay. (Reach #: 02030104002)
Arthur Kill	From the confluence of the Rahway River to the confluence with the Raritan River Bay. (Reach #: 02030104003)
Raritan Bay	From the confluence of the Arthur Kill/Raritan River to the confluence with the Waackaack Creek. (Reach #: 02030104005)
Lower Millstone River	From the confluence with the Bedens Brook to the confluence with the Raritan River. (Reach #: 02030105026)
Mid Millstone	From the confluence with the Stony Brook to the confluence with the Bedens Brook. (Reach #: 02030105028)
Lower Pequest River	From the confluence with Bear Creek to the confluence with the Delaware River. (Reach #: 02040105013)
Whippany River	From the headwaters to the confluence with the Rockaway River. (Reach #: 02030103024)
Passaic River	From the confluence of the Dead River to the confluence with the Whippany River. (Reach #: 02030103025)
Raccoon Creek	From the confluence with the South Branch Raccoon Creek to the confluence with the Delaware River. (Reach #: 02040202004)
Kings Creek	From the headwaters to the confluence with the Rahway River.
Hudson River	From the New York/New Jersey State boundary to the confluence with the East River. (Reach #: 02030101005 and 02030101009)

Note: Toxic discharges defined here are based upon USEPA's has as 126 "priority pollutants". Use impairment in these waters are currently only suspected; these are not necessarily waters with known problems. This list is based upon violations of USEPA's federal acute toxicity criteria as observed in Discharge Monitoring Reports in concert with ambient monitoring water quality data from the receiving water in questions.

Table 4-12. Significant Statewide Water Quality Trends Over 11 Year (1976-1986), and 7-Year (1980-1986) Period For NJ Waters (Hay and Campbell, 1990).

Parameter	11 Year	7 Year
Nitrogen, Total	σ_{τ}	τ_{σ}
Dissolved Oxygen	σ	σ
Nitrogen, Organic		τ
Organic Carbon, Total	τ	
Phosphorus, Total	τ	σ_{τ}
Ammonia, Total	σ	τ
Fecal Streptococcus	τ	σ
Fecal Coliform	σ	$\sigma\tau$
Alkalinity	σ	
Specific Conductance	σ	σ
Lead, Total	τ	
Calcium, Dissolved	σ	σ
Magnesium, Dissolved	σ	σ
Sodium, Dissolved	σ	σ
Chloride, Dissolved	σ	σ
Sulfate, Dissolved	$\sigma\tau$	$\sigma\tau$
PH	$\sigma\tau$	$\sigma\tau$
Solids, Dissolved		σ
Potassium, Dissolved	σ	τ
Floride, Dissolved	σ	τ
Trace Metals	τ	τ

Legend:

σ: General Statewide Increases

τ: General Statewide Decreases

$\sigma\tau$: Parameter Exhibited Both Increases and Decreases

σ_{τ}: Parameter Exhibited Mostly Increases

$\tau\sigma$: parameter Exhibited Mostly Decreases

Table 4-13. Water Quality Index Categories, Components, and Criteria for Assessing New Jersey's Rivers and Streams.

Criteria Category	Component	(Index Value of 20)
Temperature	Temp. Cold-water fishery	19 C
	Temp. Warm-water fishery	28 C
Oxygen	Dissolved oxygen-Trout Production	7 mg/l
	Dissolved Oxygen-Trout Maintenance	5 mg/l
	Dissolved Oxygen-Non-trout	4 mg/l
PH	DO Saturation	80,120 %
	pH-Non-acidic waters	6.6 – 8.5 SU
	pH-Pinelands naturally acidic	3.5 – 5.5 SU
	pH-Non-Pineland naturally acidic	4.5 – 7.5 SU
Bacteria	Fecal Coliform	200 MPN/100ml
	Total Coliform	2400 MPN/100ml
Nutrients	Total Phosphorus-Free flowing waters	10 mg/l
	Total Phosphorus-Above impoundment	0.05 mg/l
	Total Kjeldahl Nitrogen	2.5 mg/l
	Total Inorganic Nitrogen	2.0 mg/l
Solids	Total Dissolved Solids	500 mg/l
	Conductivity	750 micromhos
Ammonia	Un-ionized-Warm waters	0.05 mg/l
	Un-ionized-Trout waters	0.02 mg/l
Metals	Total Lead	50 ug/l
	Total Copper	50 ug/l
	Total Mercury	0.50 ug/l
	Total Cadium	4.0 ug/l
	Total Chromium	50 ug/l

Table 4-14. Acreage for Parks in Monmouth County, New Jersey

Park	Acres
Federal	
Gateway National Recreation-Sandy Hook Unit	4169
State	
Allaire	3080
Monmouth Battlefield	1812
State Wildlife Management Areas	
Assunpink	5600
Manasquan	753
Turkey Swamp	2457
County	
Conservation Area	
Fisherman's Cove Conservation Area	52
Golf Courses	
Pine Brook Golf Course	61
Bel-Aire Golf Course	78
Shark River Golf Course	176
Hominy Golf Course	183
Howell Park Golf Course	306
Charleston Springs Golf Course	615
Linear Parks	
Henry Hudson Trail	95
Manasquan River Linear Park	657
Recreation Area	
Wolf Hill Recreation Area	91
Sunnyside Recreation Area	129
Dorbrook Recreation Area	512
Telegraph Hill	
Regional Park	
Bayshore Waterfront Park	130
Huber Woods Park	258
Holmdel Park	338
Big Brook Park	378
Clayton Park	409
Thompson Park	665

Table 4-14. Acreage for Parks in Monmouth County, New Jersey

Park	Acres
Regional Park (continued)	
Shark River Park	725
Hartshorne Woods Park	736
Turkey Swamp Park	911
Crosswicks Creek Park	1011
Special Use Area	
Longstreet Farm	9
Monmouth Cove Marina	10
Mount Mitchell Scenic Overlook	12
Seven Presidents Oceanfront Park	36
Walnford-Historic	36
Deep Cut Gardens	52
East Freehold Park & Showgrounds	81
Manasquan Reservoir	1204
Unclassified	
Baysholm Tract	71
Durand Tract	90
Weltz Park	165
Tatum Park	368
TOTAL	**28,521**

Table 5-1. Contaminant and Sediment Control Methods

These options include activities that reduce contaminant levels or the need to dredge. Most of the techniques in these options are in a demonstration stage (sediment reduction and decontamination) or site-specific plans (contaminant reduction) have not yet been developed. They are among the preferred option types in the DMMP because they can provide long-term beneficial changes to dredged material management by reducing disposal needs and creating opportunities for use of dredged material as a resource by eliminating contamination.

	CONTAMINANT REDUCTION	SEDIMENT REDUCTION
GENERAL DESCRIPTION	Watershed-wide actions to reduce point and non-point sources of contaminants; land remediation option type is important part of this option in that brownfields and landfills will be eliminated as contaminant sources.	Includes various mechanical (Turbo-Scour), physical approaches (dikes, sills, channel realignment) and pneumatic suspension systems to minimize sediment build-up. Mechanical approaches would be applied primarily at berthing areas, while physical modifications would be applied at channels and anchorages. Mechanical approaches in demonstration stage by private entities.
PHYSICAL CONDITIONS	No impact; physical conditions in harbor unchanged with reduction in contaminants.	Variable impacts, beneficial and adverse, depending on particular site and methods used.
SURFACE WATER QUALITY	Significant beneficial impact.	Variable impacts, beneficial and adverse, depending on particular site and methods used.
GROUNDWATER QUALITY	Significant beneficial impact.	No impact.
BENTHOS	Significant beneficial impact; reduced exposure and accumulation in body tissues.	Variable impacts, beneficial and adverse, depending on particular site and methods used.
FISH AND MEGAINVERTEBRATES	Significant beneficial impact; primarily through reduced food chain transfers and bioaccumulation.	Variable impacts, beneficial and adverse, depending on particular site and methods used.
OTHER LIVING RESOURCES	Beneficial impact; reduced food chain transfers and bioaccumulation.	Variable impacts, beneficial and adverse, depending on particular site and methods used.
ENDANGERED/ THREATENED SPECIES	Beneficial impact; reduced food chain transfers and bioaccumulation.	Beneficial impacts; reduction in frequency of dredging.
SPECIAL HABITATS AND EFH	Beneficial impact; general reduction in contaminants	Beneficial reduction in frequency of dredging.
SOCIO-ECONOMIC	Beneficial impact; improved general health of environment, all aquatic resources available for human use. More areas potentially open to commercial and recreational fishing and shellfishing. Also decreased costs for dredged material management.	Beneficial impact; reduced costs for dredging.
AIR QUALITY	Beneficial impact; some reduction in contaminant release to the air when sediments are disturbed during dredging.	No impact.
NOISE	No impact.	No impact.
AESTHETICS	No impact.	No impact.

Table 5-2. Beneficial Uses

Beneficial use is the most diverse strategy among the approaches evaluated for dredged material management. It differs from the disposal-only approach of CDF's is that dredged material is used as a resource for applications most of which beneficial the environment. The strategy includes both in-water and upland sites, and utilizes both treated and stabilized material. Applications of untreated materials are limited to the dredged material meeting the criteria for ocean placement except in cases where they can be used as fill to restore or raise bottom elevations under a cap of cleaner materials. Upland sites use material unsuitable for ocean placement that is stabilized to sequester any existing contaminants before its beneficial use application. The potential applications in this strategy span the entire study area and could include distant upland sites for mined land remediation. This strategy includes sites that are apparently permitted and others that are in the development or demonstration stage. The options in this strategy are generally the preferred options among all the options considered for dredged material management.

	OCEAN REMEDIATION	HABITAT CREATION, ENCHANCEMENT AND RESTORATION	LANDFILL, BROWNFIELD AND MINE REMEDIATION	BEACH NOURISHMENT AND CONSTRUCTION MATERIAL	DECONTAMINATION
GENERAL DESCRIPTION	The Historic Area Remediation Site (HARS) is the focus of this option. HARS suitable material will be used to cap in-place contaminated sediments. Confinement of contaminants and therefore a restoration of a viable benthic community is the goal of this option. This option is in use and monitoring data are available. Additional ocean remediation sites are possible pending completion of HARS remediation establishing a need with no other practical alternatives available.	This category contains many options with diverse objectives. Creating important habitat that is in short supply and enhancing or restoring degraded habitats is the common theme. All potential sites have some existing value, thus selection of these options must show a net gain in habitat value. This option includes small scale, and localized sites.	This category includes three primary approaches • Remediation of contaminated former industrial sites (Brownfields) • Capping existing landfills • Remediation of surface and deep shaft mines which are sources of acid (coal mines).	This category includes the use of clean sand for nourishment of the beaches or as a source of supply for construction aggregate. The use of sand for these purposes is dependent upon the sand meeting physical criteria for these applications. These uses have been successful used in the past. Because the source would be from channel dredging projects, the adverse impacts of the mining of these materials would be avoided.	Includes various techniques that physically, chemically, thermally or biologically treat sediments to remove contaminants. These approaches would require the construction of a treatment facility for full scale processing; sites for such facilities have not been identified. Siting and operational effects associated with decontamination facilities could create some adverse impacts.
PHYSICAL CONDITIONS	Beneficial impact; substrate is the primary physical condition of concern. Clean placed material will, to extent possible, match habitat conditions across the site, while isolating the benthos from contaminants in	Beneficial impacts; highly variable depending on conditions at candidate sites. Each option is designed to alter existing conditions to achieve habitat objective, generally by changing substrate and/or elevations, or	Beneficial impact; physical conditions at these sites are generally highly modified by former use. Remediation would include reestablishment of physical conditions suitable for brownfields development or habitat	Sources of sand would be from permitted dredging projects, primary channels and anchorages; use of sand is secondary to the dredging projects.	Significant beneficial impact; reduction in contaminants has ecosystem-wide benefits.

Table 5-2. Beneficial Uses

	OCEAN REMEDIATION	HABITAT CREATION, ENCHANCEMENT AND RESTORATION	LANDFILL, BROWNFIELD AND MINE REMEDIATION	BEACH NOURISHMENT AND CONSTRUCTION MATERIAL	DECONTAMINATION
	buried deposits.	capping exposed contaminants.	creation/enhancement.		
SURFACE WATER QUALITY	Beneficial impact; contaminants confined, eliminates loss to surrounding water. Water column effects during disposal would be localized and temporary.	Beneficial impacts; degraded in-water sites would eliminate poor water quality conditions, through improved flow, reduced sedimentation or wetland filtration.	Significant Beneficial impacts; Loss of pollutants from leachate or erosion of existing site prevented by remediation and capping.	Minor temporary impacts on turbidity during placement for beach nourishment.	No significant impact; controls on facility operations.
GROUNDWATER QUALITY	No impacts	No impact; clean dredged material and water sites limit potential for groundwater effects. Use of non-HARS material would employ techniques to confine contaminants.	Significant beneficial impacts; remediation would curtail groundwater pollution, a common problem at these sites.	No impacts	No significant impact; controls on facility operations.
BENTHOS	Exposure to contaminants greatly reduced. Significant beneficial impact; site restored to productive benthic habitat with associated food web benefits.	Potential beneficial impact; in-water sites may enhance benthic habitat by improving water quality, surficial sediments or isolating contaminants.	Beneficial impact; confinement of contaminants prevents food chain transfer and bioaccumulation; human health concerns ameliorated.	Minor temporary impact during placement for beach nourishment.	Beneficial impact; ecosystem-wide benefits.
FISH AND MEGA-INVERTEBRATES	Exposure to contaminants greatly reduced. Beneficial impact; habitat conditions restored and food chain transfers of contaminants from benthos would be eliminated.	Potential beneficial impact; in-water sites, such as mudflats, shellfish beds, and intertidal wetlands, may enhance fish and invertebrate habitat through restored water quality, isolating sediments and reductions in food chain uptake and biomagnification.	Beneficial impact; confinement of contaminants prevents food chain transfer and bioaccumulation; human health concerns ameliorated.		Beneficial impact; ecosystem-wide benefits.
OTHER LIVING RESOURCES	Exposure to contaminants greatly reduced. Beneficial impact;	Beneficial impact; general ecosystem enhancement through maintenance of	Beneficial impact; confinement of contaminants prevents		Beneficial impact; ecosystem-wide benefits.

Table 5-2. Beneficial Uses

	OCEAN REMEDIATION	HABITAT CREATION, ENCHANCEMENT AND RESTORATION	LANDFILL, BROWNFIELD AND MINE REMEDIATION	BEACH NOURISHMENT AND CONSTRUCTION MATERIAL	DECONTAMINATION
	confinement of contaminants prevents food chain transfer and bioaccumulation.	habitat diversity; possible enhancement of habitat for selected species of concern.	food chain transfer and bioaccumulation; human health concerns ameliorated.		
ENDANGERED/ THREATENED SPECIES	Exposure to contaminants greatly reduced. Beneficial impact; marine mammals and turtles protected from exposure to contaminants.	Potential beneficial impact; possible enhancement of habitat for protected species.	Beneficial impact; contaminant exposure eliminated.		Beneficial impact; ecosystem-wide benefits.
SPECIAL HABITATS AND EFH	Indirect beneficial impact, by reducing exposure of humans, fish, and invertebrates to contaminants found presently at site..	Beneficial impact by recreating/restoring habitat where previously lost or degraded or creating new habitat, or enhancing habitat.	No impact	Beneficial impact; ecosystem-wide benefits	Beneficial impact; ecosystem-wide benefits.
SOCIO-ECONOMIC EFFECTS	Beneficial impact, by reducing exposure of humans, fish and invertebrates to contaminants found presently at a site.	Potential beneficial impact by increasing habitat for wetland species and increased opportunities for wildlife observation. Other potential benefits include aesthetic improvement and recreational use.	Significant beneficial impact through elimination of associated human health effects and reestablishment of viable commercial sites. Landfills and mine sites have potential to be converted to viable wildlife habitat and increase opportunities for wildlife observations.	Beach nourishment helps maintain important recreational resources without imposing the adverse effects of mining for new sources of sand.	Beneficial impact; improved general health of environment, more aquatic resources available for human use. Potential impacts from siting and operation of a decontamination facility must be addressed on a site-specific basis.
AIR QUALITY	Minimal impacts, temporary at time of placement.	Temporary adverse impacts during construction.	Temporary impacts during placement.	Minor temporary impact during placement for beach nourishment.	No significant impact, controls on facility operations.
NOISE	Minimal impacts, temporary at time of placement.	Temporary adverse impacts during construction, but long-term beneficial impacts due to creation of habitat.	Temporary impacts during placement. Impacts on site after placement may be positive (i.e., habitat creation), or negative as a result of development (i.e., increase traffic creating	Temporary impacts during placement.	Potential adverse impacts from decontamination facility.

Table 5-2. Beneficial Uses

	OCEAN REMEDIATION	HABITAT CREATION, ENCHANCEMENT AND RESTORATION	LANDFILL, BROWNFIELD AND MINE REMEDIATION	BEACH NOURISHMENT AND CONSTRUCTION MATERIAL	DECONTAMINATION
			noise and aesthetic changes).		
AESTHETICS	Minimal impacts, temporary at time of placement.	Temporary adverse impacts during construction, but long-term beneficial impacts due to creation of habitat.	Temporary impacts during placement. Impacts on site after placement may be positive (i.e., habitat creation), or negative as a result of development (i.e., increase traffic creating noise and aesthetic changes).	Temporary impacts during placement.	Potential adverse impacts from decontamination facility.

Table 5-3. Confined Disposal Facilities

Confined disposal facilities (CDFs) are disposal only options that do not use the material as a resource. CDF use would be exclusively for contaminated dredged material. They have in common potential impacts on aquatic resources, but very limited potential upland impacts because they are located primarily in aquatic or in industrial areas. Their design varies by location, but they all involve placement of dredged material within a confining structure such as dikes in an upland area, a pit in the bottom, an enclosing island or a nearshore structure such as an interpier area modified to contain the material. In any of the possible configurations, the design may include a provision for lining the structure (groundwater protection) or capping a completed CDF with clean material to prevent erosion. Potential impacts of concern for CDFs include habitat disruption and loss associated with the construction of the facility, and the loss of contaminants as the dredged material is placed in the facility or after it is capped. Nearshore CDFs may use stabilized (processed) material, which would limit the potential for contaminant release during placement. With the exception of the existing Newark Bay CDF, the CDF options are considered fallback, least preferred, or of uncertain status among all of the options evaluated. An advantage of pits or subchannel cells is that they can be constructed as discrete units on an as needed basis and implemented in a relatively short period of time providing safe containment of non-HARS material while other options are brought on line. Use of existing pits can selectivity enhance locations where water quality and habitat is degraded.

	PITS AND CAD FACILITIES	ISLAND CDF	NEARSHORE CDF	UPLAND CDF
GENERAL DESCIPTION	Many possible configurations: • Pits or cells in shallow water • Subchannel cells • Utilize existing pits Size, shape and depth variable; local geology important in design. Upper Bay Complex is primary subarea for shallow water pits and subchannel cells. Lower Bay Complex is primary subarea for existing pits or new open water pits.	New islands designed to contain sediments. Lower Bay Complex and New York Bight Apex are subarea locations. Large volume option; design could include a pit in footprint of island to maximize capacity and minimize size. Design includes features to provide stability to resist ocean storms. Size and shape variable depending on site features and capacity needs.	Fill degraded habitats to create usable land for expansion of shipping facilities or to enhance habitat such as wetlands. Size and shape dependent on configuration of existing shoreline and structures.	Upland placement of untreated dredged material within dikes/confining structures in areas selected for their low existing habitat value; size, shape and capacity would be site specific. Siting would be important to minimize impacts to adjacent land owners. Facility would include provisions to control/treat runoff; site would ultimately be capped to create selected habitat type and isolate sediments.
PHYSICAL CONDITIONS	Variable impact; new pit or cells would cause temporary change in currents and sedimentation patterns; filling existing pits would restore original depths and bottom configuration; restoring physical conditions when filling is completed.	Significant adverse impact; aquatic habitat lost to new structure. Current and sedi-mentation patterns effected in vicinity of structure, which would permanently alter benthic habitats and cause flood/erosion impacts to the shore. Some shore areas may experience less storm damage.	Significant adverse impact; likely aquatic habitat lost to filling. Current and sedimentation patterns altered in vicinity, but existing nearshore, structures would have already modified these physical factors. Benefits could include improvement to existing wetlands, but benefits would be limited.	Minimal adverse impact from construction if site selected was of low habitat value; potential for long term beneficial impact if site was restored to relatively high value habitat.
SURFACE WATER QUALITY	Temporary adverse impact; localized turbidity increase during construction and disposal; small contaminant loss during disposal, particularly for pits or cells in deepwater. Losses are	Temporary adverse impact; localized turbidity increase during construction; confining dike structure would eliminate loss during disposal.	Temporary adverse impact; localized turbidity increase during construction; confining structure would eliminate loss during disposal. Effects can be controlled by lining fill area with	Potential adverse impact from runoff from placed material; runoff control through settling basins and, if needed, treatment of water discharged to adjacent drainages would minimize surface

Table 5-3. Confined Disposal Facilities

	PITS AND CAD FACILITIES	ISLAND CDF	NEARSHORE CDF	UPLAND CDF
	controllable by various management measures and suitable pit locations.		impermeable material.	water effects.
GROUNDWATER QUALITY	Potential for adverse groundwater effects, but situation is site-specific depending on local subsurface geology. Effects can be controlled by lining pit or cell with impermeable material.	Potential for adverse groundwater effects, but situation is site-specific depending on local subsurface geology. Effects can be controlled by lining pit or cell with impermeable material.	Potential for adverse groundwater effects, but situation is site-specific depending on local subsurface geology. Effects can be controlled by lining pit or cell with impermeable material.	Potential for adverse impacts if placed material contained contaminants; potential impacts avoided if disposal site is protected with impermeable liner; if needed.
BENTHOS	Variable impacts; temporary loss of benthic community during construction and filling of new pits or cells; enhancement of benthos by filling existing pits which have degraded benthic habitat. All pits or cells designed to restore substrate to productive benthic habitat when project is completed.	Significant adverse impact due to loss of benthic habitat in footprint of structure; potential offset to this loss through new substrate of the confining structure in the water column which provides habitat for attaching species. Adverse impacts to benthic habitat may extend to adjacent area due to changes in currents and sedimentation patterns. No "in kind" mitigation is possible, but "out of kind" may be feasible.	Significant adverse impact likely due to loss of benthic habitat in footprint of structure; confining structure likely to be vertical wall with little benthic habitat potential.	No impacts.
FISH AND MEGA-INVERTEBRATES	Temporary adverse impact due to disturbance of substrate in footprint of pit or cell for new sites. Enhancement of existing pits after filling is completed. Restoration of benthic habitat would ensure recolonization by fishes and reduce contaminant uptake. Water column effects during disposal operations would be localized and temporary; no adverse impact on movements and migrations.	Significant adverse impact due to loss of aquatic habitat and water column; new rocky substrate in water column would be attractive to some species, but would be a significant change from existing benthic conditions. The productivity exchange would be difficult to assess. Island CDF could be a focal point of recreational fishing and provide habitat for species that are attracted to vertical structure. No "in kind" mitigation is possible, but "out of kind" may be feasible.	Significant adverse impact likely could occur due to loss of aquatic habitat; new confining structure would not provide significant habitat for species that use vertical structure or crevices. If wetlands are created benefits would accrue to juvenile and spawning adult fish and invertebrate.	No impacts.
OTHER LIVING RESOURCES	Limited potential effects on diamondback terrapins and upland habitat for birds due to	Island surface could provide habitat for seabirds/shorebirds. Habitat development would re-	No effects. Potential sites are next to existing industrial areas. Wetland development may have	Dredged material may be attractive to upland wildlife immediately after placement if it

Table 5-3. Confined Disposal Facilities

	PITS AND CAD FACILITIES	ISLAND CDF	NEARSHORE CDF	UPLAND CDF
	disturbances during site work if Jamaica Bay is used.	quire clean cap and design features selected for habitat objectives. Bird use would develop with or without habitat planning.	limited value because they are isolated from other wetlands and adjacent natural uplands.	contains food resources; potential adverse impacts if dredged material contains contaminants; capping needed to isolate material if contaminants are present; site could ultimately be restored to usable habitat.
ENDANGERED/ THREATENED SPECIES	No adverse effects anticipated. Transient marine reptiles and mammals may pass near work area. NMFS, USFWS would be coordinated with for Federally listed species.	Island CDF may be attractive to some species, particularly birds, which may expand limited habitat. Provision to prevent attraction during active use would be used.	No adverse effects anticipated. Transient marine reptiles and mammals may pass near work area. NMFS and USFWS would be coordinated with for Federally listed species.	Same impact potential as for "other living resources" if these species are in the vicinity or transient species (migratory birds) use the site; potential to develop habitat for species of concern, but this opportunity would be site specific.
SPECIAL HABITATS AND EFH	Potential temporary adverse impacts, but careful siting, disposal techniques, and permit conditions can minimize effects. Habitat recovers after facility is completed.	Significant adverse impact due to loss of aquatic habitat to CDF structure. Siting considerations could reduce level of effects, but habitat will be lost and adjacent habitat changed. Loss of EFH.	Potential adverse impact, but permit conditions can minimize construction effects. Existing habitat is impacted but some important uses may occur. Significant adverse impact could occur where there is special localized use (i.e., striped bass wintering).	No impacts to aquatic special habitats; siting would avoid impacts to upland special habitats.
CULTURAL RESOURCES	Potential impacts. Surveys needed.	Potential impacts. Surveys needed.	Potential impacts. Surveys needed.	Potential impacts. Surveys needed.
AIR QUALITY	Potential release of volatiles during transport.	Potential impacts. Release of volatiles from raw dredged material. Impact under study.	Potential impacts. Release of volatiles from raw dredged material. Impact under study.	Potential impacts. Release of volatiles from raw dredged material. Impact under study.
NOISE	No Impact	No Impact	Equipment noise during construction.	Equipment noise during construction.
AESTHETICS	No Impact	Adverse impact. Island would be unattractive during construction and may remain so after completion.	Potentially beneficial, depending on location and existing surrounding land use.	Potentially adverse, depending on location and existing surrounding land use.

Table 5-4. List of Preparers

NAME	DISCIPLINE/ EXPERTISE	EXPERIENCE	ROLE IN PREPARING PEIS
Leonard Houston, M.S. Chief, Environmental Analysis Branch Planning Division	Marine Biology	25 years in Planning Division of NYD	Existing Pits and CAD Pits
Bryce Wisemiller, B.S. DMMP Study Team Leader	Environmental/Civil Engineering	15 years in Planning Division of NYD	Plan Formulation, Island CDF
Robert J. Kurtz, M.S. Environmental Impact Statement Coordinator	Biology/Marine Biology	28 years in Planning Division of NYD, 2 years Private Consultant, 1 year Public Health	NEPA Coordination Fish and Wildlife Resources Endangered Species
Robert J. Will, M.S. Biological Studies Coordinator	Marine Biology	32 years in Planning Division of NYD, 1 year Public Health, 2 years Private Consultant	Fisheries and Benthic Resources Beneficial Use
Doug Clarke, Ph.D.	Marine Biology/Marine Ecology	23 years at USACE (Waterways Experiment Station), 4 years Private Consultant	Pit Biological Characterization Biological Modeling Studies
David Yazoo, Ph.D.	Marine Ecology	2 years at USACE (Waterways Experiment Station), 10 years Private Consultant	Beneficial Use
Lynn Rakos, M.A.	Archaeology	5 years Planning Division of NYD, 8 years Private Consultant	Cultural Resources
Darin Damiani, M.S.	Planning	1.5 year in Planning Division of NYD	Contaminant Reduction Sediment Reduction Upland Disposal Land Remediation Decontamination Technologies

Table 6-1. Written Comments Received on the DPEIS

CATEGORY	DESIGNATION	LETTER DATED
<u>FEDERAL</u>		
Elected Officials		
Congressman Fossella	F1	Nov. 23, 1999
Agencies		
US Environmental Protection Agency	F2	Dec. 9, 1999
US Department of Interior	F3	Oct. 25, 1999
US National Park Service	F4	Nov. 12, 1999
US Dept. of Commerce, National Marine Fisheries Service	F5	Dec. 3, 1999
<u>STATE</u>		
New York		
Assemblywoman Helene Weinstein	S1	Dec. 3, 1999
NYS Department of State	S2	Nov. 1, 1999
NYS Department of Environmental Conservation	S3	Dec. 8, 1999
New Jersey		
NJ Department of Environmental Protection	S4	Oct. 28, 1999
NJ Department of Transportation, Maritime Resources	S5	Dec. 1, 1999
Port Authority of New York/New Jersey	S6	Jan., 2000
NY State Committeewoman 46th A.D., Marsha Rapaport	S7	Nov. 24, 1999
<u>MUNICIPAL</u>		
President Borough of Queens, Claire Shulman	M1	Dec. 1, 1999
Harrison Town Councilman, Dan E. Kelly	M2	Nov. 30, 1999
Brooklyn Community Board 13	M3	Nov. 22, 1999
Community Board No. 15	M4	Nov. 23, 1999
Monmouth County Board of Health	M5	Nov. 30, 1999
Community Board No. 10	M6	Jan. 13, 2000
<u>ORGANIZATION</u>		
Monmouth County League of Women Voters	OR1	Nov. 22, 1999
Natural Resources Protective Association, Adolph Malanga	OR2	No date
Natural Resources Protective Association, Mildred Eiferman	OR3	No date
Natural Resources Protective Association, Pat Semp	OR4	No date
Natural Resources Protective Association, Sylvia Harris	OR5	No date
Surfers' Environmental Alliance	OR6	Dec. 1, 1999
Natural Resources Protective Association (Packet), James Scarcella	OR7	Dec. 1, 1999
Bensonhurst West End Community Council	OR8	Nov. 22, 1999
Concerned Citizens of Bensonhurst, Inc.	OR9	Nov. 23, 1999
S.I. Taxpayers' Assoc., Inc. 1933	OR10	Nov. 26, 1999
Clean Ocean Action	OR11	Dec. 3, 1999
Long Island Diver's Association	OR12	No date

Table 6-1. Written Comments Received on the DPEIS

CATEGORY	DESIGNATION	LETTER DATED
OTHER		
Citgo Petroleum Corp.	OT1	Nov. 16, 1999
Sea Gate Association	OT2	Nov. 24, 1999
New York State Marine Resources Advisory Council	OTI3	Dec. 1, 1999
New Jersey Petroleum Council	OT4	Dec. 2, 1999
BBL, Inc. for Chemical Land Holdings, Inc.	OT5	Dec. 2, 1999
Atlantic States Legal Foundation, Inc.	OT6	Dec. 3, 1999
CITIZEN		
Ms. Aileen V. Scalice	C1	Sep. 22, 1999
Mr. Matt Madden	C2	Nov. 19, 1999
Ms. Anna Marchini	C3	Nov., 1999
Mr. Anthony V. Somma	C4	Nov. 23, 1999
Mrs. Harold Langer	C5	Nov., 1999
Mr. Dominic Traina	C6	Nov., 1999
Mr. Ira Drogin	C7	Nov., 1999
Mr. Richard Ciaravino	C8	Nov., 1999
Ms. Dorothy A. Ciaravino	C9	Nov. 1999
Mr. Alfred L. Lama	C10	Nov. 27, 1999
Mr. William Fink	C11	Nov., 1999
Ms. Rosemarie Bugenis	C12	Nov., 1999
Mr. James R. Koenig	C13	Dec. 3, 1999
Mr. Boris Konstantinoskiy	C14	No date
Mr. Andrew Waxman	C15	No date
Mr. Alex Tiethof	C16	Dec. 3, 1999
Mr. Ronald Vaccaro	C17	Dec. 3, 1999
Mr. John Malizia (Staten Island Tuna/Yacht Club)	C18	Dec. 3, 1999
Mrs. William Bugenis	C19	Nov. 27, 1999
The Bike Shop of Staten Island (signature illegible)	C20	Nov. 23, 1999
Mr. Eugene W. Geer	C21	Nov. 30, 1999
Mr. Anthony Cianci	C22	Dec. 23, 1999
Mr. Lee Gelfand	C23	No date
Reverend Joseph R. Parrish Jr.	C24	Nov. 30, 1999
Ms. E. Tsoukalas et al.	C25	Nov. 30, 1999
Signature illegible (to Mayor Giuliani)	C26	No date
Ms. Elizabeth M. Kosich	C27	No date
Ms. Larrell R. Brown	C28	Dec. 26, 1999
Mr. Charles A. Munro, III	C29	Dec. 27, 1999
Elcanor and Steve Romaine	C30	Dec. 28, 1999

Table 6-2. List of Speakers for Public Meeting held on November 16, 1999

SPEAKERS
Len Houston, COE
Michael Beson
Pat Gilligan
Andrew Wilner
Michael Parker
Cindy Zipf
Reverend Joseph R. Parrish, Jr.
Peggy Bowen
Alex DeSevo
Emerson Ellet

Table 6-3. List of Speakers for Public Meeting held on November 22, 1999

SPEAKERS
Raimo Liias, COE
Leonard Houston, COE
Michael McMahon (representing Assemblywoman Elizabeth Connolly)
Michael Arbanites
Kristin Bernhardt
State Senator Vincent Gentile
Raymond Fasano (representing Assemblyman Straniere)
Nick Dmytryszyn (representing Borough President Guy Molinari)
Greg Orlando (representing Council Member James S. Oddo)
Councilman Stephen Fiala
Joseph Carroll
Dan Maynard
Anthony Rose
Congressman Vito Fossella
Andrew Wilner
Michael Parker
Kerry Sullivan
Jim Kelly
John Malizia
James Scarcella
Joseph Toth
Thomas Hamilton
Frank Cresettelli
Bill Pedersen
Caroline Catroneo
Chris Ragucci
John Rooney
Anita Lehrman
Bob Olivari
Peter Leone

APPENIX F

FIGURES

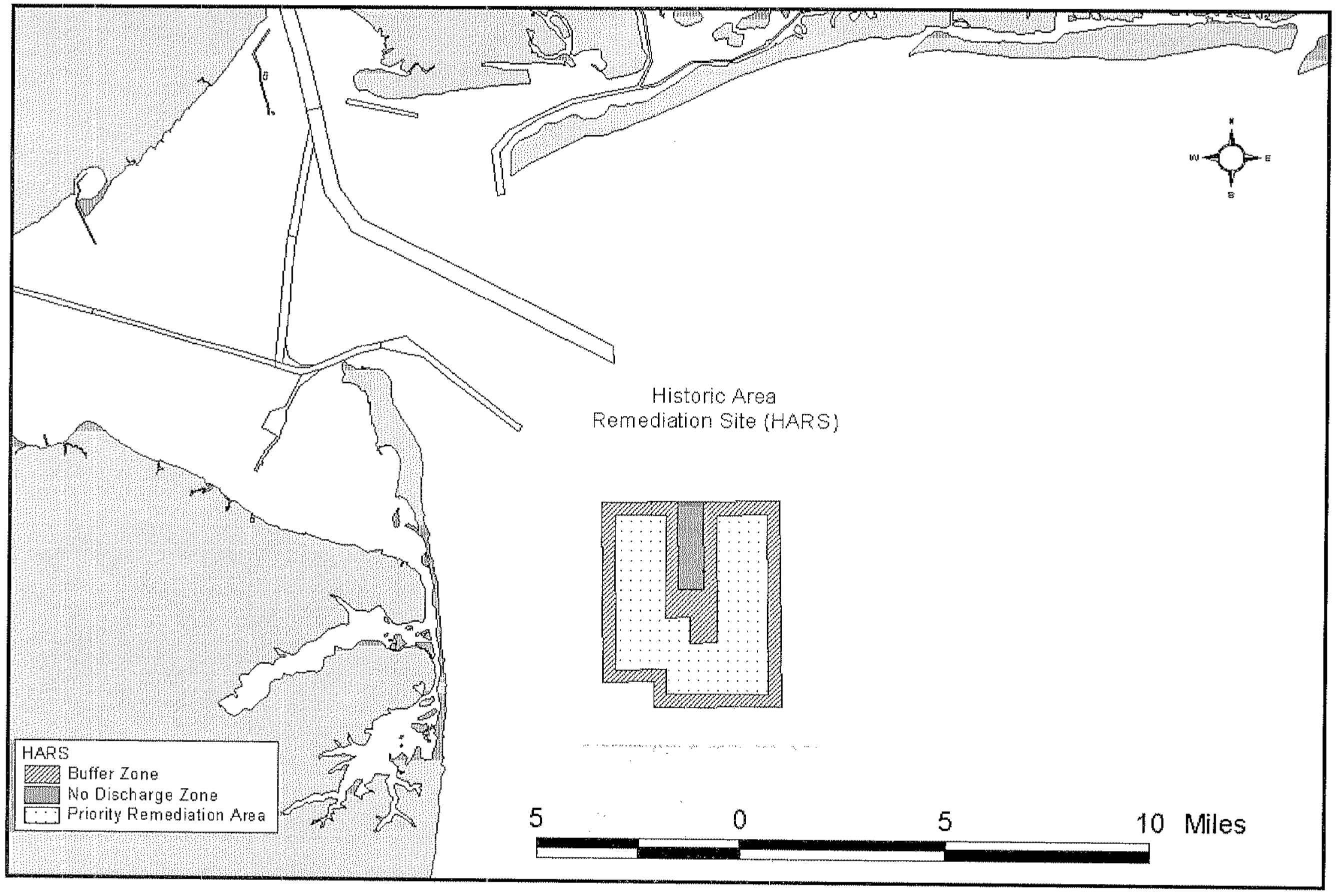


Figure 3-1. Historic Area Remediation Site (HARS)

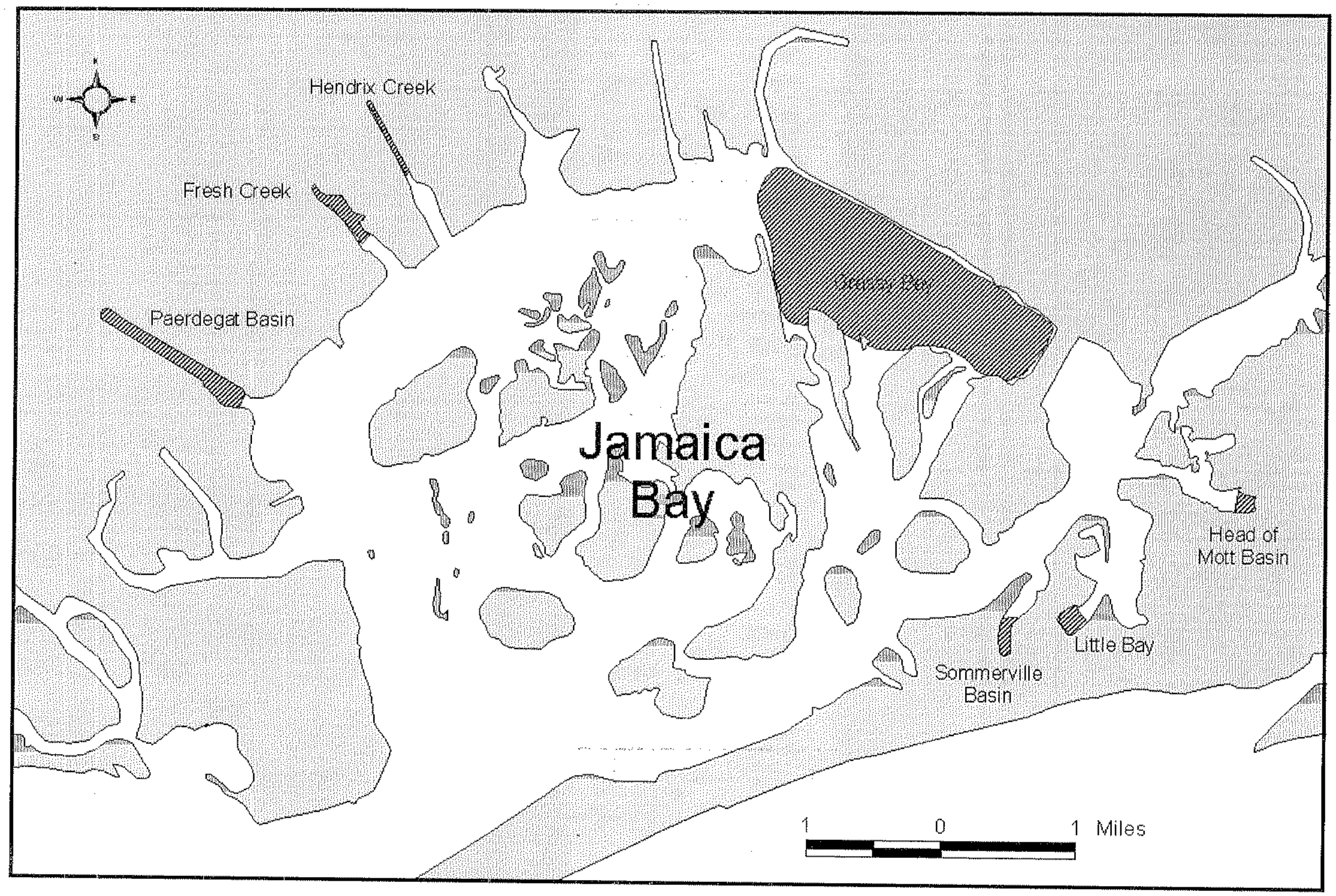


Figure 3-2. Jamaica Bay Zones for Potential Aquatic Restoration

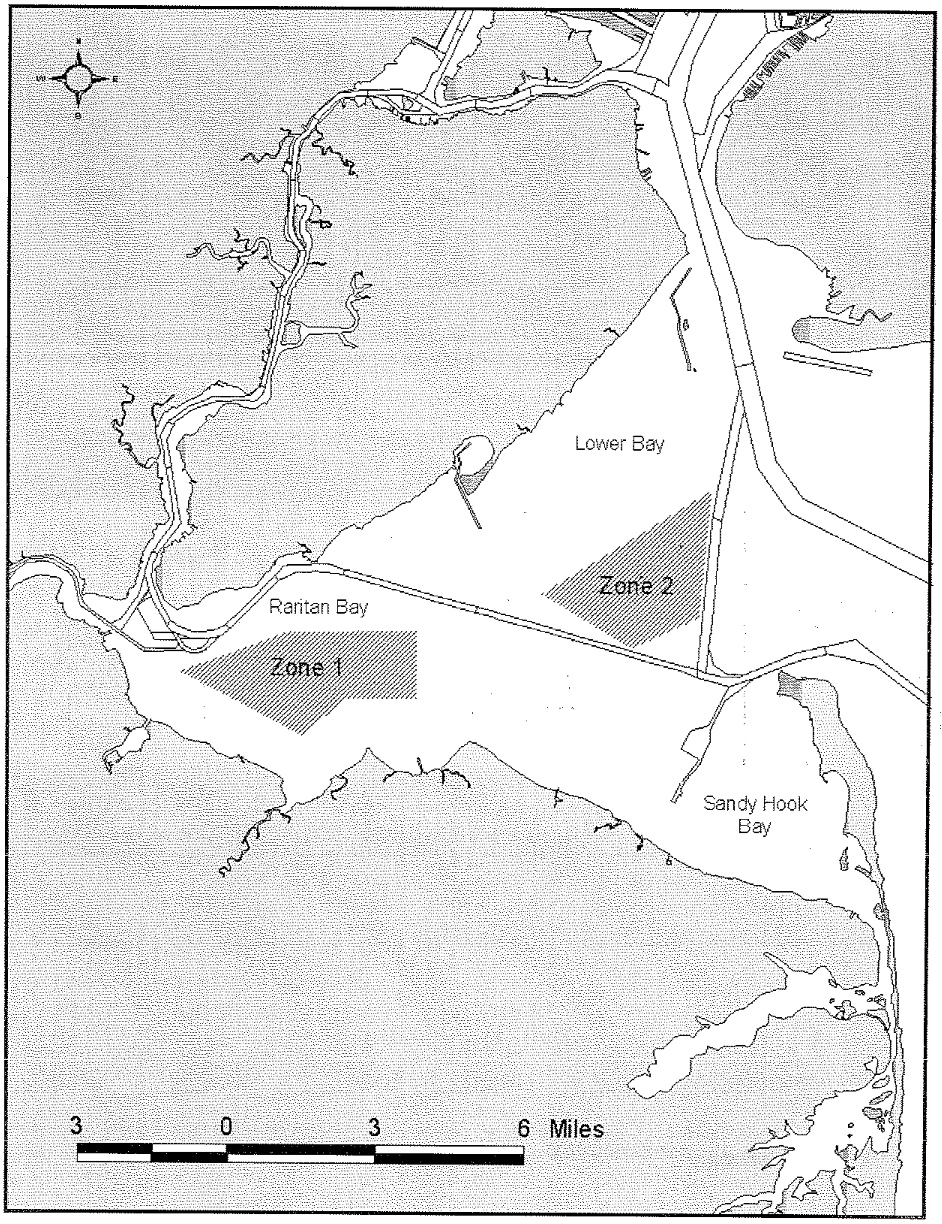


Figure 3-3. Siting Zones for New Pits in the Lower Bay Complex

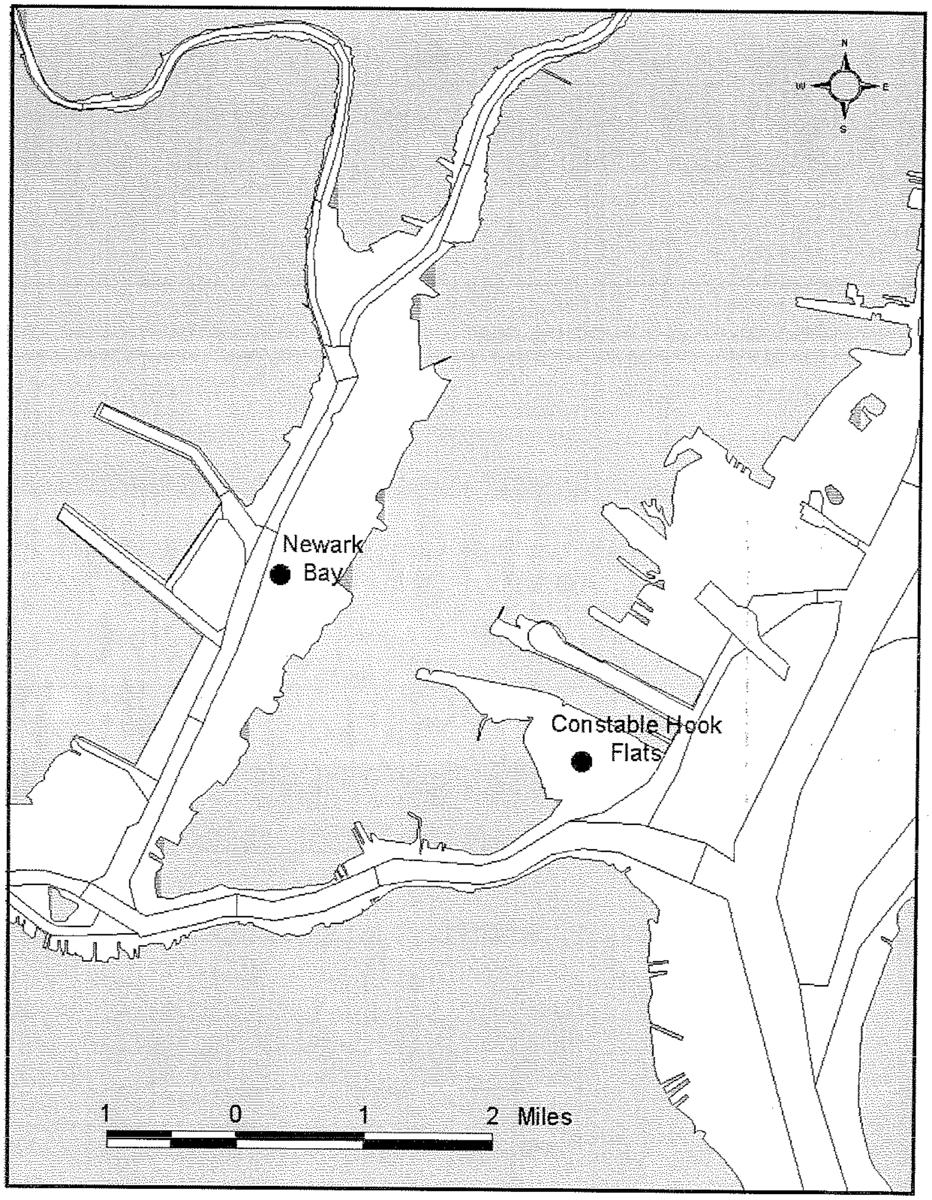


Figure 3-4. Siting Zones for New Pits in the Upper Bay Complex

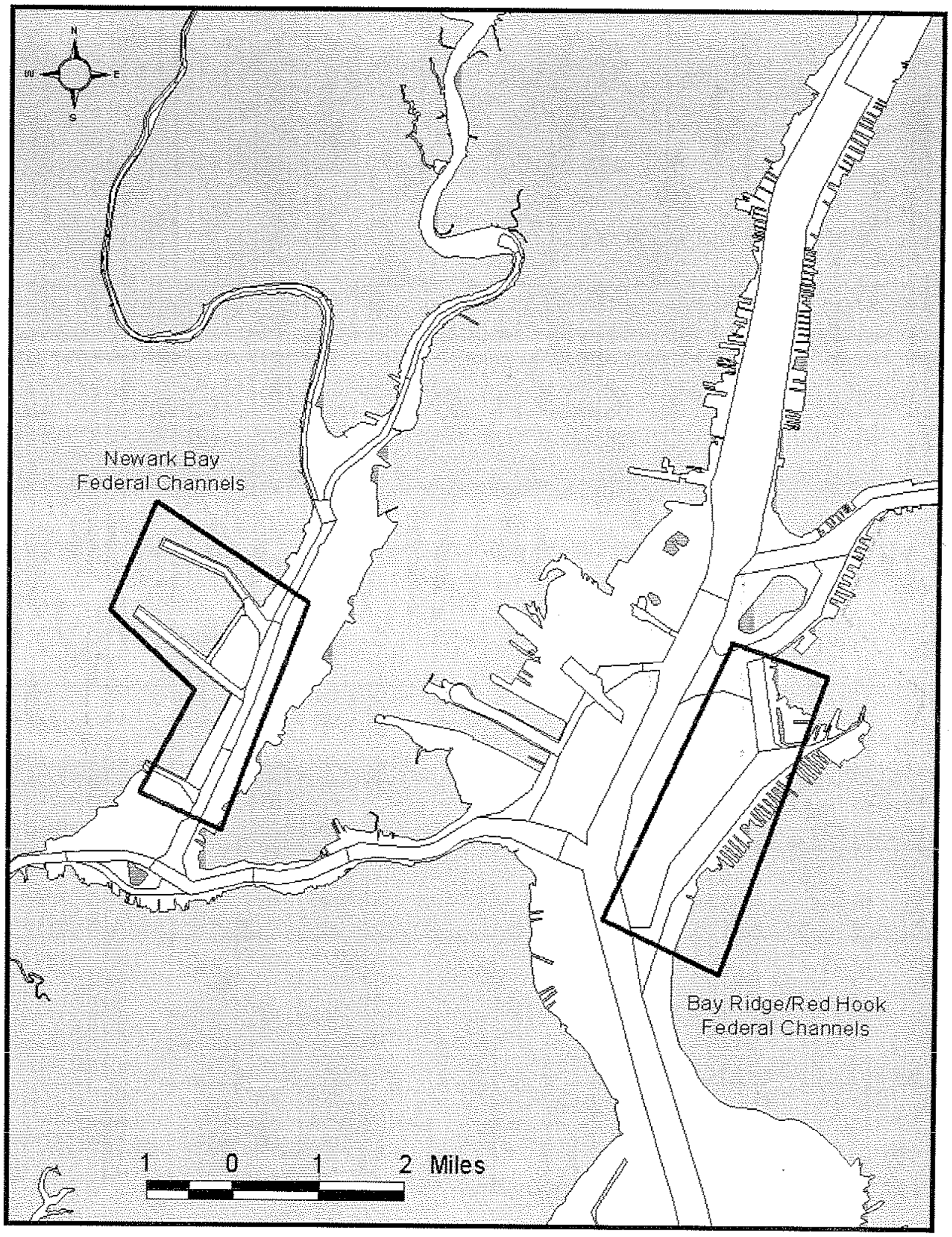


Figure 3-5. Potential In-Channel Placement Pits – Upper Bay Complex

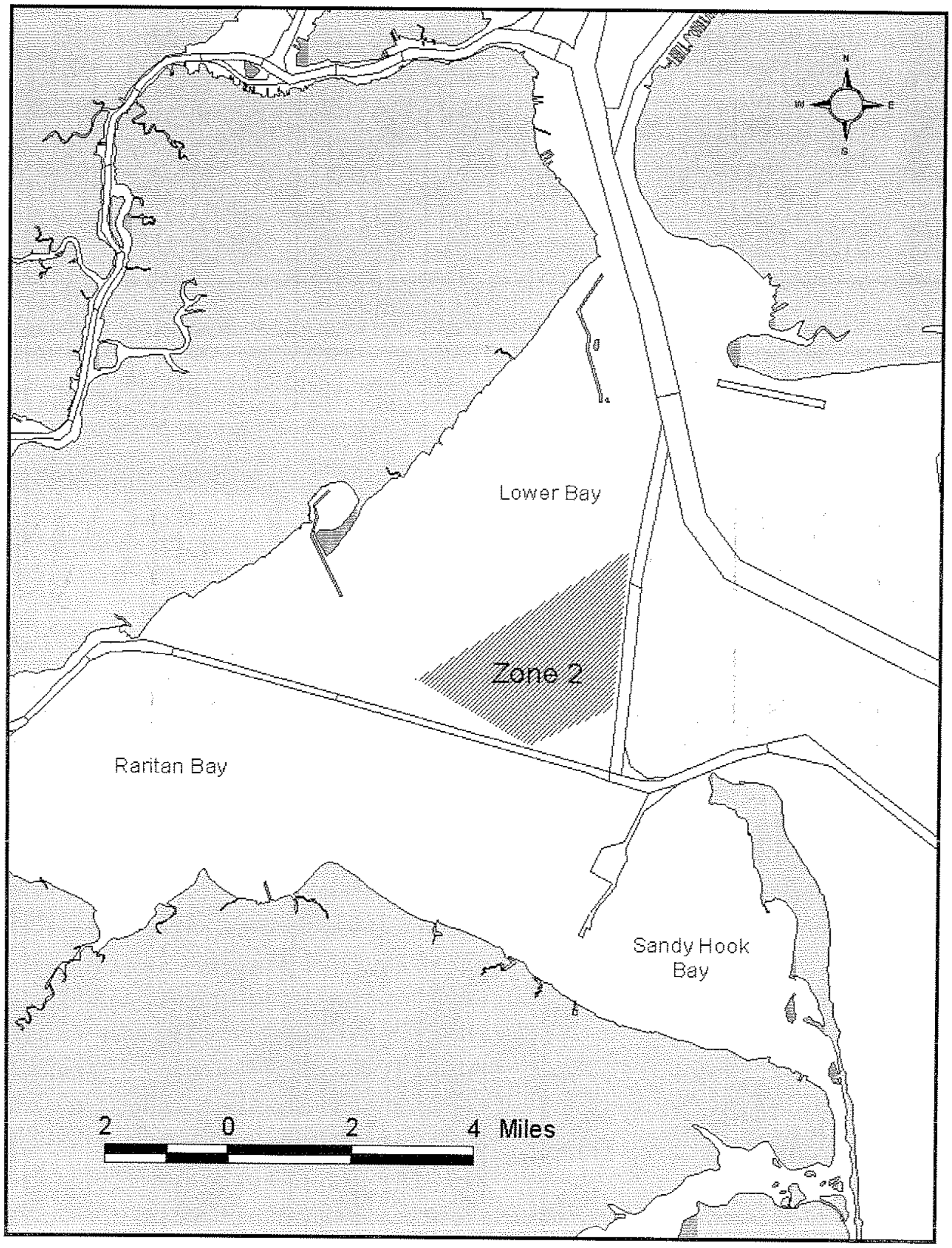


Figure 3-6. Siting Zone for a Bay Island

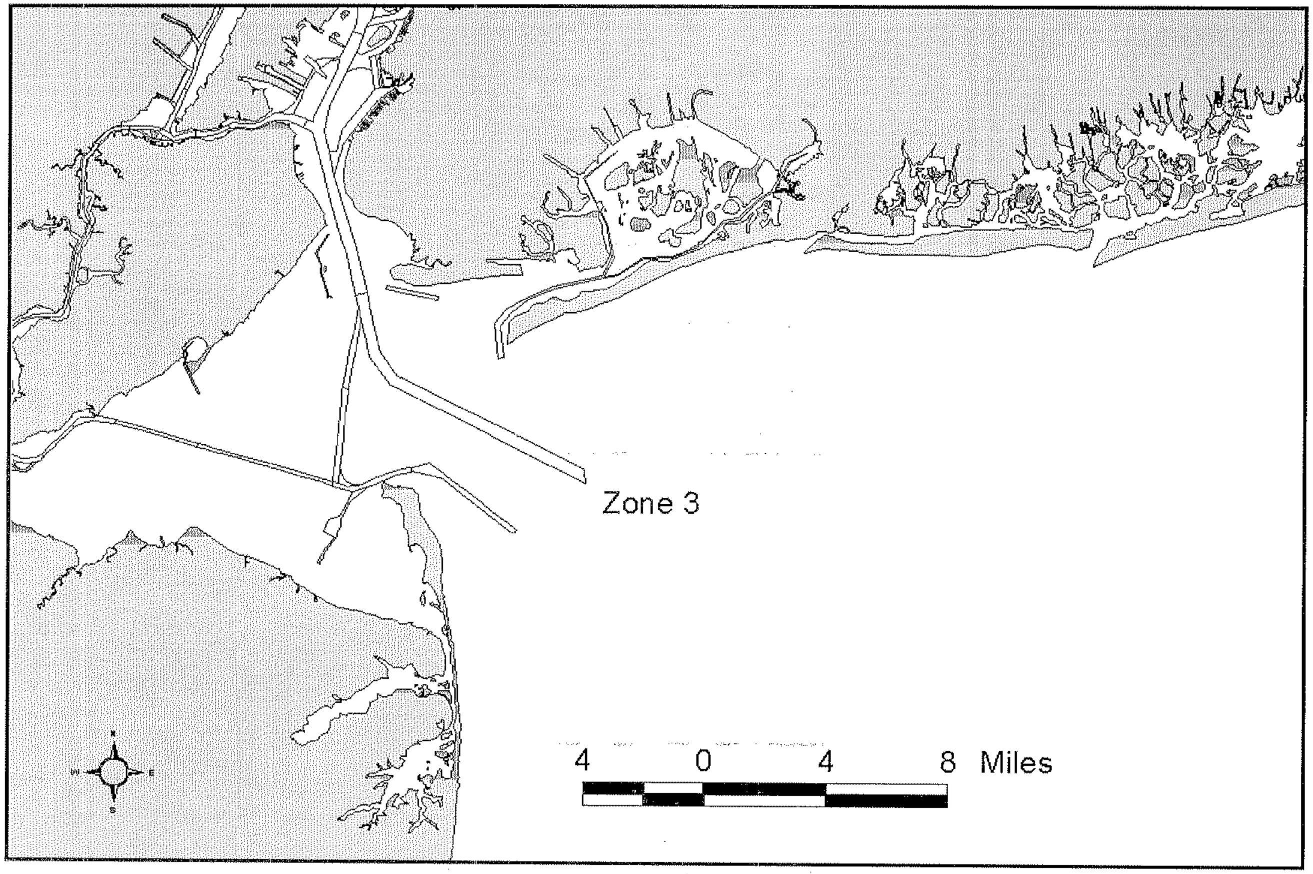


Figure 3-7. Siting Zone for an Ocean Island

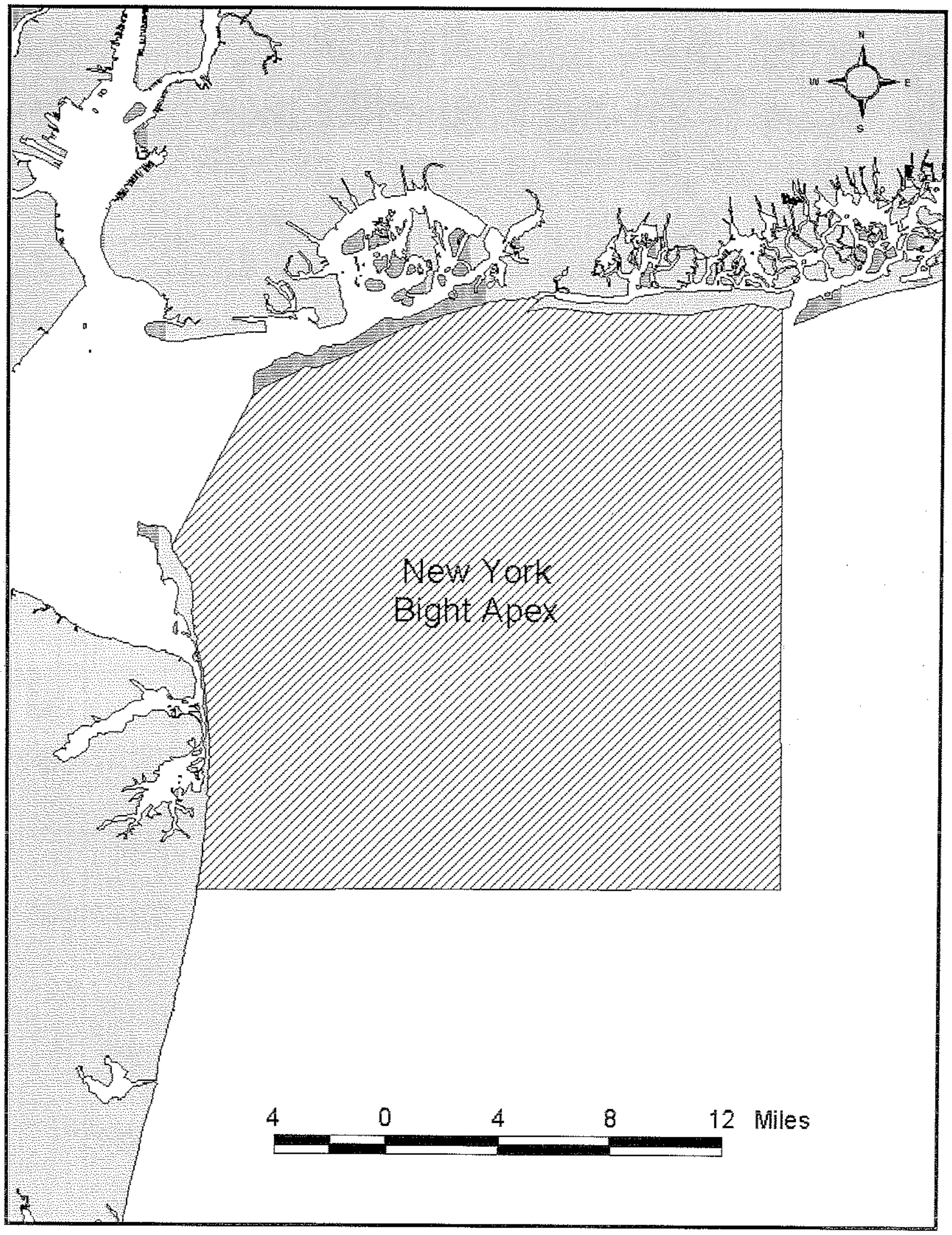


Figure 4-1. Area of the New York Bight Apex

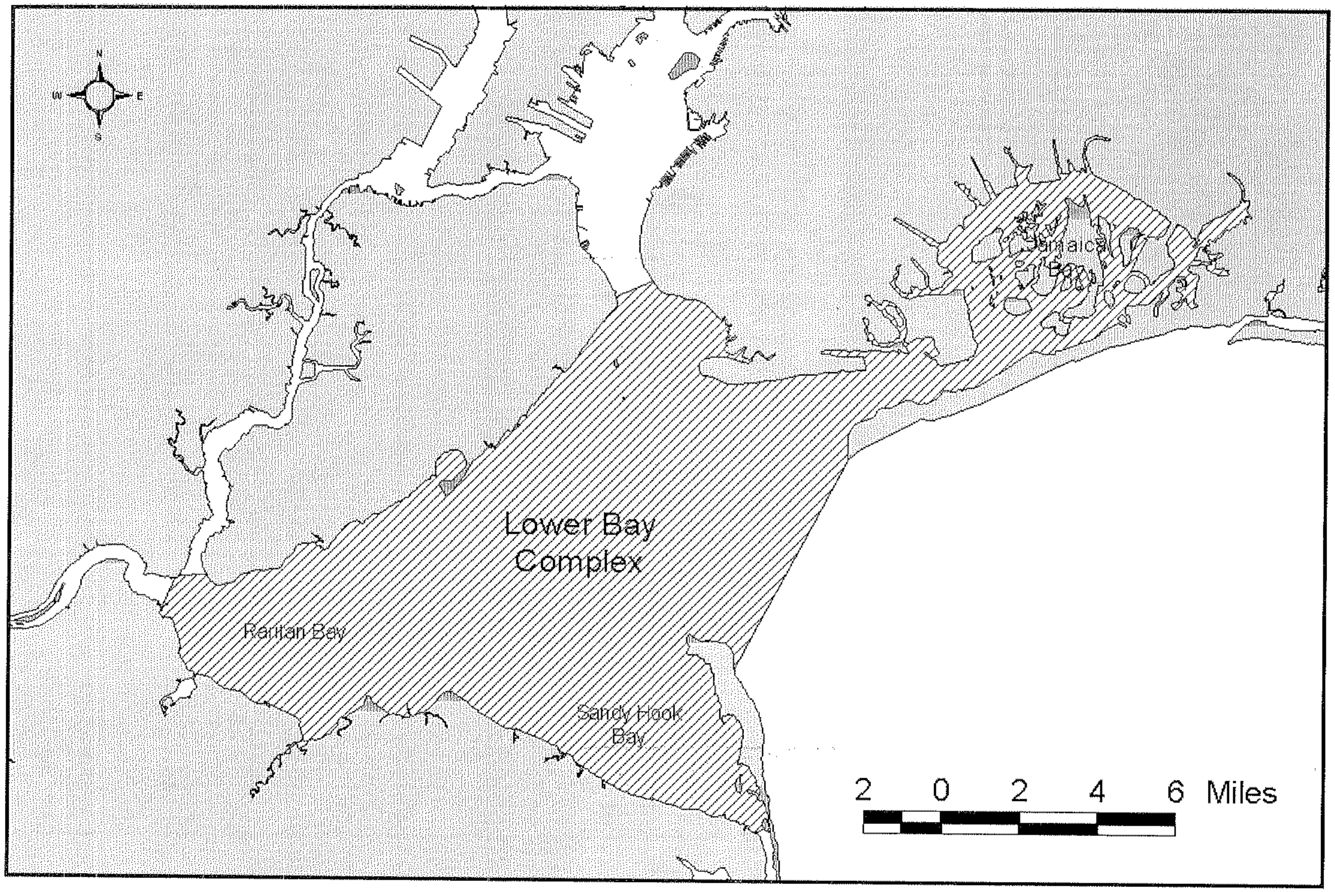


Figure 4-2. Area of the Lower Bay Complex

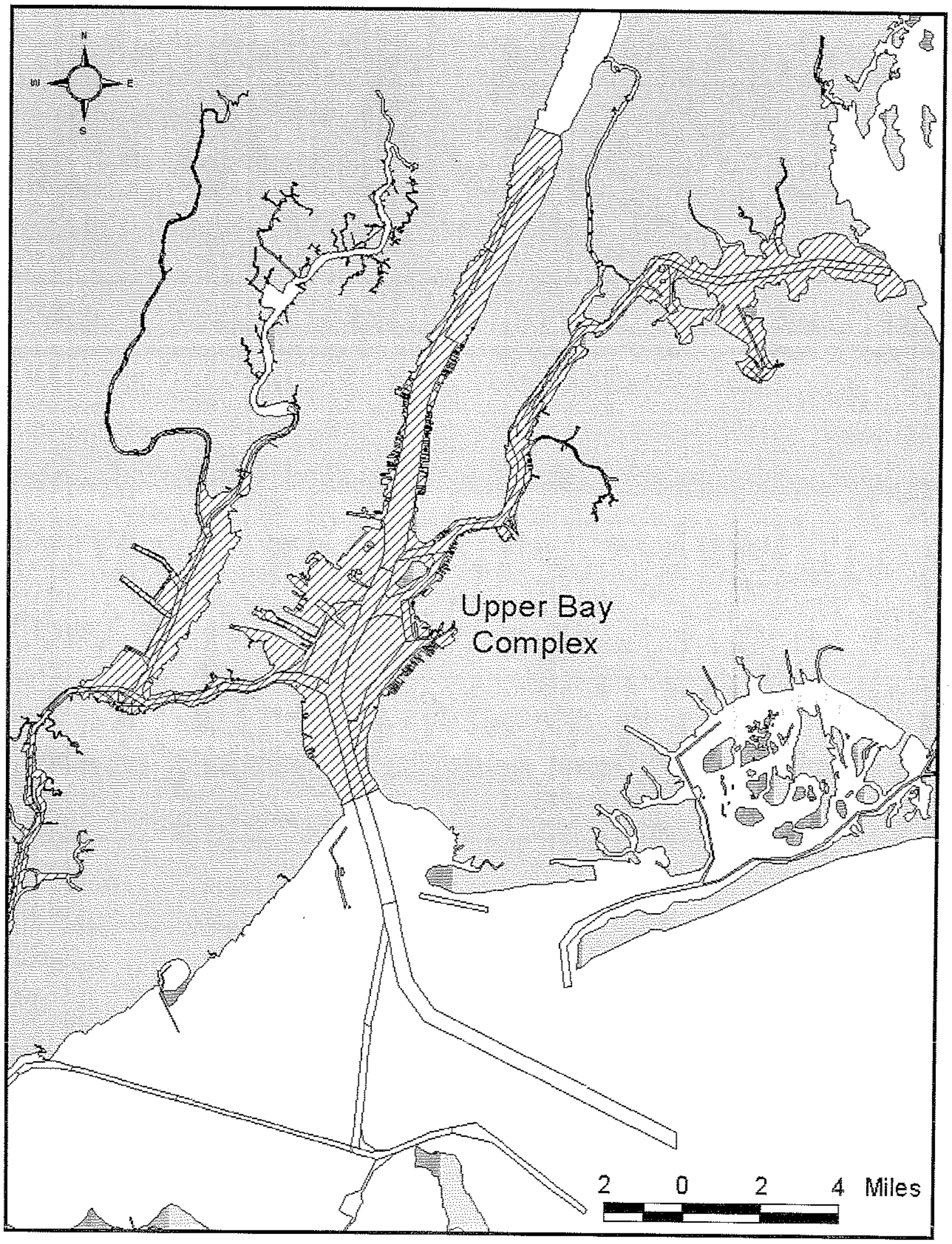


Figure 4-3. Upper Bay Complex

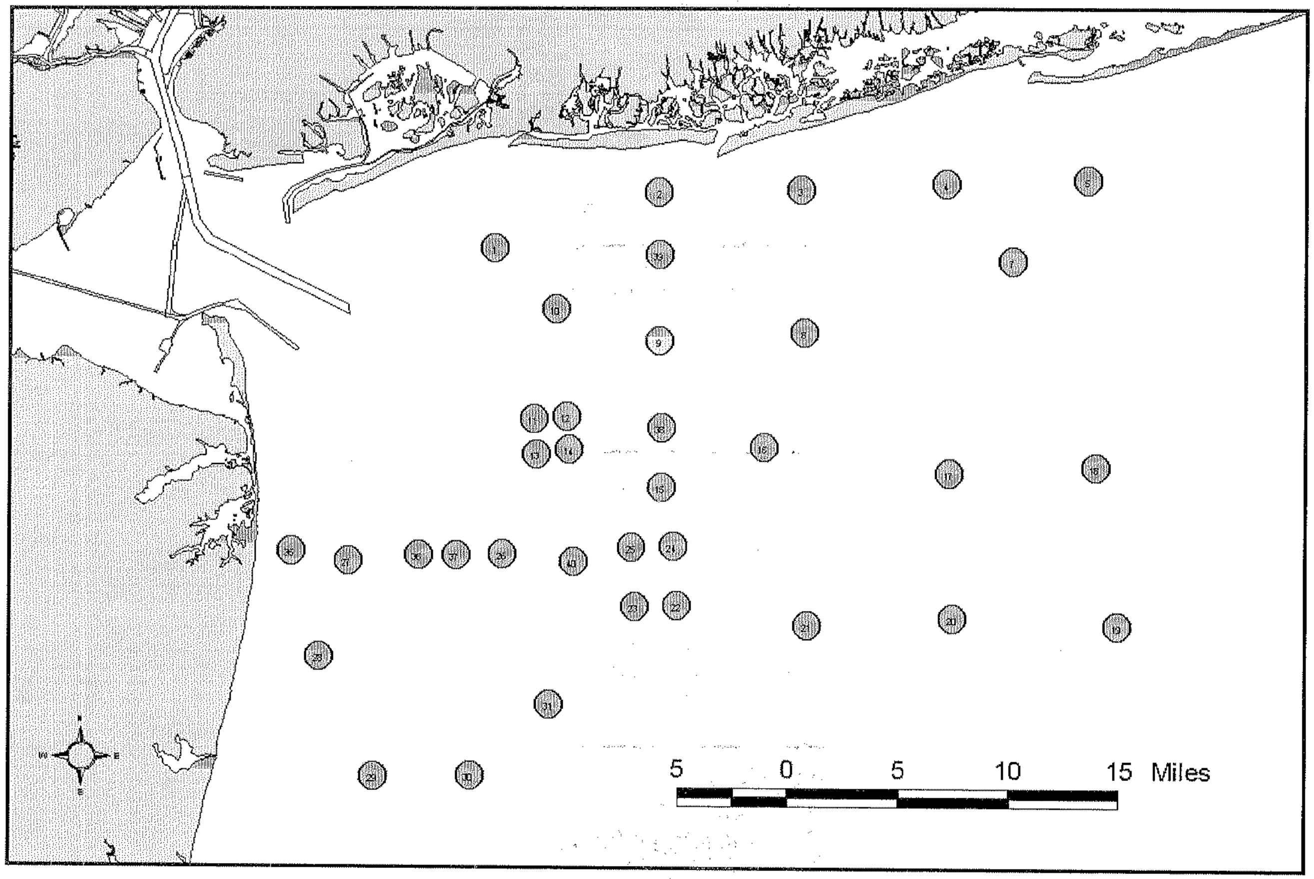


Figure 4-4. Sampling Stations for Sediment/Benthic Infauna Sampling in the New York Bight Apex

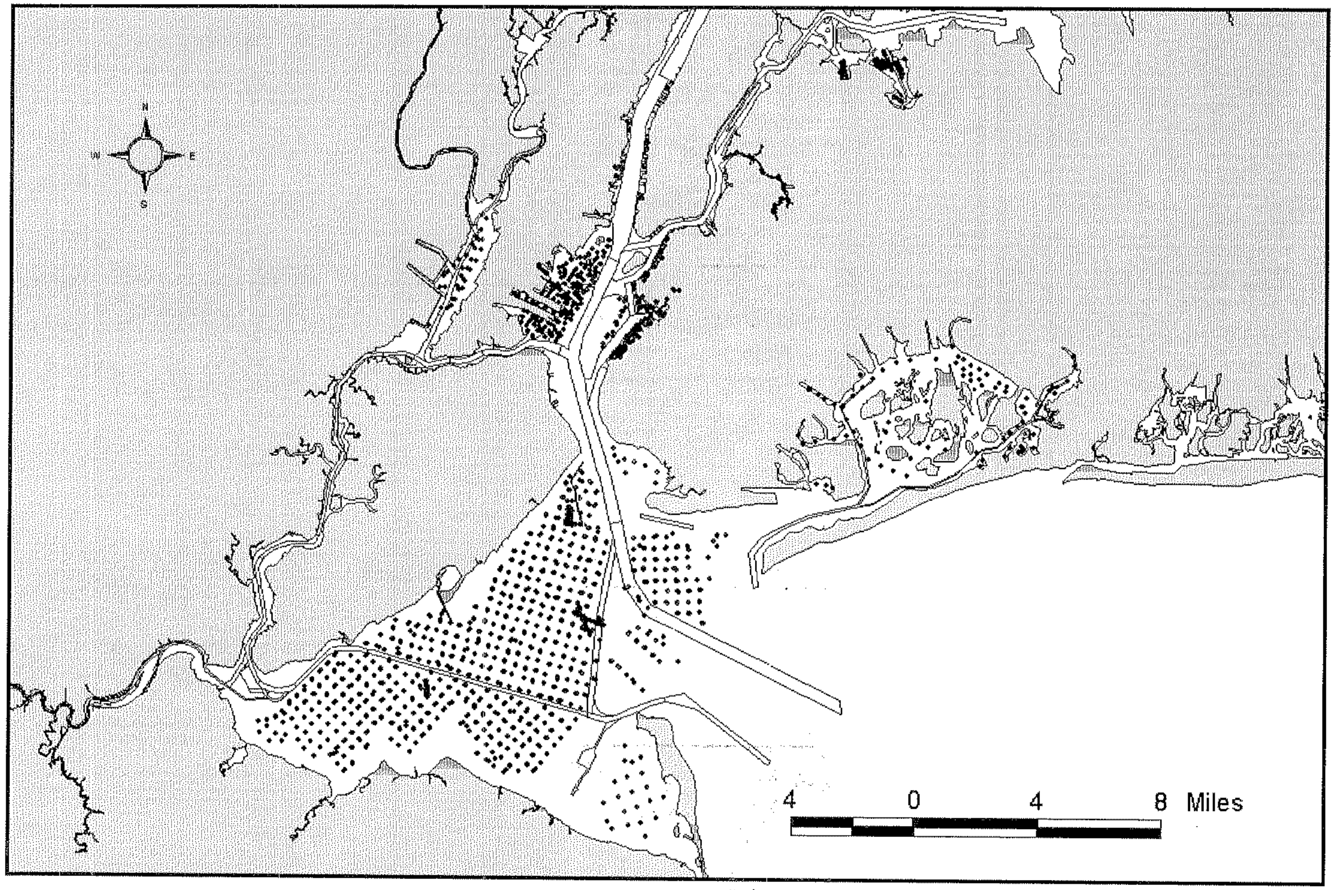
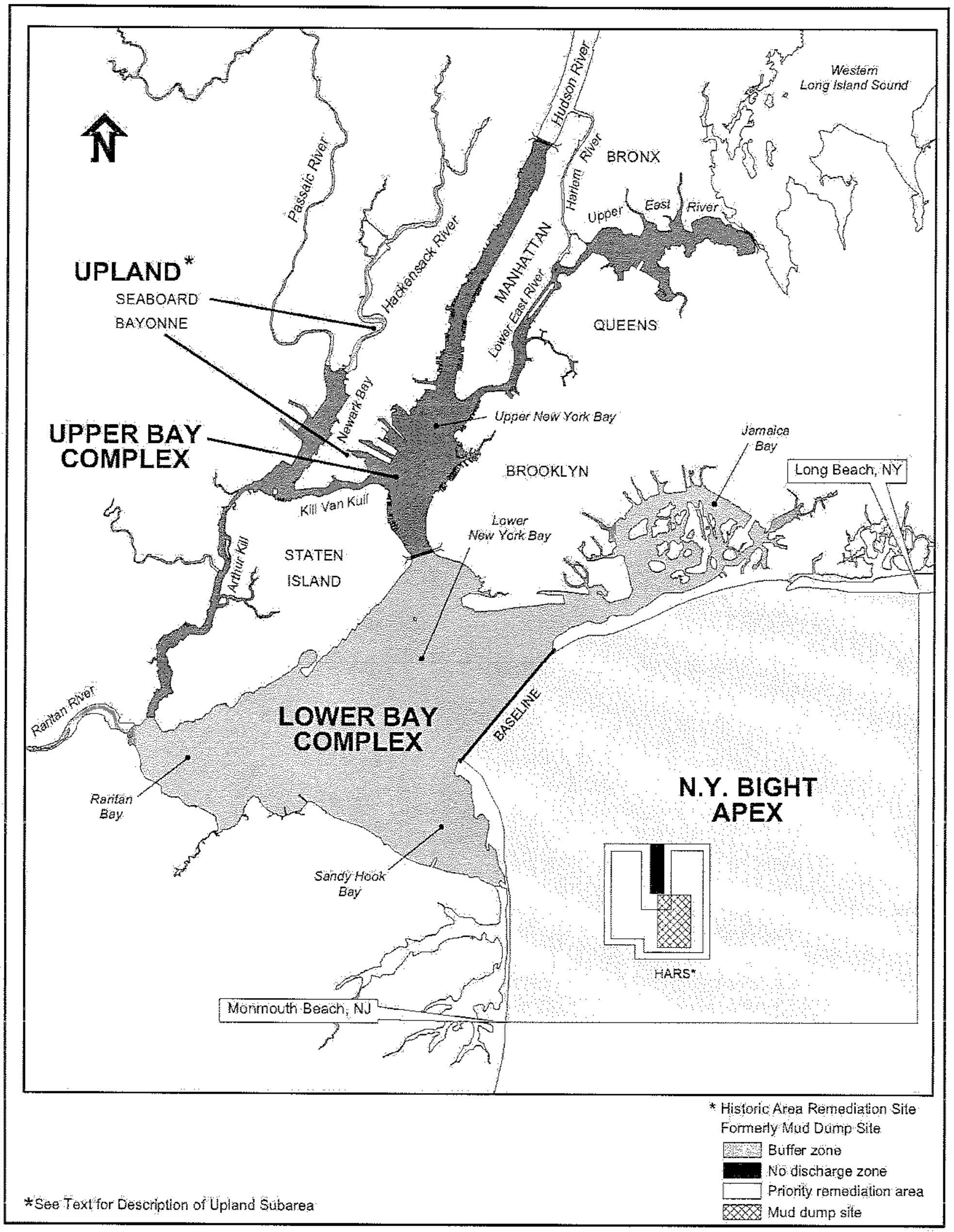


Figure 4-5. SPI/Shipek Sampling Stations in Lower and Upper Bay Complexes



U.S. Army Corps of Engineers

Figure 5.1
Study Area Showing Aquatic Subareas

US Army Corps
of Engineers®
New York District