

NEW BEDFORD HARBOR TRUSTEE COUNCIL

ENVIRONMENTAL ASSESSMENT

**ROUND III
NEW BEDFORD HARBOR RESTORATION
GRANT APPLICATIONS**

DRAFT

Commonwealth of Massachusetts

U.S. Department of Commerce

U.S. Department of the Interior

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Table of Contents:

	Page
Abbreviations Used	3
1. Purpose and Need for Action	5
1.1 The Proposed Action: Environmental Restoration of the New Bedford Harbor Environment	5
1.2 Need for the Proposed Action : Injury to Natural Resources	6
1.2.1 Site History: Contamination of New Bedford Harbor	6
1.2.2 Injury to Natural Resources: Overview.....	7
1.3 Purpose of the Proposed Action: Restore Injured Natural Resources and Lost Services of the Natural Resources.....	8
1.4 Coordination of Restoration with Remediation.....	9
1.5 Process for Soliciting Round III Restoration Projects	9
2. Alternatives and Their Impacts.....	11
2.1 No-Action Alternative: No Environmental Restoration	12
2.1.1 Current Status of the Harbor Environment.....	12
2.1.2 Predicted Scenario Under Natural Recovery Only	13
2.2 The Preferred Alternative: Environmental Restoration	13
2.3 Specific Proposals/Alternatives	14
2.3.1 Marshes or Wetlands	14
2.3.1.1 No-action Alternative: No Marsh or Wetland Restoration, Enhancement or Creation	15
2.3.1.2 Preferred Alternatives	15
2.3.1.3 Non-preferred Alternatives	24
2.3.2 Recreation Areas	24
2.3.2.1 No-action Alternative: No Recreation Area Enhancement or Development.....	24
2.3.2.2 Preferred Alternatives	25
2.3.2.3 Non-preferred Alternatives	26
2.3.3 Water Column.....	27
2.3.3.1 No-action Alternative: No Water Column	

Restoration.....	28
2.3.3.2 Preferred Alternatives	28
2.3.4 Habitats.....	28
2.3.4.1 No-action Alternative: No Habitat Restoration or Enhancement.....	29
2.3.4.2 Preferred Alternatives	29
2.3.4.3 Non-preferred Alternatives	41
2.3.5 Living Resources	42
2.3.5.1 No-action Alternative: No Living Resources Restoration or Enhancement.....	43
2.3.5.2 Preferred Alternatives	43
2.3.5.3 Non-preferred Alternatives	44
2.3.6 Endangered Species.....	46
2.3.6.1 No-action Alternative: No Endangered Species Restoration.....	46
2.3.6.2 Preferred Alternative	47
2.3.7 Studies, Plans or Educational Activities	51
2.3.7.1 Preferred Studies, Plans or Educational Activities	52
2.3.7.2 Non-preferred Studies, Plans or Educational Activities	55
2.4 Cumulative Effects of the Preferred Alternatives	58
3. Listing of Agencies and Persons Consulted.....	62
4. References	64
5. Relationship to Other Laws	66
6. Comments/Responses	76
Index of Restoration Ideas	77
Round III Project Map.....	79

Acronyms Used

ACOE	U.S. Army Corps of Engineers
APR	Agricultural Protection Restriction
AWQC	Ambient Water Quality Criteria
CBC	Community Boating Center
CDF	Confined Disposal Facility
CFR	Code of Federal Regulations
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CR	Conservation Restriction
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
DOC	U.S. Department of Commerce
DOI	U.S. Department of the Interior
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EOEA	Executive Office of Environmental Affairs
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FDA	Food and Drug Administration
FFO	Federal Funding Opportunity
FMP	Federal Management Plan
FR	Federal Register
GPAC	Global Programme of Action Coalition for the Gulf of Maine
MCZM	Massachusetts Office of Coastal Zone Management
MDAR	Massachusetts Department of Agricultural Resources
MDEP	Massachusetts Department of Environmental Protection
MDFW	Massachusetts Department of Fisheries and Wildlife
MDMF	Massachusetts Division of Marine Fisheries
MDPH	Massachusetts Department of Public Health
MGL	Massachusetts General Laws
MNHESP	Massachusetts Natural Heritage and Endangered Species Program
NBHE	New Bedford Harbor Environment
NBHTC	New Bedford Harbor Trustee Council
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
PCB	Polychlorinated biphenyl
ppm	parts per million
RC	NOAA Restoration Center
ROD	Record of Decision

RP	Restoration Plan
RP/EIS	Restoration Plan/Environmental Impact Statement
RSRC	Regional Shellfish Restoration Committee
SAV	sub-aquatic vegetation
USC	United States Code
WRP	Wetlands Restoration Program
WWTP	Wastewater Treatment Plant
YOY	young-of-the-year

1: PURPOSE AND NEED FOR ACTION

1.1 The Proposed Action: Environmental Restoration of the New Bedford Harbor Environment

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or "Superfund," 42 U.S.C. §9601 *et seq.*) provides a mechanism for addressing the Nation's hazardous waste sites, allowing states and the federal government to sue polluters to recover the costs of the clean-up and/or restoration of designated sites. CERCLA provides for the designation of federal, state, or tribal authorities as "natural resource trustees" who represent the public interest in natural resources. Natural resource trustees may seek monetary damages (*i.e.*, compensation) from polluters for injury, destruction, or loss of natural resources resulting from releases of hazardous substances. These damages, which are distinct from clean-up costs, must be used by the trustees to "restore, replace, or acquire the equivalent of" the natural resources that have been injured. (42 U.S.C. §9607(f)(1)) The trustees must prepare a restoration plan and are required to involve the public in the development of the restoration plan (42 U.S.C. §9607(f)(1) and §9611(l); 40 C.F.R. §300.600; 43 C.F.R. §11.93).

The sediments, water column and biota of New Bedford Harbor, Massachusetts, are highly contaminated with polychlorinated biphenyls (PCBs) as a result of industrial discharges into the Harbor and nearby coastal environments in western Buzzards Bay. As a result, the U.S. Environmental Protection Agency (EPA) designated New Bedford Harbor a Superfund Site under CERCLA in 1983.

In 1991 the New Bedford Harbor Trustee Council (NBHTC or Trustee Council) was formed, composed of the Commonwealth of Massachusetts, the U.S. Department of Commerce (DOC), and the U.S. Department of the Interior (DOI). The Commonwealth's designated Trustee is the Secretary of Environmental Affairs of the Executive Office of Environmental Affairs (EOEA) with assistance provided by its departments and divisions. DOI is represented by the U.S. Fish and Wildlife Service with assistance provided by the DOI Office of the Solicitor. The National Oceanic and Atmospheric Administration (NOAA) has been designated as the DOC's lead agency responsible for damage assessment and restoration. NOAA's lead agency for restoration is the National Marine Fisheries Service (NMFS) assisted by NOAA's Office of General Counsel.

In order to satisfy the requirements of the National Environmental Policy Act (NEPA, 42 U.S.C. §4321 *et seq.*), the Trustee Council combined restoration planning with the development of an Environmental Impact Statement (EIS) and prepared a Restoration Plan and EIS (RP/EIS) for the New Bedford Harbor Environment (NBHTC 1998) under CERCLA, 42 U.S.C. §9601 *et seq.*, and NEPA, 42 U.S.C. §4321 *et seq.* A Record of Decision was issued on September 22, 1998 (NBHTC 1998b).

The Trustee Council has undertaken and is undertaking environmental restoration in New Bedford Harbor and the surrounding environment in order to: (1) restore natural resources injured by PCB releases; (2) restore the habitats of living resources and the ecological services that those resources provide; (3) restore human uses of natural resources, such as fisheries and public access; and (4) improve aspects of the human environment of New Bedford Harbor that have been degraded by the Harbor contamination (NBHTC, 1993).

The environmental restoration has incorporated public and professional opinion to develop, evaluate, and select specific and general restoration alternatives. The result has been the selection and implementation of the preferred alternatives identified in the RP/EIS. The RP/EIS also identified appropriate times when the Trustee Council could consider selecting additional projects for implementation. As a result, the Trustee Council initiated a second solicitation of restoration ideas (Round II) which were the alternatives included in an Environmental Assessment (EA) approved on January 8, 2001.

NOAA, acting on behalf of the Trustee Council, issued a notice (70 FR 5161) on February 1, 2005 announcing the availability of grant funds for fiscal year 2005 (Round III). Included in that notice was an announcement of New Bedford Harbor Restoration Grants. This EA describes the process being used by the Trustee Council in making its final recommendations regarding the grant applications for funding of restoration projects to be implemented in Round III to address the injury to natural resources.

1.2 Need for the Proposed Action: Injury to Natural Resources

1.2.1 Site History: Contamination of New Bedford Harbor

New Bedford Harbor is an urban tidal estuary on Buzzards Bay, in southeastern Massachusetts. From the late 1940s until 1977, when the use of PCBs was banned in the United States, manufacturers of electrical parts in New Bedford discharged PCBs directly and indirectly, via the municipal wastewater treatment system, into the New Bedford Harbor Estuary (Estuary). PCBs are a class of chlorinated organic compounds that are suspected human carcinogens. They have been shown to be harmful to many species, capable of causing reproductive failure, birth defects, and death. PCBs tend to “biomagnify” up the food chain, accumulating in the tissues of top predators such as gamefish, birds, and humans (60 F.R. 10836).

A series of studies conducted from 1974-1982 found high levels of PCBs and toxic metals (particularly cadmium, chromium, copper and lead) to be widespread in the water, sediments, and marine life of New Bedford Harbor. Levels of PCBs in the Harbor biota were found to exceed what was then the U.S. Food and Drug Administration (FDA) guideline of 5 parts per million (ppm) (subsequently lowered to 2 ppm). As a result, the Commonwealth closed the Inner Harbor (the area of the harbor north of the Hurricane Barrier) to all fishing, and the Outer Harbor (the area of the harbor south of

the Hurricane Barrier extending out to Closed Area III) to the taking of certain species in September, 1979.

In the late 1980s and early 1990s, studies further demarcated the distribution of PCBs and toxic metals throughout the Estuary and in parts of Buzzards Bay (Pruell et al., 1990). PCB concentrations in marine sediment in the Estuary were found to range from a few parts per million to over 200,000 ppm, while concentrations in excess of 50 ppm were found in parts of Outer New Bedford Harbor. PCB concentrations in the water column were found to exceed federal ambient water quality criteria (AWQC) (0.030 ppm, based on chronic impacts to marine organisms) (60 F.R. 10836).

In 1983, New Bedford Harbor was designated as a Superfund Site, eligible for Federal clean-up action, or “remediation.” In addition, Massachusetts has identified New Bedford Harbor as the Commonwealth's priority Superfund site. As a result of settlements in 1991 and 1992 with the federal government and the Commonwealth of Massachusetts, the manufacturers responsible for the contamination paid approximately \$100 million for remediation and restoration of New Bedford Harbor. Of this amount, approximately \$21 million plus accrued interest must be used by the Trustee Council for restoration, replacement or acquisition of natural resources.

1.2.2 Injury to Natural Resources: Overview

Discharges of PCBs to the New Bedford Harbor Environment (NBHE¹) have caused significant ecological injury. Widespread contamination of the air, water, sediments and biota of the Estuary has resulted in lethal effects for some species as well as widespread sub-lethal effects such as reduced biological diversity, alteration of biotic communities, and reproductive impairment of marine species.

Contamination of New Bedford Harbor natural resources by PCBs has resulted in the closure of fishing grounds, lost use of beaches, and loss of environmental quality.

The Superfund Site remediation of New Bedford Harbor is expected to remove 85% to 90% of the PCB contamination from New Bedford Harbor. It will not, however, restore the NBHE to its pre-contamination condition. Lower, but still significant, levels of PCBs and metals will remain in the marine sediments of some Harbor areas. An offsite

¹ The “New Bedford Harbor Environment” means New Bedford Harbor, Massachusetts, and the adjacent waters and shore areas containing natural resources which have been or may be injured, destroyed or lost as a result of releases of hazardous substances from the facilities. This includes the New Bedford Harbor Superfund Site, located in portions of New Bedford, Acushnet and Fairhaven, Massachusetts, including New Bedford Harbor, the Acushnet River Estuary extending north to the Wood Street Bridge, and any adjacent marine waters and sediments and shoreline areas which were the subject of the United States Environmental Protection Agency's Remedial Investigation and Feasibility Study, including at least Areas 1, 2 and 3 as defined in 105 CMR 260.005. (Note: Contamination found outside of this defined area (north of Wood Street) has been the the subject of recent cleanup actions.)

disposal option is being assessed but if the cost of this option proves to be too expensive confined disposal facilities (CDF) containing PCB laden sediments may be constructed and occupy portions of the shoreline along New Bedford Harbor.

Contamination from other sources such as combined sewage overflows, wastewater treatment plant discharges, industrial wastewater discharges, and boats is also present. The Superfund designation of this site was based primarily on the PCB releases from industrial discharges at two locations and not on these other sources of environmental contamination.

1.3 Purpose of the Proposed Action: Restore Injured Natural Resources and Lost Services of the Natural Resources

The purpose of the proposed action--natural resource restoration in New Bedford Harbor--is to restore, replace or acquire the equivalent of natural resources injured by PCB releases in New Bedford Harbor, as required by CERCLA (42 USC §9607(f)(1)). Restoration actions would accelerate and enhance recovery of the ecosystem, the ecological services provided by the ecosystem, and associated human uses.

In order to assess the potential environmental impacts of the restoration, the Trustee Council defines the affected environment to include the lands of the Acushnet River watershed, the waters of the Acushnet River and New Bedford Harbor, and parts of Buzzards Bay, as well as uses of this environment -- ecological as well as human -- extending beyond these boundaries. However, since the injury primarily affected marine and coastal resources, the proposed restoration focuses on the natural resources of the Estuary and adjacent coastal areas.

Following the process described in RP/EIS Section 2.2.7.5, the Trustee Council solicited natural resource restoration ideas from the public for near-term restoration projects.

In October 1995, the Council issued an initial "Request for Restoration Ideas" (60 FR 52164, October 5, 1995)(Round I). Fifty-six ideas were received from the local communities, members of the public, academia and state and federal agencies. The ideas were the basis for the alternatives listed in the Council's RP/EIS that was developed to guide the Council's restoration efforts. A record of decision (ROD) was issued on September 22, 1998 for the RP/EIS. The ROD provided for implementation of 11 preferred restoration projects through funding provided by the Trust Account.

A second request for proposed restoration ideas was issued in August 1999 (64 FR 44505, August 16, 1999) (Round II). Thirty-five restoration ideas were submitted to the Council with total requested funding of approximately \$35.0 million from the Trust Account. After consideration of public comment, the Council chose to implement 17 restoration ideas worth over \$8 million.

1.4 Coordination of Restoration with Remediation

Restoration of the NBHE has been and will continue to be coordinated with the process of remediation, since the restoration options available at a particular time would be largely dependent on the status of the Harbor environment and clean-up. Water and sediment quality, ongoing dredging and construction activities, and the location and extent of CDFs will influence the possibilities for restoration. The Trustee Council, therefore, is implementing a flexible restoration planning process, based on a combination of near-term and future restoration actions. The process makes use, over a number of years, of a series of public solicitations for restoration ideas.

One issue that is causing greater uncertainty is the level of funding available to the EPA for cleanup of the harbor. The settlement funds designated for the cleanup have been expended. When this occurs, funds can be sought from the Superfund. However, there is no longer any Superfund and cleanup activities must now be funded out of annual appropriations. At recent levels of funding, the current phase of cleanup could take over 20 years to complete, and additional phases, longer. Despite this uncertainty, the Trustee Council will continue to work with the EPA to coordinate respective activities and conduct natural resource restoration in those areas where cleanup actions will not disturb the restoration. The Trustee Council will also continue to seek EPA's involvement, where appropriate, on those restoration projects that would benefit from earlier cleanup.

1.5 Process for Soliciting Round III Restoration Projects

The implementation of restoration activities from previous rounds has sometimes been a slow and cumbersome process. This has been made more difficult by the large number of projects (Round I resulted in 11 projects, and Round II resulted in 17 projects) and the many steps needed for their implementation. Round I and II projects are primarily implemented by Trustee Council staff through additional solicitations for contracts or grants. This process has hindered some applicants who were prepared to move forward with direct restoration funding. To address this concern, Trustee Council staff explored alternative means to conduct Round III.

Initially the Council considered having an organizational foundation handle the administration of restoration projects. The foundation would receive project funds and issue contracts or grants to implement the project. The foundation would charge an administrative oversight fee based upon the funds received for the projects. This would take the burden off of the Trustee Council staff but would also increase implementation costs. A benefit-cost analysis eventually determined that this method would be too expensive despite potentially accelerating project implementation dates. This method was rejected by the Trustee Council.

Another method considered was to solicit for restoration projects rather than restoration ideas. When soliciting for ideas, the concept does not have to be very specific nor does the applicant have to be the entity eventually doing the project. An example of this was the Round I idea to install a box culvert in the hurricane barrier across the mouth of New Bedford Harbor. Although the idea was suggested by a private citizen, project implementation would require the involvement of the U.S. Army Corps of Engineers. In this example, the applicant would not be the one actually doing the project. Council staff would work with the U.S. Army Corps of Engineers and prepare the contract documents to get the work accomplished.

The result of soliciting for projects is that applicants would actually be doing the restoration project with oversight from the Trustee Council staff. The means to apply for funding would be a grant application which requires a complete project description and budget. This places a greater burden on the applicant. The applicant needs to have complete information and be able to do or administer the project. No longer would a suggested idea be taken and implemented by an agency.

Despite these shortcomings, this method was chosen for Round III since it would result in applicants being able to receive funds more quickly to implement restoration projects. As mentioned previously in Section 1.1, a notice was published in the *Federal Register* on February 1, 2005 announcing the availability of grant funds for New Bedford Harbor Restoration Projects. Notice was also provided through GRANTS.GOV, the U.S. government's method of announcing grant opportunities and receiving applications, as well as email notifications, letters, press releases and a posting on the Trustee Council's website (www.restorenbh.gov). Accompanying the notice was a Federal Funding Opportunity (FFO) (NOAA 2005) which described the information required for application and the means by which applications would be reviewed and decisions made. Applicants had 45 days to submit an application to the Trustee Council for consideration. A total of 19 applications were received by March 18, 2005. Of these, four were rejected for not being related to the solicitation (i.e. did not involve projects to restore New Bedford Harbor natural resources) and are not considered in this EA.

The 15 remaining applications requested a total of \$11.0 million in Trustee Council funding and addressed several but not all of the Trustee Council's restoration priorities. These proposals were the subject of legal review and technical review and scoring. Recommendations were then made to the Trustee Council which met in closed session with its technical and legal advisors to receive and discuss the recommendations and render preliminary decisions. This EA examines the applications received as alternatives and documents the Trustee Council decision process. The EA identifies six preferred alternatives and the Council's suggested funding levels but also requests specific comments on options and funding levels for two land acquisition projects.

The preferred alternatives and their suggested preliminary funding levels are:

Marshes or Wetlands

1. West Island Beach Saltmarsh Restoration (\$162,000)
2. River Road Restoration (\$195,000)

Recreation Areas

No preferred alternatives

Water Column

No applications received

Habitats

1. Acushnet River: Headwaters to Bay
 - a. Acushnet River North (up to \$833,000, options)
 - b. Acushnet Sawmill (up \$1,651,500, options)
 - c. Marsh Island South (up to \$397,500)
 - d. Viveiros Farm (up to \$1,270,000)

Living Resources

No preferred alternatives

Endangered Species

1. Restoration and Management of Tern Populations in Buzzards Bay (\$833,336.15)

Studies, Plans or Educational Activities

1. Apponagansett Bay Resource Restoration Feasibility Study (\$175,000)
2. Round Hill Salt Marsh Restoration Project (\$164,000)

The selection of these projects as preferred alternatives is not expected to be controversial.

2: Alternatives and Their Impacts

This section analyzes environmental impacts of the proposed action: environmental restoration of New Bedford Harbor. This section identifies restoration alternatives under consideration and evaluates their environmental consequences. Restoration priorities were established through a public process of communication among the Trustee Council agencies, other public officials, members of the public, and other stakeholders. (RP/EIS Chapter 2) The alternatives that follow were derived from a public, formal solicitation of grant applications for New Bedford Harbor restoration projects (70 FR 5161).

2.1 No-Action Alternative: No Environmental Restoration

No-action/natural recovery (with monitoring) must always be considered in environmental analysis, and should be chosen when it provides greater environmental benefits than other alternatives.

For purposes of this analysis, the no-action alternative assumes that the Harbor cleanup described in Chapters 2 and 3 of the RP/EIS will be completed in approximately twenty years (i.e., thru 2025); that it will reduce the level of contaminants in the Harbor Environment; that previous Trustee Council funded projects will be implemented and that EPA initiated natural resource restoration activities resulting from cleanup activities will be undertaken during or after cleanup.

2.1.1 Current Status of the Harbor Environment

The release of PCBs, heavy metals and other contaminants into the New Bedford Harbor Environment has caused injury to natural resources and lost use of those resources. Sewage, household wastes, and commercial wastes such as debris, oil, metals and organics all contributed to a degraded environment.

The discovery that PCBs and other contaminants had been released into the Harbor since the 1940s caused New Bedford Harbor to be added to the National Priorities List by EPA in 1983. Marine sediments, beaches, the water column, and biota were contaminated with PCBs, and this has in turn affected the area's natural resources and ecosystems. PCBs have been shown to harm reproduction and can cause cancers in marine species.

The impacts from PCB contamination are not limited to natural resources alone. The services provided by the natural resources in the affected area have been impacted as well. The contamination resulted in the prohibition of fishing in large portions of the Harbor Environment. Other activities provided by the natural resources became unfeasible or undesirable. The Massachusetts Department of Public Health (MDPH) posted warning signs along the Harbor prohibiting swimming, fishing, shellfishing and lobstering.

Initial cleanup actions removed 14,000 cubic yards of contaminated sediment with PCB levels exceeding 4,000 ppm. This activity occurred in the Upper Estuary portion of the Harbor during April 1994 through September 1995. The dredging focused in a five-acre area designated as the "Hot Spot Area" so named because it contained the highest concentration of PCB-contaminated sediments. Additional cleanup occurred in an Upper Estuary area north of Wood Street where 12,000 cubic yards of PCB-contaminated sediment was removed from November 2002 through March 2003. This cleanup was necessary because of the high concentrations of PCBs and the proximity

of this area to the residences and parks located along the shoreline nearby. At the conclusion of the sediment removal, the area was replanted with native trees and wetland grasses and shrubs. An additional 14,000 cubic yards was dredged in the Fall of 2004.

It has been estimated that a total of 880,000 cubic yards or more of PCB-contaminated sediment will need to be removed and disposed of to complete this phase of the cleanup. EPA is putting the infrastructure in place (dewatering facility, desanding facility, pumping and pipeline) to allow additional contaminated sediment removal to proceed.

2.1.2 Predicted Scenario under Natural Recovery Only

Natural recovery for the Harbor is often slow and may not restore resources, habitats, or associated services to baseline conditions. PCBs were designed to remain stable in industrial applications this means that they are chemically stable (will not easily degrade into other compounds), are able to withstand high temperatures, have low solubility in water, and are non-flammable. These characteristics also mean that they will remain in the environment for a long time and will bioaccumulate in the tissues of living resources. (Weaver, 1982) Other contaminant sources such as heavy metals and sewage may also adversely affect recovery times within the Harbor Environment.

The damage assessment conducted on the New Bedford Harbor Environment assumed a natural recovery period of 100 years without remediation. This is a likely scenario given the stability of PCBs and environmental processes taking place. As described in RP/EIS Section 3.5.1.2, EPA has informally estimated that once the cleanup is completed, water quality target levels for PCBs may take another ten years to achieve (Dickerson, PC, 1996). The Harbor cleanup will reduce the concentration and volume of PCBs, but residual PCBs will continue to remain and affect natural resources for an additional 16-100 years.

2.2 The Preferred Alternative: Natural Resource Restoration

Funds to restore injured natural resources are available from settlements with the parties responsible for releasing contaminants into the New Bedford Harbor Environment. The Trustee Council has the legal responsibility to use these funds money to restore, replace or acquire the equivalent of the natural resources that were injured.

Natural resource restoration will accelerate the natural recovery process and, in turn, should lead to additional economic benefits through increased use and greater confidence in the health of the Harbor. The sooner injuries can be corrected through cleanup efforts and natural resource restoration, the sooner natural resources can thrive in a healthy environment. Such an environment will support larger populations of marine organisms, healthier individuals and a greater diversity of species. This will also

lead to increasing the services provided by the natural resources such as fishing, shoreline use and boating.

Due to time constraints and settlement of the litigation, the damage assessment performed was incomplete and was a generalized approach for determining the impacts of the contamination on natural resources. It remains for the Trustee Council to determine the best approach for restoration. Other environmental impacts are present in the area which may mask or increase the impacts of PCB contamination. Historical information does not describe the quality to which resources should be restored. Accordingly, the preferred approach is to take a holistic view and address natural resource restoration opportunities throughout the affected environment. This will provide ecological benefits throughout the watershed while having additional positive effects on the human environment.

Projects will be selected to address the restoration priorities (RP/EIS Section 2.2.6) by applying the selection criteria (RP/EIS Section 2.2.5). The selection criteria were further refined through the FFO used to announce the grant availability for Round III. The FFO provided clarification regarding the first criteria and read:

“The potential of the project to restore, protect, conserve, enhance, replace or acquire the equivalent of natural resources that were injured as a result of the release of hazardous substances, including PCBs, in the New Bedford Harbor Environment. This is a required provision for project acceptance. Only if a project satisfies this provision will the project be evaluated for the following factors...”

The FFO went on to describe the restoration criteria previously presented in the RP/EIS.

2.3 Specific Proposals/Alternatives

This section identifies the fifteen Round III restoration project grant applications received and the preliminary preferred alternatives resulting from the Council's review process organized by restoration priority set forth in the RP/EIS at Section 2.2.6.

2.3.1 Marshes or Wetlands

Marshes and wetlands provide important habitat for many of the injured fish and wildlife resources within the Harbor Environment. Besides having habitat value, marshes and wetlands provide important functions which protect or enhance the Harbor Environment. Wetlands also cleanse polluted waters, protect shorelines, and recharge groundwater aquifers (Mitsch and Gosselink, 1993). During flood conditions, wetlands provide protection by holding excess water that would otherwise flood surrounding areas.

Tidal marshes, which provide some of the functions listed above as well as habitat essential to fish and shellfish affected by PCB contamination, are found within the Harbor Environment.

2.3.1.1 No-action Alternative: No Marsh or Wetland Restoration, or Creation

The no-action alternative would be to leave existing marshes or wetlands in their present state and not restore or create any new marshes and wetlands. The New Bedford Harbor Environment contains several marshes or wetlands, some of which function properly. Others are contaminated or are otherwise less than fully functional.

Marshes on the eastern side of the Harbor north of Coggeshall Street have high levels of PCB contamination. Species are exposed to PCBs each time they use the marsh, resulting in detrimental health effects. Allowing these marshes to continue in this condition will allow future generations of the natural resources to be exposed and suffer chronic PCB effects. EPA's Record of Decision for the Upper and Lower Operable Unit (EPA ROD) (EPA 1998) specifies that sediments with PCB contamination levels above 50 ppm in salt marshes will be removed. Portions of the marsh will still contain levels higher than those protective of natural resources. The 50 ppm level was decided upon to spare large portions of the marsh from being removed or destroyed. After removal for the cleanup, EPA will restore the affected marsh areas.

Other marshes within the area have undergone transition (unrelated to PCB contamination) due to inadequate tidal exchange. In some cases this has allowed non-native invasive salt tolerant plants such as the common reed (*Phragmites australis*) to take over portions of the marsh. When established, this plant provides limited habitat value to wildlife. In other cases, inadequate tidal flow has led to hypersaline conditions resulting in native vegetation die-off. Such conditions will no longer support many of the species commonly found in salt marshes.

Marshes and wetlands are critically important within the Harbor Environment to provide alternative habitat locations or to increase productivity to compensate for losses in areas remaining contaminated. Since certain marshes within the Harbor will still have PCB contamination even after cleanup, it is important to restore or enhance other marshes within the Harbor Environment. Failure to restore these resources will allow the habitat value of the Harbor Environment to continue to deteriorate. For these reasons, the no action alternative is rejected.

2.3.1.2 Preferred Alternatives

The preferred alternative is active restoration of the marshes and wetlands within the Harbor Environment. The Trustee Council will seek opportunities to restore injured or poorly functioning marshes and wetlands within the Harbor Environment. Once identified, the Trustee Council will prioritize the wetland restoration opportunities so that wetlands within the Harbor Environment that support natural resources such as fish, shellfish and avian species will be favored. Wetlands that can be rehabilitated to replace PCB contaminated wetlands will be favored for current restoration activities.

2.3.1.2.1 West Island Beach Salt Marsh Restoration

Project Description

Proposed Action: The project will increase full tidal exchange to a tidally-restricted 8-acre salt marsh by replacing an undersized culvert with a properly-sized culvert beneath the West Island Beach access road (Fir Street). Requested funds will be used to hire contractors to correctly size and design a culvert that will maximize tidal exchange with the West Island Beach marsh (without adversely affecting nearby properties), obtain all necessary permits and approvals, develop construction drawings, specifications and bid documents, construct the project, and install an interpretive sign that recognizes the contribution of the New Bedford Harbor Trustee Council and the project partners. NOAA Restoration Center (RC) staff, along with Massachusetts Office of Coastal Zone Management Wetlands Restoration Program (WRP) staff, will conduct pre- and post-construction monitoring following the Global Programme of Action Coalition for the Gulf of Maine (GPAC) protocols (Neckles, H.A. and M. Dionne 2000). All aspects of this work will be conducted in partnership with the Town of Fairhaven.

Location: The project site is located at the entrance to West Island Beach in Fairhaven, Massachusetts. The site is located in the Buzzards Bay watershed, within the New Bedford Harbor Environment. Coordinates: N 41° 35' 02", W 70° 49' 28".

Timeframe:

August 2005 – August 2010: Pre- and post-construction monitoring

October 2005 – April 2006: Project Design

April 2006-September 2006: Project Permitting

December 2006: Project construction. (Project construction must occur during the off-season, when the beach is not heavily used for recreation).

Rationale for Adoption

Affected resources addressed: Salt marsh and the natural resources supported by salt marsh, including plants, mammals, birds, fish and shellfish that have been negatively affected by the PCB contamination of the New Bedford harbor Environment.

Nexus to PCB Injury: Marshes on the eastern side of the Harbor north of Coggeshall Street have high levels of PCB contamination. Marine and estuarine resources are exposed to PCBs each time they use these marshes resulting in detrimental health effects. EPA's ROD (EPA 1998) specifies dredging of salt marsh where PCB levels exceed 50 ppm. It will be a number of years before these areas will be dredged and restored, and even then some salt marsh will remain relatively contaminated (0-50 ppm). Restoration of marsh habitat that is in the vicinity of New Bedford Harbor but is not impacted by contaminants will help support fish, shellfish and other natural

resources dependent on marshes that have been injured within the New Bedford Harbor Environment.

Benefits to Resource: Salt marshes are among the most biologically productive ecosystems, providing habitat to hundreds of organisms and of particular importance to the lower trophic levels, that is, the base of the estuarine food pyramid which supports such top predators as sportsfish, birds of prey, and humans. In addition, salt marshes play critical physical and chemical roles within the estuarine environment, trapping sediments, filtering pollutants, and buffering the effects of floods. This project would enhance the biological productivity of West Island Beach salt marsh, minimize potential expansion of *Phragmites australis* and provide a restored habitat for marine species injured by the contamination of the New Bedford Harbor Environment.

Benefits to Community: A project goal is to educate the public about the importance of habitat restoration and the work of the Trustee Council by placing interpretative signage at the entrance of the beach which is actively used throughout the summer. Additional public benefit will be derived from a potentially enhanced commercial and recreational fisheries. A functioning salt marsh at this location will also provide a potential for increased birdwatching as well as improved water quality.

Technical Feasibility

Achievability: Increasing tidal flushing through the placement of a properly sized culvert is a common restoration technique that has been routinely implemented successfully in the Buzzards Bay area and elsewhere.

Reliability of Techniques: The project includes initially obtaining topographic elevations of upstream low-lying structures and performing hydraulic analysis to determine the size of the culvert that would enhance tidal exchange to the extent practicable without negative impacts to upstream structures. While a larger culvert is expected to improve tidal exchange, a properly sized culvert will maximize the overall benefits of the project. Using this information the applicant would seek and obtain the appropriate permits for construction. Construction would likely occur during the winter months to minimize impacts to beachgoers. The applicant proposes to use Best Management Practices to minimize any construction-related impacts. Finally, the project would be overseen by a professional, licensed engineer to ensure that the project is constructed as designed and is consistent with the project plans and specifications.

The techniques are usual and customary for such a project and would provide the expected results.

Impact of Remediation: The site is outside the area of remediation and thus would not be impacted by remediation activities.

Monitoring: RC and WRP personnel will conduct pre- and post-construction monitoring at this site. Minimum monitoring data will be obtained by monitoring structural and functional parameters, as described below. Site monitoring will follow the GPAC protocols (Neckles, H.A. and M. Dionne 2000)

1. Tidal hydrology. Tidal hydrology will be measured to determine the project's success in meeting its structural objective of increasing the tidal range within the restored marsh. Tide gauges were placed immediately upstream and downstream of the Fir Street culvert in August 2004. The tide gauges will be deployed in the same locations following project construction for one full lunar cycle. Pending proof of protection of low-lying properties, the target value for the upstream tidal range is to equal that of the immediate downstream tidal range.

2. Vegetation. Vegetation will be measured to determine the project's success in meeting its functional objective of increasing native salt marsh plant productivity and cover on the marsh surface. Salt marsh plant establishment, measured by species cover, will be used as an indicator of native salt marsh plant productivity. Permanent transects and plot locations will be established across the marsh surface. At a minimum, within each plot, percent vegetative cover (by species) will be measured, as will the height of the stems of *Phragmites australis*. The reference and target values will be the number of plant species in the reference (downstream) salt marsh.

3. Other parameters. Other parameters that may be monitored by the project team include pore water salinity and fish use in the restored marsh.

Requested Funding: \$162,000

Estimated Match: \$4,500 anticipated.

Impacts on the Environment

Biological: The biological environment would be enhanced by this action by creating a more diverse and functional habitat than that which is currently available at this location.

Impacts on injured resources: This project will take place within the New Bedford Harbor Environment as defined by the Trustees. The proposed activity will provide enhanced habitat for fish, shellfish and bird species injured by the release of contaminants. Provided that Best Management Practices are followed during the construction phase, no adverse effects on the injured resources are expected.

Impacts on other resources/habitats:

Vegetation: Invasive *Phragmites australis* has established in the marsh and may continue to spread across the marsh and displace native marsh plant species if conditions are not changed. The proposed project would improve tidal exchange which

would discourage further spread of the *Phragmites* and may result in a die-off of the *Phragmites* allowing native salt marsh/brackish marsh plants to recolonize and grow.

Wildlife: Restoration of a more natural hydrologic regime is expected to enhance the overall productivity of the marsh. Further, a marsh dominated by *Phragmites* provides limited wildlife habitat value. Therefore minimizing the spread of *Phragmites* should improve the value of the site for wildlife.

Fish and shellfish: The project is expected to expand and enhance habitat for fish and shellfish resources by returning the site to a more natural tidal regime and allowing access by fish and other biota from Buzzards Bay.

Endangered species: West Island has been designated as a “High Priority Site of Rare Species Habitats and Exemplary Natural Communities” by the Massachusetts Natural Heritage and Endangered Species Program (MNHESP) (MHNESP 2005). The following protected bird and plant species can be found on or in the vicinity of the island. The shorebird Piping Plover (*Charadrius melodus*) has been designated as “Threatened” for Massachusetts under the Endangered Species Act and is under protection. The plant Mattamusket Panic-grass (*Dichanthelium dichotomum* var. 6) has been designated as endangered. Least Terns (*Sterna antillarum*) a seabird species and Seabeach Knotweed (*Polygonum glaucum*) have been designated with “Special Concern” status. The applicant will consult throughout the planning and construction process with both the MNHESP and the USFWS to avoid impacts to this priority site and species.

Physical: Direct physical impacts to the environment are expected to be limited primarily to the access road adjacent to the existing culvert that is expected to be replaced. The construction activities required to remove the existing culvert will require excavating around the culvert and lifting the sections free. Placement of the new culvert will involve the use of an excavator or crane to lift the culvert and place it at the proper elevation and alignment on site. Following this placement, soils will be backfilled around the culvert and the area will be repaved. Best Management Practices will be used to minimize the impact of these construction operations. Wetland functions, water quality and tidal flow are expected to improve due to this project. No impacts on cultural resources (archaeological or historical) or on land use patterns are expected. This determination has been forwarded to the Massachusetts State Historic Preservation Officer for confirmation.

Human: There will be a temporary impact to the human environment during construction (excavation and placement of culvert) and through the temporary closure of the road. West Island Beach is heavily used during the summer months so the applicant plans to schedule construction during the winter months to minimize disruption. The project location is at the end of a road and there are no other public access requirements other than beach access.

Preliminary Determination: The Trustee Council has preliminarily approved the idea for possible implementation after consideration of public comments. The Council would be interested in pursuing an expansion of the project through the relocation of the beach parking lot and by removing the fill that was used to create the parking lot and will discuss this alternative with the Town of Fairhaven. Such a project change would require the approval of the Town.

Preliminary Funding: \$162,000

2.3.1.2.2 River Road Restoration

Proposed Action: The City of New Bedford proposes to return a former industrial site to open space including restoring a 23,000 square foot tidal marsh on filled tidal land, and by creating walking trails, interpretative signs, canoe/kayak launch, picnic area, play area, lawn and parking area. The site is composed of 2.5 acres of City-owned waterfront property.

Location: 246 River Road, New Bedford, MA located on the western shoreline of the Acushnet River. N 41° 40' 51", W 70° 55' 05"

Timeframe: The project would start upon funding being received and would be completed within 36 months. Cleanup actions have already taken place within the river and along the shoreline for this location and any activity initiated by the project would not be affected by further cleanup actions.

Affected resources addressed: Tidal marsh and the natural resources supported by tidal marsh, including plants, mammals, birds, fish and shellfish that have been negatively affected by the PCB contamination of the New Bedford harbor Environment. The public's access and use of the harbor has been impacted by the PCB contamination which has prompted the placement of warning signs around the harbor prohibiting swimming and fishing.

Rationale for Adoption

Nexus to PCB Injury: Marshes on the eastern side of the Harbor north of Coggeshall Street have high levels of PCB contamination. Marine and estuarine resources are exposed to PCBs each time they use these marshes resulting in detrimental health effects. EPA's ROD (EPA 1998) specifies dredging of salt marsh where PCB levels exceed 50 ppm. It will be a number of years before these areas will be dredged and restored, and even then some salt marsh will remain relatively contaminated (0-50 ppm). Restoring marsh habitat after cleanup actions have occurred will help support fish, shellfish and other natural resources dependent on marshes that have been injured within the New Bedford Harbor Environment.

The kayak/canoe launch would address a lost use principally that public access to the river/harbor and use have been negatively impacted by the PCB contamination and Harbor closures.

Benefits to Resource: Tidal marshes are among the most biologically productive ecosystems, providing habitat to hundreds of organisms and of particular importance to the lower trophic levels, that is, the base of the estuarine food pyramid which supports such top predators as sportfish, birds of prey, and humans. In addition, tidal marshes play critical physical and chemical roles within the estuarine environment, trapping sediments, filtering pollutants, and buffering the effects of floods. This project would enhance the biological productivity of the Upper Estuary portion on New Bedford Harbor and provide a restored habitat for marine species injured by the contamination of the New Bedford Harbor Environment.

Benefits to Community: The Harbor is highly urbanized. Restoration of this area (former industrial site) will provide additional benefits to the public in terms of a healthier, more functional natural environment. A park in this location could also lead to a greater appreciation of the river and education through interpretative signage. Construction of a canoe/kayak launch could lead to increased boating in a section of the Harbor that has already been cleaned up.

Technical Feasibility

Achievability: Excavation of fill soils and planting or seeding of native vegetation is a proven technique to restore tidal marsh. Care must be taken to achieve the proper elevations and slope to allow survival and the proper growth requirements of the species chosen. Some planting has already occurred in this portion of the river and compatible plant material to that already planted should be used. Standard construction methods will be used to create the canoe/kayak ramp and provided that an appropriate engineering design and materials are followed and used, should be readily achievable. (Initial assessment has already occurred and additional information will be available for the remedial activities that occurred at this location. Having already had the contaminated sediment removed from this portion of the river will allow for easier construction.)

Reliability of Techniques: The techniques are usual and customary for such a project and should provide the expected results.

Impact of Remediation: The site has already been remediated due to the former high concentrations of PCBs in the sediment and the proximity to residences and parks. No further remedial activity is proposed and thus this area would not be impacted by remediation activities.

Monitoring: Pre- and post-construction monitoring will be conducted at this site. Minimum monitoring data will be obtained by monitoring structural and functional

parameters. Site monitoring will follow the NBHTC's minimum monitoring requirements. (NBHTC 2005)

Requested Funding: \$954,453

Estimated Match: \$0

Impacts on the Environment

Biological: The biological environment would be enhanced by the restoration of the salt marsh by creating a more diverse and functional habitat than that which is currently available at this location.

Impacts on injured resources: This project will take place within the New Bedford Harbor Environment as defined by the Trustees but will take place in a location where cleanup activities have already occurred (completed March 2003). The proposed salt marsh restoration activity will provide enhanced habitat for fish, shellfish and bird species injured by the release of contaminants. Where in-water work will occur, adherence to time-of-year restrictions to protect upstream and downstream migrations of anadromous fish will be required. Provided that Best Management Practices are followed during the construction phase, no adverse effects on the injured resources are expected. The construction of a canoe/kayak launch must be in a location and of a size to avoid or minimize impacts to mudflats and/or subaquatic vegetation. Cleanup activities involved the damming of the river, allowing the river to dry, and then excavating the contaminated sediments down to a level where low or no concentrations of contaminants occurred. It is unknown to what extent any regrowth of native plant species or repopulation by benthic organisms has occurred. It is important that any recovery not be set back by the construction activity.

Impacts on other resources/habitats:

Vegetation: The restoration of the tidal marsh will require the excavation (approximately 5,400 cy) and removal of filled soil down to an elevation to support a native tidal marsh plant community. The vegetation will be replaced by installing a plantable medium and plant plugs of *Spartina*, *Scirpus* or other species. This should enhance the biological productivity of this location and compensate for the vegetation that was removed. The construction of a canoe/kayak launch must be in a location and of a size to avoid or minimize impacts to intertidal mudflats and/or subtidal habitat.

Wildlife: Restoration of the tidal marsh will provide greater opportunities for fish and wildlife (birds, small mammals) species in terms of shelter and feeding. The construction of the marsh and canoe/kayak launch would be expected to result in short-term impacts to wildlife, which would be expected to temporarily relocate and avoid this area.

Fish and shellfish: The project is designed and expected to expand and enhance habitat for fish and shellfish resources.

Endangered species: No listed endangered or threatened species are present in the proposed project area.

Physical: Extensive alterations have already occurred on site. The commercial business previously occupying the property has relocated and the buildings have been removed. Some additional excavation work will be conducted on the upland portion of the site to remove lead contaminated soil which was determined through an assessment of the site. Once completed the upland would be planted with native plant species and the area would be used as a public recreation park. Given that the immediate surrounding area is residential, this would be a complimentary and beneficial use of the property. The park would also enhance the recreational park located across the river on the Acushnet shoreline. The public use (including traffic, parking, walking) of this area would be substantially less impact than that experienced with commercial operations at the site.

Direct physical impacts to the environment associated with the Trustee Council's funding of the project would be expected to be limited primarily to the immediate area of the marsh restoration. The construction activities required for the marsh will require the excavation of approximately 5,400 cubic yards of soil and the contouring of a marsh plain 1:4 side slope. The preference is to have the soils remain on site rather than be removed and disposed of. One potential use will be to replace upland soils removed to reduce the lead contamination on site. The excavated marsh soils will need to be tested for contaminants to determine if they can be placed on the upland portion of the site. This will require the use of excavators, which will have to maneuver around the site, causing impact to the immediate surrounding area. Following excavation to a subgrade elevation, appropriate planting medium will be placed on site. Best Management Practices will be used to minimize the impact of these construction operations. Wetland functions, water quality and tidal flow are expected to improve due to this project. No impacts on cultural resources (archaeological or historical) or on land use patterns are expected. This preliminary determination is expected to be confirmed through separate correspondence with the Massachusetts State Historic Preservation Office.

Human: There will be a temporary impact to the human environment during construction (excavation and planting and construction of ramp). Access to the site is currently excluded by chain-link fencing due to contamination on the upland portion of the site. (Note: the Trustee Council-preferred project will not involve this portion of the site, which is expected to be cleaned up in 2005).

While a cleanup of the contaminated river sediments has occurred in this area, it may not be the appropriate time to allow boating access to this portion of the river. Areas of the river south of the location are still the focus of future EPA and ACOE cleanup

activities. Until those activities are completed, it is not appropriate to encourage canoe or kayak use which could expose users to PCBs.

Preliminary Determination: The Trustee Council has preliminarily approved the salt marsh restoration for possible implementation after consideration of the public comments.

Preliminary Funding: \$195,000 (\$145,000 for wetland restoration, \$5,000 for signage, \$25,000 for construction contingency and \$20,000 for design/permitting)

2.3.1.3 Non-preferred Alternatives

There were no non-preferred alternatives for the Marshes or Wetlands restoration priority.

2.3.2 Recreation Areas

Section 3.5.3 of the RP/EIS describes the losses to the public through the contamination of the New Bedford Harbor Environment. The damage assessment conducted found lost recreational angling and beach use.

2.3.2.1 No-action Alternative: No Recreation Area Enhancement or Development

Under the no action alternative, there would be no implementation of actions to enhance or develop recreational opportunities. This would mean that the public would continue to use existing parks, beaches, and boating facilities.

There is little designated open land that is accessible to the public within the Harbor Environment; given the largely commercial nature of this area, little more is expected to become available. Much of the Harbor is fenced off to prevent public access to contaminated areas or commercial operations. This means that harbor visitors have limited opportunities to enjoy harbor vistas, or conduct harbor-related activities such as fishing, swimming or boating. These activities must be conducted in the Outer Harbor where contaminant levels are lower or where no contamination exists.

Since the cleanup will likely take twenty years or more to complete, and portions of the shoreline may be taken up by confined disposal facilities, the no action alternative would continue to restrict public access to New Bedford Harbor. Some recreational opportunities might develop through harbor master planning activities and the designation of the New Bedford Historic District as a National Park.

The no-action alternative should be rejected. Recreational activities and access were directly harmed by the release of PCBs into the Harbor Environment. By selecting the

no-action alternative, loss of access would continue to occur with a loss of benefits to the public.

2.3.2.2 Preferred Alternatives

One of the impacts of PCB contamination of the Harbor has been the loss of certain recreational opportunities. A study of recreational losses prepared for the Trustees as part of the damage assessment for New Bedford Harbor documented that although PCB contamination was not sufficient to close beaches in the Outer Harbor, the contamination did impact the use of those beaches. The number of people using the beaches declined. A study of reduced amenity services considered the reduced value of recreational services provided by the Harbor in its contaminated state (McConnell and IEc, 1986). In addition, the MDPH has prohibited recreational fishing (except for bait) and swimming in large portions of the Harbor since 1979.

The FFO (NOAA 2005) for Round III stressed that projects were required to restore, protect, conserve, enhance, replace or acquire the equivalent of natural resources that were injured as a result of the release of hazardous substances in the NBHE. Information on the public lost use associated with the injury to natural resources was requested to be provided in the application for recreation projects. The merit review conducted on the applications received for recreation projects resulted in low scores and as a result there were no preferred alternatives.

One project, River Road Restoration, included both recreational and wetlands components. The wetlands components and a boat ramp were the preferred aspects of the project. This project is assessed under the "Marshes or Wetlands" section under Section 2.3.1.2.2.

2.3.2.3 Non-preferred alternatives

The following alternatives are non-preferred:

2.3.2.3.1 Regional Waterways Public Access Project at Clarks Cove in Dartmouth, MA

Proposed Action: The project would be conducted in five phases:

1. Remediate two existing storm drains beneath the surface where a boat ramp is to be constructed.
2. Construct a boat ramp.
3. Construct a parking facility for 35 boat trailers and 27 vehicles.
4. Create an efficient traffic pattern by modifying traffic flow.
5. Purchase of adjacent land and building for education center and office space.

Location: Roger Street, Dartmouth, Massachusetts on Clarks Cove. Clarks Cove leads directly into Buzzards Bay and is part of the NBHE. Coordinates: N 41° 36' 30", W 70° 55' 53"

Resource Injury: This project would address lost public use of marine resources in the New Bedford Harbor Environment as well as address the injury that occurred to the water column through the release of PCBs.

Resource Benefits: Benefits would be derived from the storm drain remediation. The applicant reports that the storm drain outlets create a direct negative impact on the shellfish resources of Clarks Cove resulting from the untreated urban runoff and create a localized area of high pollution levels. The project would also enhance public access to Clarks Cove by providing an alternative location for entry and by reducing crowding at other locations.

Environmental Impacts: Potential adverse environmental impacts would occur through construction activities to create the boat ramp and parking facility. Depending on the activity required to remediate the storm drains, some short-term adverse impacts could result though it is expected that there will be overall benefits resulting from correcting storm water discharges. In-water work would require federal, state and local permits and care would be required to avoid or minimize the impact to marine resources (submerged aquatic vegetation, mudflat, shellfish, etc.) that may be present at the project location.

Requested Funding: \$1,009,375

Estimated Match: \$539,820

Rationale for Non-preference: This project received a lower score in the merit ranking of all submitted project applications. Insufficient funds are available for the lower ranked projects.

2.3.2.3.2 Community Boating Center, Inc.'s Clarks Cove Pier Restoration and Shore Side Improvement

Proposed Action: Capital match funding is being requested to:

1. complete renovation of a stone pier (concrete cap, railings, access ramp, utilities);
2. purchase and construct pier end access and floats;
3. purchase and install moorings, float retention gear, hoists and related storage equipment;
4. purchase and install environmental monitoring, safety, education and recreation equipment;
5. modify facilities to add bathrooms, classrooms, changing facilities and storage space;

6. restore, remove debris and resurface dilapidated marine railway and boat yard;
7. remove and dispose of near shore oil unloading platform “dolphin”;
8. remove overhead power lines; and
9. purchase waterfront recreation equipment.

Location: Padanaram Avenue and Rogers Street, New Bedford, MA, Clark’s Cove Area
II Coordinates: N 41° 36' 30", W 70° 55' 53"

Resource Injury: The PCB contamination has eliminated certain human uses of the harbor and degraded the value of access to the harbor environment.

Resource Benefits: While there would not be any direct natural resource benefits, the proposed project would restore some of the lost human recreational uses.

Environmental Impacts: There would be two components to this project – shoreside construction and in-water work associated with the repair of a pier. The shoreside construction should result in minimal impacts provided that efforts are made to reduce erosion and dust during construction. In-water work would be done in a manner to minimize resuspension of bottom sediments, and to control release of debris or contaminants.

Requested Funding: \$737,000

Estimated Match: \$928,000 raised for the project.

Rationale for Non-preference: This project scored low in the merit ranking of all submitted project applications. Insufficient funds were available for the lower ranking projects.

2.3.3 Water Column

The water column includes all fresh, salt and estuarine waters in the New Bedford Harbor Environment. PCBs are present in the water column where they can be a source of contamination to fish and wildlife species that use, live or swim in the water column. Demersal fish are subject to contaminant exposure through the water column as well as bottom sediments. Representative species include winter flounder, bluefish, blueback herring and Atlantic silverside. Phytoplankton and zooplankton, including copepod and diatom species, are exposed through the water column. Bivalve mollusks, including Atlantic ribbed mussel, blue mussel, Atlantic bay scallop, and the Eastern oyster, are exposed through the water column rather than the sediment. (EPA, 1990)

In addition to PCBs, other types of contamination may be present in the water column including human sewage, heavy metals, industrial discharge, salt and grit from roads, agricultural products, and petroleum products. All contribute to the degradation of the water column.

2.3.3.1 No-action Alternative: No Water Column Restoration

Pursuant to the no-action alternative, the Trustee Council would refrain from taking action to restore the water column, relying instead on the wastewater treatment plant improvements and Harbor remediation, which includes some water treatment for removal of PCBs. As discussed in Chapter 3 of the RP/EIS, the remediation will remove the bulk of, but not completely eliminate, the PCBs from the Harbor sediments. Exchange of contaminants between the sediments and water column is expected to continue, but to be greatly reduced following clean-up.

Under the no-action alternative, water-column concentrations of PCBs would be expected to decline over time. There is uncertainty as to when acceptable levels ("ambient water quality criteria" or AWQC) would be reached. As discussed in Chapter 3 of the RP/EIS, the process could take two decades or more. Other factors stand to impede the recovery of the Harbor's water column from PCB contamination, particularly in the Inner Harbor and Upper Estuary. Most notable is the presence of the Hurricane Barrier, which restricts tidal flushing in these areas.

Meanwhile, the water column of New Bedford Harbor remains the principal pathway by which living resources are exposed to the contamination from the Harbor sediments. As discussed in Chapter 3 of the RP/EIS, the fish, shellfish, birds, and invertebrates of the Harbor have been, and will continue to be, severely affected by PCB contamination of the water column of New Bedford Harbor.

2.3.3.2 Preferred Alternative

The preferred approach is to initiate actions to enhance or restore the overall quality of the water column. This would require cooperative efforts with other agencies such as ACOE, EPA and local agencies. A water column free of, or containing fewer contaminants, will be less likely to pass contamination on to the natural resources that inhabit it.

No grant applications were received that would address this restoration priority.

2.3.4 Habitats

Habitat is the complex of physico-chemical features, hydrologic conditions, and living organisms within an ecosystem that provides food, nesting, reproduction, resting areas and shelter for fish and wildlife. Habitat restoration is a basic component of natural resource restoration in the New Bedford Harbor Environment, since, as described in Chapter 3 of the RP/EIS, habitat is essential to the living resources of the Harbor.

As demonstrated by the following preferred alternatives, restoration, enhancement, protection or replacement of habitat in the New Bedford Harbor Environment has the

potential to substantially improve the abundance and health of a wide variety of living natural resources.

2.3.4.1 No-action Alternative: No Habitat Restoration or Enhancement

Under the no-action alternative, the Trustee Council would not implement habitat restoration actions in the New Bedford Harbor Environment. Under this alternative, animals and plants would continue to live in habitats degraded by PCB contamination and other factors. In many cases, this would preclude the success of efforts to restore living resources injured by the PCB contamination, because habitat restoration is often the most cost-effective way--indeed in many cases, the only practical way--to restore populations of plants and animals.

As discussed in Chapter 3 of the RP/EIS, PCB contamination in the New Bedford Harbor Environment has depressed populations of plants and animals and reduced the diversity of estuarine species. However, in a highly urbanized environment such as New Bedford Harbor, most living resources--plants, fish, shellfish, birds, and terrestrial animals--are subject to multiple stressors from the cumulative impacts of contamination, habitat loss, and other factors. Habitat loss is often a critical factor preventing the recovery of populations that have been depressed or otherwise injured by contamination or other forms of environmental degradation in a developed estuary such as New Bedford Harbor. The no-action alternative would prevent some resource populations in New Bedford Harbor from recovering from the effects of PCB releases, and would greatly extend the period of recovery for others.

2.3.4.2 Preferred Alternatives

Preferred alternatives are those that provide direct restoration or enhancement of affected habitat. In many of the affected habitats of the New Bedford Harbor Environment, however, restoration must wait until cleanup is complete. Therefore, the focus of near-term habitat restoration will be on those areas that can be enhanced before cleanup is completed to provide greater habitat value and environmental returns as well as providing protection from future stressors to the natural resources.

One of the types of actions contemplated is land acquisition. Section 4.3.4.2 of the RP/EIS provides the rationale for land acquisition and the procedures the Trustee Council must follow to determine the appropriateness of providing funds for an acquisition. In general, land acquisition and/or a conservation restriction on a parcel, permanently protects the parcel from future commercial or residential development. It preserves the habitat and natural resources present in or using the parcel. Further enhancements can be realized if there is an opportunity for appropriate habitat restoration on the parcel.

One application, "Acushnet River: Headwaters to Bay", contained four separate land acquisitions as part of the submitted proposal. These acquisitions are considered as separate alternatives under this section.

2.3.4.2.1 Acushnet River North

Project Description

Proposed Action: The proposal is for the Fairhaven-Acushnet Land Preservation Trust to purchase 88 acres of undisturbed forest and wetlands west of Squam Brook and open the property to the public for passive recreational use. The parcel would also be protected through the attachment of a permanent conservation restriction to the deed. An additional 90 acres east of Squam Brook would be protected through the purchase of a conservation restriction (CR) on the land. This action would prevent any future development of the land and preserve the existing agricultural use (cranberry production) in accordance with Best Management Practices. The eastern portion of the site would remain in private ownership with public access limited by the owners.

The applicant would conduct due diligence on the property, including the completion of a title examination, fair market real estate appraisal, environmental site assessment, survey and conservation restriction.

No direct restoration within the property is proposed at this time.

Location: East Freetown and Acushnet, MA at the headwaters of the Acushnet River along Squam Brook Coordinates: N 41° 45' 54", W 70° 55' 12"

Timeframe: If approved and funding provided, the applicant would immediately proceed with the property real estate appraisals, title examinations, surveys and environmental assessments and secure a conservation restriction. Once completed, property acquisition closings could occur immediately after.

Affected resources addressed: Diadromous fish, sediments and wetlands that were impacted by PCB contamination.

Rationale for Adoption

Nexus to PCB Injury: Riparian habitat was lost or injured due to PCB contamination of the Acushnet River. Squam Brook is a tributary and headwater of the Acushnet River.

Benefits to Resource: Acquisition of riverine and coastal habitat provides protection of water quantity and quality downstream and the protection of fish and wildlife habitats and/or passive recreation lands. The project would acquire the equivalent of river lands lost or injured due to PCB and other contamination along the estuary.

Benefits to Community: Portions of the protected acreage will be made available for public access. Walking trails exist on the western portion of the site and availability of uplands for limited parking exists.

Technical Feasibility

Achievability: The project would be completed using a fee simple purchase and conservation restriction on a portion of the property and a conservation restriction on the remaining portion of the property. Acquisition of a fee interest and imposition of a conservation restriction will result in permanent protection of the property and the adjoining brook from future development.

Reliability of Techniques: Land acquisition with the imposition of a conservation restriction is a proven method for preserving and protecting natural resources while enhancing recreational opportunities and public use.

Impact of remediation: This site is outside of the area to be impacted by remediation activities.

Monitoring: The NBHTC has established a policy that all NBHTC-funded land preservation projects must be monitored to ensure compliance with the site's Conservation Restriction. For the first five years following the purchase of the property, the property owner must submit an annual report, certified by the holder of the Conservation Restriction, to the NBHTC Coordinator describing the general condition and use of the site and comparing that with the conditions contained in the Conservation Restriction.

Requested Funding: \$833,500

Estimated Match: \$0

Impacts on the Environment

Biological: Benefits to biological resources should occur or remain unchanged through permanent protection and preservation of this site from future development.

Impacts on injured resources: There are no expected negative impacts to injured natural resources (fish, shellfish, birds, vegetation) through the acquisition and/or imposition of a conservation restriction of this property. Rather, there will be continued protection of habitat suitable for sustaining these resources.

Impacts on other resources/habitats:

Vegetation: While the purchase and/or imposition of a conservation restriction will provide protection and preserve wetland and upland vegetation located on this property, some impacts may occur to vegetation adjacent to walking trails or if additional walking trails are created. Such impacts could include crushing of native plants or erosion.

Wildlife: The purchase and/or imposition of a conservation restriction will provide protection and preserve the vegetation located on this property, and help prevent decreases in water quality thus benefiting the wildlife living on or using the property.

Fish and shellfish: The purchase and/or imposition of a conservation restriction will provide protection and preserve the fish and shellfish resources located in the ponds and brooks on this property.

Endangered species: No listed threatened or endangered species are known to be present in the proposed project area.

Physical: No physical impacts are expected to occur except through increased passive recreational use of the property. The western portion of the property already has trails which are used by the public for both walking and biking. The purchase and/or imposition of a conservation restriction of the property has the potential to increase public use. It is expected that the use will continue to be walking and biking though now instead of local neighbors, there could be increased use by others arriving by car. By locating a parking lot in an appropriate upland location near the start of the trail system, the project would localize associated impacts from vehicles. The Trustee Council will work with the applicant to identify and protect any sensitive areas located on the property from incidental public use through the use of appropriate signage and education. The eastern portion of the property would remain in agricultural operation and public access would be limited and only under permission of the owner.

No impacts on cultural resources (archaeological or historical) or on land use patterns beyond those described above are expected. This preliminary determination is expected to be confirmed through separate correspondence with the Massachusetts State Historic Preservation Office.

Human: Beneficial impacts will occur through increased access to the natural resources on those portions of the property where access would be allowed.

Preliminary Determination: The Trustee Council has preliminarily approved the project for possible implementation pending public comment on its decision and the project. The Trustee Council is considering two options for the project: 1) purchase and/or CR of the entire property or 2) purchase and/or CR of the western portion of the property only. The western portion is characterized by upland forest and wetlands leading down to an irrigation reservoir and Squam Brook. This second option would not purchase a CR on the eastern portion where there are active cranberry bog operations. The Council favors outright purchase the second option to provide greater protection to the headwaters since there is development pressure in this area. The Council is not as interested in the eastern portion unless the potential exists for restoring the wetlands natural condition.

Preliminary Funding: Information will be sought on the pro-rated amount of funding needed for the option eventually chosen (which is expected to be less than the proposed

\$833,500). The Council seeks clarification on the \$10,000 requested for “Property Stewardship” .

2.3.4.2.2 Acushnet Sawmill

Project Description

Proposed Action: Funds would be provided for the fee simple purchase and conservation restriction of 21 acres (consisting of field, forest, riverfront, freshwater pond and marsh) at the Acushnet Sawmill site from its present owners. The site is the location of the first dam on the Acushnet River that is being examined by the Trustee Council and the Massachusetts Division of Marine Fisheries for modifications to restore anadromous fish passage under Round I. There are presently three buildings located on site as well as other structures associated with a once active sawmill and lumberyard. The applicant envisions restoring this site to a natural state through the removal of all the buildings and pavement covering approximately 4 acres. While this may be a long-term objective of the applicant, the only action to be taken at this time is the fee simple acquisition and conservation restriction. This action would prevent further development of the site.

Due diligence would be conducted on the property including the completion of a title examination, fair market real estate appraisal, environmental site assessment, survey and conservation restriction.

Location: Acushnet, MA at the mouth of the freshwater Acushnet River and beginning of the Acushnet River Estuary. Coordinates: N 41° 41' 04", W 70° 55' 08"

Timeframe: If approved and funding provided, the applicant would immediately proceed with the property real estate appraisals, title examinations, surveys and environmental assessments and secure a conservation restriction. Once completed, property acquisition closings could occur immediately after.

Affected resources addressed: Diadromous fish, birds, sediments and wetlands that were impacted by the PCB contamination.

Rationale for Adoption

Nexus to PCB Injury: Riparian habitat was lost or injured due to PCB contamination along the Acushnet River. The site provides protection to equivalent natural resources, particularly diadromous fish, injured by the contamination. The site is also the location of current and future river herring fish passage efforts to travel upstream of the Acushnet Sawmill Dam, the first obstruction on the river, to upstream spawning habitat.

Benefits to Resource: The purchase of the site would improve or prevent further degradation of water quality downstream and the protection of passive recreation lands

and/or fish and wildlife habitat. The site has been used for commercial purposes which would cease with the purchase and/or conservation restriction.

Benefits to Community: The site has been closed to public access since it was the location of commercial businesses. The purchase would allow public access and passive recreation on the site.

Technical Feasibility

Achievability: The project would be completed using a fee simple purchase and conservation restriction on the property. Acquisition of a fee interest and imposition of a conservation restriction will result in permanent protection of the property and the adjoining river from future development.

Reliability of Techniques: Land acquisition with the imposition of a conservation restriction is a proven method for preserving and protecting natural resources while enhancing recreational opportunities and public use.

Impact of remediation: This site is outside of the area expected to be impacted by remediation activities although PCB contamination and cleanup activities have occurred downstream of the site.

Monitoring: The NBHTC has established a policy that all NBHTC-funded land preservation projects must be monitored to ensure compliance with the site's Conservation Restriction. For the first five years following the purchase of the property, the property owner must submit an annual report, certified by the holder of the Conservation Restriction, to the Coordinator describing the general condition and use of the site and comparing that with the conditions contained in the Conservation Restriction.

Requested Funding: \$1,651,500

Estimated Match: \$0

Impacts on the Environment

Biological: Benefits to biological resources should continue to occur through the permanent protection and preservation of this site from future development.

Impacts on injured resources: There are no expected negative impacts to injured natural resources (fish, birds, vegetation) through the acquisition of this property. There will be continued protection of habitat suitable for sustaining these species.

Impacts on other resources/habitats:

Vegetation: While the purchase of the property will preserve the wetland vegetation located on this site there may be impacts to vegetation adjacent to walking trails or if additional walking trails were created.

Wildlife: The purchase of the property would ensure future protection to the wildlife and associated habitat at this site. Some minor disturbance to wildlife may occur due to new public access that were previously closed as private property/

Fish and shellfish: The purchase of the property would provide protection to the fish and shellfish resources inhabiting in the river on the site by reducing or eliminating impacts posed by commercial operations.

Endangered species: No known listed endangered or threatened species are present in the proposed project area.

Physical: The purchase and/or conservation restriction of the property would preserve the physical characteristics of the property unless habitat restoration activities are implemented in the future. (Note the proposed funding of this project would only be for the purchase and/or conservation restriction of this property and does not commit future funds to habitat restoration beyond the Round I "Restoration of the Acushnet Herring Run".) Public access to the property is currently not allowed. The proposed action would increase public access but this would be limited to walking and the number of people using this property is expected to be large. This changing use may effect portions of the property through increased foot traffic but the effect is expected to be limited.

No impacts on cultural resources (archaeological or historical) or on land use patterns beyond those described above are expected through the purchase and/or conservation restriction of the land. This preliminary determination is expected to be confirmed through separate correspondence with the Massachusetts State Historic Preservation Office. Consultation with the office was initiated with the filing of a Project Notification Form accompanying the Environmental Notification Form for the Acushnet Sawmill Dam project. No buildings or structures will be removed by this action though the applicant may pursue removal in the future.

Human: Beneficial impacts will occur through increased access to, and appreciation for, the property's natural resources.

Preliminary Determination: The Trustee Council has preliminarily approved of the project for possible implementation pending public comments on its decision and the project. The Trustee Council is considering two options for the project: 1) purchase and/or CR of the entire property or 2) purchase and/or CR of the undeveloped portion of the property composed primarily of the eastern portion of the property. The concern over the developed portion is the amount of effort needed to restore the property to natural conditions and the various unknowns associated with the commercial use (e.g.

sawmill operations) of the site. The Council has not made a decision on either option and invites public comment.

Preliminary Funding: Information will be sought on the pro-rated amount of funding needed for the option eventually chosen. The Council seeks additional information on the requests for \$50,000 for “Property Stewardship” and \$50,000 for “Restoration Planning and Design”.

2.3.4.2.3 Marsh Island South

Project Description

Proposed Action: Funds would be provided for the fee simple purchase and conservation restriction of a 7.68-acre site on the southern portion of a peninsula known as Marsh Island in Fairhaven. (The remaining northern portion of Marsh Island was purchased using Trustee Council funds authorized in Round II. The Trustee Council is investigating the feasibility of restoring the salt marsh that was present before fill was placed on the island.) Prior to the purchase, funds would be provided for a title examination, fair market real estate appraisal, environmental site assessment and survey (if needed).

Location: Marsh Island, Fairhaven, filled wetlands resulting in a peninsula on the eastern shore of New Bedford Harbor. Coordinates: N 41° 39' 02", W 70° 54' 56"

Timeframe: If approved and funding provided, the applicant would immediately proceed with the property real estate appraisals, title examinations, surveys and environmental assessments and secure a conservation restriction. Once completed, property acquisition closings could occur immediately after.

Affected resources addressed: Salt marsh and natural resources supported by salt marsh including plants, mammals, birds, fish and shellfish that have been negatively affected by the PCB contamination of the New Bedford Harbor Environment.

Rationale for Adoption

Nexus to PCB Injury: Marshes on the eastern side of the Harbor north of Coggeshall Street have high levels of PCB contamination. Marine and estuarine resources are exposed to PCBs each time they use these marshes resulting in detrimental health effects. EPA’s ROD (EPA 1998) specifies dredging of salt marsh where PCB levels exceed 50 ppm. It will be a number of years before these areas will be dredged and restored, and even then some salt marsh will remain relatively contaminated (0-50 ppm). Restoration of marsh habitat that is in the vicinity of New Bedford Harbor but is not impacted by contaminants will help support fish, shellfish and other natural resources dependent on marshes that have been injured within the New Bedford Harbor Environment.

Benefits to Resource: The purchase would preserve the land from future development and further the efforts to restore the historic salt marsh once present on the site.

Benefits to Community: The public would be able to use the property for passive recreation. Interpretive signage would be used to explain the restoration activities and need for protecting the estuarine environment.

Technical Feasibility

Achievability: As an initial step, the purchase and conservation restriction will prevent any further commercial or residential development of the island. The purchase would also assist the Trustee Council's efforts to restore the filled salt marsh back to a functioning salt marsh environment while allowing passive recreational use.

Reliability of Techniques: Land acquisition with the imposition of a conservation restriction is a proven method for preserving and protecting natural resources while enhancing recreational opportunities and public use.

Impact of remediation: While areas of the northern portion of the island will be remediated due to PCB contamination along the shoreline and tidal creek, no remedial activities are expected on the southern portion of the site which is the subject of this alternative.

Monitoring: The NBHTC has established a policy that all NBHTC-funded land preservation projects must be monitored to ensure compliance with the site's Conservation Restriction. For the first five years following the purchase of the property, the property owner must submit an annual report, certified by the holder of the Conservation Restriction, to the Coordinator describing the general condition and use of the site and comparing that with the conditions contained in the Conservation Restriction.

Requested Funding: \$447,500

Estimated Match: \$0

Impacts on the Environment

Biological: The biological environment would initially be preserved and then enhanced by creating a more diverse and functional habitat than that which is currently available at this location.

Impacts on injured resources: This project will take place within the New Bedford Harbor Environment as defined by the Trustee Council. The proposed activity will ensure future habitat for fish, shellfish, and bird species injured by the releases of contaminants. No adverse effect on the injured resources would occur from the purchase of the property.

Short term impacts would occur through the potential construction operations to remove fill and reestablish a salt marsh community on the island. The overall impact would be beneficial through the restoration of an ecologically diverse and function salt marsh habitat.

Impacts on other resources/habitats:

Vegetation: The purchase of this property would preserve the desirable vegetation located on the site. If the salt marsh restoration were to occur on site, the project would create salt marsh habitat by excavating the fill, thus impacting the existing upland plant community consisting of herbs, shrubs and scattered trees. The restored salt marsh habitat would provide a functional habitat for the marine and estuarine species of the Harbor.

Wildlife: The purchase of the property would provide protection to the wildlife and associated habitat at this site. Should the project proceed to salt marsh restoration, there would be a loss of upland of low ecological value as the fill is removed resulting in a lower elevation allowing portions of the island to be inundated with salt water. There would be a displacement of species using this habitat (e.g. small mammals, insect, birds) to the remaining upland on and adjacent to the site.

Fish and shellfish: The purchase of the property would provide restored access and use by fish and shellfish resources located in the Harbor adjacent to the site. If salt marsh restoration occurs, it would provide beneficial impacts by providing more habitat for fish and shellfish resources. Efforts would be taken to avoid or minimize impacts to shellfish beds or essential fish habitat during construction operations.

Endangered species: No listed endangered or threatened species are present in the proposed project area.

Physical: The purchase of the property would preserve the physical characteristics of the property. Short-term physical impacts will result if the project were to proceed to salt marsh restoration as the coarse-grained dredge material present on the site is removed and soil is regraded. An assessment of the island has determined that there are no significant historical or archaeological resources. This determination has been confirmed with the Massachusetts State Historic Preservation Office and the Tribal Historic Preservation Officer of the Wampanoag Tribe.

Human: Beneficial impacts will occur through increased access to the property's natural resources. Some short-term detrimental impacts may occur through future potential construction activities. Access to the site is limited and the best means of bringing in equipment and materials with the least impact will have to be evaluated. Efforts will be made to avoid or minimize impacts on the nearby neighborhood and cemetery. Once completed, foot trails could be developed to provide direct access to the harbor. Public education and outreach opportunities would be afforded by providing educational signage for the restored salt marsh on the site.

Preliminary Determination: The Trustee Council has preliminarily approved the project for possible implementation subject to consideration of public comment. The Council is concerned about the two existing radio towers on site and will explore with the applicant options for their eventual removal.

Preliminary Funding: Up to \$397,500. The Council does not believe the \$50,000 for “Restoration Planning and Design” is required since the Council is already funding efforts on Marsh Island revolving around salt marsh restoration. The Council also seeks clarification on the request for \$50,000 for “Property Stewardship.”

2.3.4.2.4 Viveiros Farm

Project Description

Proposed Action: To protect 127 acres (comprised of farmland, salt marsh, freshwater wetlands and coastal beach) from future development through a combination of land protection methods. A fee simple purchase would occur for 40 acres and a conservation restriction would be placed on 16 acres. The remaining 71 acres would be acquired using an Agricultural Protection Restriction (APR) through the Massachusetts Department of Agricultural Resources (MDAR).

Location: On Sconticut Neck in Fairhaven, MA. Part of the Winsegansett Marsh system spanning from Outer New Bedford Harbor to Nasketucket Bay. The project would not be located in the NBHE but is adjacent to the NBHE and properties protected through previous Trustee Council action. Coordinates: N 41° 36' 30", W 70° 51' 29"

Timeframe: If approved and funding provided, the applicant would immediately proceed with the property real estate appraisals, title examinations, surveys and environmental assessments and secure a conservation restriction. Once completed, property acquisition closings could occur immediately after.

Affected resources addressed: Coastal salt marsh, coastal beach, freshwater wetlands and the natural resources supported by these habitat types including plants, mammals, birds, fish and shellfish.

Rationale for Adoption

Nexus to PCB Injury: The project would acquire the equivalent of injured natural resources that were lost or degraded by the release of PCBs. Acquisition of salt marsh habitat, coastal beach and freshwater wetlands that are not impacted by contaminants will help support natural resources that use these habitats and those of the NBHE.

Benefits to Resource: Protection of the salt marsh and costal beach habitat would occur through the purchase and/or conservation restriction or APR. These actions would

prevent any future residential or commercial development at this site. This area of Sconticut Neck has seen an expansion of residential house development. An additional benefit is that the marsh portion of the property will add to and make complete protection of the Winsegansett Marsh East system. This area is the focus of a Round I acquisition and a Round II habitat restoration project.

Benefits to Community: The applicant states that there would be expanded “passive recreation opportunities and access for use by the general public”.

Technical Feasibility

Achievability: The acquisition would be accomplished through a variety of means including outright purchase and the use of a conservation restriction. Acquisition of a fee interest and imposition of a conservation restriction will result in permanent protection of the property.

Reliability of Techniques: Land acquisition with the imposition of a conservation restriction is a proven method for preserving and protecting natural resources while enhancing recreational opportunities and public use.

Impact of remediation: This site is outside of the area to be impacted by remediation activities.

Monitoring: The NBHTC has established a policy that all NBHTC-funded land preservation projects must be monitored to ensure compliance with the site’s Conservation Restriction. For the first five years following the purchase of the property, the property owner must submit an annual report, certified by the holder of the Conservation Restriction, to the Coordinator describing the general condition and use of the site and comparing that with the conditions contained in the Conservation Restriction.

Requested Funding: \$1,270,000

Estimated Match: \$2,050,000

Impacts on the Environment

Biological: Benefits to biological resources should continue to occur through the permanent protection and preservation of this site from future development.

Impacts on injured resources: There are no expected negative impacts to injured natural resources (fish, shellfish, birds, vegetation) through the acquisition of this property. There will be continued protection of habitat suitable for sustaining these species.

Impacts on other resources/habitats:

Vegetation: The purchase of the property will preserve the desirable vegetation located on this site.

Wildlife: The purchase of the property would provide protection to the wildlife and associated habitat at this site.

Fish and shellfish: The purchase of the property would provide protection to the fish and shellfish resources located in the coastal waters adjacent to the site.

Endangered species: No listed endangered or threatened species are present in the proposed project area.

Physical: The purchase and /or conservation restriction of the property would preserve the physical characteristics of the property, except for changes that might occur if wetland restoration is implemented in the future. Much of the property (70 acres) is in active agricultural use (dairy farm with associated grazing) which is not expected to change through the proposed action. There are 33 acres of saltmarsh and 19 acres of freshwater wetlands. The remaining land is comprised of 5 acres of coastal beach. Impacts from increased public use will be limited and would be confined to specific designated areas on site. Active stewardship on the part of the applicant through the installation of educational signage will further limit any potential impacts on the property.

No impacts on cultural resources (archaeological or historical) or on land use patterns beyond those described above are expected. This preliminary determination is expected to be confirmed through separate correspondence with the Massachusetts State Historic Preservation Office.

Human: Beneficial impacts will occur through increased access to the property's natural resources on those areas of the property that will be made available for public use.

Preliminary Determination: The Trustee Council has made preliminarily approved the project for possible implementation subject to consideration of public comment. The Trustee Council is uncertain whether funding would be used to supplement MDAR funding for the APR. The Council is not interested in funding the APR. Further, the Trustee Council does not want agricultural use of the purchased land.

Preliminary Funding: Up to \$1,270,000. The Trustee Council seeks additional information on the requested \$40,000 amount for "Property Stewardship".

2.3.4.3 Non-preferred alternatives

2.3.4.3.1 Enhancement of Bottom Habitat for Marine Species in Buzzards Bay as Related to the New Bedford Harbor Clean-up

Proposed Action: Deploy an artificial reef in the New Bedford Harbor/Buzzards Bay area as a means to enhance bottom habitat. The project would be conducted in three phases. Phase I would include the selection of an appropriate location in Outer New Bedford Harbor or Buzzards Bay, collecting data to determine site feasibility for habitat enhancement and securing the required permits. Phase II would involve the issuance of work contracts, the purchase of materials and the construction of the reef. Phase III would be to conduct monitoring of the reef through visual, dive surveys, optical acoustic surveys and lobster sampling.

Location: New Bedford Outer Harbor, eastern Buzzards Bay. Location of reefs would be determined by site selection criteria specified in Matthews 1979, Castro et. al 1996, and DeAlteris 1996.

Resource Injury: Bottom habitat has been adversely impacted by the release of PCBs which settled into the bottom sediments. Living resources using or coming in contact with these bottom sediments risk injury from the PCBs. An artificial reef could provide an alternative location of favorable habitat for the living resources.

Resource Benefits: Properly constructed and appropriately located artificial reefs can: 1) enhance or replace injured fish habitat; 2) facilitate access and utilization by recreational and commercial fishermen to quality fishing grounds; 3) provide benefits to anglers and the economies of shore communities; and 4) increase total biomass within a given non-contaminated area.

Environmental Impacts: Minimum short-term negative impacts would be expected during the construction of the reef. Care should be taken to control placement of the reef materials in the designated location. The assessment of reef locations would be an initial step to locate an appropriate location to maximize benefits to marine resources and minimize impacts of the reef.

Requested Funding: \$781,041.50

Estimated Match: \$0

Rationale for Non-preference: This project scored low in the merit ranking of all submitted project applications. Insufficient funds were available for the lower ranked projects.

2.3.5 Living resources

Living resources are fish and wildlife resources that have been impacted by the PCB contamination. Sections 3.3.2 through 3.3.8 of the RP/EIS describe the living resources

of the New Bedford Harbor Environment, while Section 3.5.3.1 of the RP/EIS describes the living resources that were injured.

2.3.5.1 No-action Alternative: No Living Resources Restoration or Enhancement

Under the no-action alternative, the NBHTC would not undertake specific actions to restore or enhance injured fish, shellfish, wildlife or other living resources within the New Bedford Harbor Environment. As noted above and in Chapter 3, this would result in an extended time period of natural recovery, since it is expected to be many years following the clean-up before PCB concentrations reach acceptable levels in the waters, wetlands, sediments and biota of the New Bedford Harbor Estuary. During this period the living resources of the Harbor would continue to be affected by the contamination. PCBs continue to disperse, and in some cases bioaccumulate or biomagnify, as they migrate throughout the food web. Cumulative or intergenerational impacts may result. Moreover, the recovery of species and populations from PCBs in the Harbor may be depressed or retarded by additional adverse impacts, such as other contaminants and habitat loss, particularly in the urbanized, highly degraded Inner Harbor and Upper Estuary.

2.3.5.2. Preferred Alternatives

The living resources that use or reside in the Inner Harbor and Upper Estuary have been directly exposed to high levels of PCBs and thus are the resources most severely affected by PCB contamination in New Bedford Harbor. As discussed in Chapter 3 of the RP/EIS, these species are consumed by other species--potentially including humans--within and outside the Harbor Environment. Contaminants are thereby transported throughout the ecosystem and beyond. The preferred alternative therefore, focuses on improving the condition of the living resources that live, feed, breed in, or otherwise use the more severely affected areas of the Harbor Environment, in an effort to improve the health of these resources and thereby enhance and accelerate ecosystem recovery.

Potential approaches to living resource restoration in the New Bedford Harbor Environment include habitat restoration or enhancement; enhancement of spawning success through direct (e.g., stocking or transplanting) or indirect (e.g., spawning habitat restoration) means; or direct augmentation or transplantation of stocks to improve populations, resource survival, or opportunities for human use.

The preferred alternative--living resource restoration in New Bedford Harbor--would provide ecological benefits throughout the Harbor Environment in the form of increased species diversity and abundance. Broad economic benefits could also result, through increased commercial and recreational harvest of fish and shellfish. Near-term actions would focus on developing sustainable populations of harvestable resources in the Outer Harbor. As clean-up of the Inner Harbor and Upper Estuary proceeds, subsequent actions could place greater emphasis on direct restoration of living resources in these areas.

There were no preferred alternatives resulting from the merit review for this restoration priority.

2.3.5.3. Non-preferred alternatives

2.3.5.3.1. Expansion and diversification of the shellfish restoration effort in New Bedford Harbor through expansion of shellfish production infrastructure: developing a shellfish hatchery.

Proposed Action: The applicant would construct a shellfish hatchery at the site of the Greater New Bedford Marine Farms, Inc. shellfish nursery to produce and rear a variety of bivalve mollusk species for use in an expanded shellfish restoration effort. The applicant would also develop outreach materials for distribution in the local communities explaining the environmental, cultural and economic benefits of shellfish restoration within the New Bedford Harbor region.

Location: 1510 Padanaram Avenue, New Bedford, MA along the western shore of Clarks Cove, Buzzards Bay. Coordinates: N 41° 36' 30", W 70° 55' 50"

Resource Injury: Quahogs, bay scallops and softshell clams were identified as species of concern for PCB contamination (EPA 1990). All have shown some level of PCB contamination though the actual amounts vary by species and location. Fishing for all three species has been prohibited in the Inner Harbor and some areas of the Outer Harbor because of closures for fecal coliform and PCB contamination.

Resource Benefits: The controlled introduction of shellfish species to the Harbor will increase the biodiversity and biomass of the Harbor. Increased numbers of shellfish will benefit predator species in the food chain. Filter feeding by the shellfish could improve localized water quality.

Environmental Impacts: Potential short-term impacts associated with the construction of the expanded facility would be expected though these impacts could be avoided or minimized through construction techniques that minimize dust, runoff and any in water work. The applicant states that permits are in place allowing the proposed activity including withdrawal and discharge permits and an aquaculture license.

Requested Funding: \$781,041.50

Estimated Match: \$0

Rationale for Non-preference: This project scored low in the merit ranking of all submitted project applications. Insufficient funds were available for the lower ranked projects.

2.3.5.3.2.Regional Shellfish Restoration

Proposed Action: The Regional Shellfish Restoration Committee (RSRC) proposes to purchase seed quahog, bay scallop and oyster and plant the seed in low densities into selected areas. In addition the RSRC would purchase clean shellfish stock and place the stock in designated family permit program harvest areas. The RSRC would also conduct a contaminated shellfish relay where juvenile and adult shellfish are harvested from “Restricted” areas (as designated by MDMF) and placed in open waters where they are allowed to depurate (cleanse through filter feeding) for a period from 90 days to a year before being harvested. Enforcement of the shellfish harvest would be augmented using State law enforcement special details and the hiring of local law enforcement. The RSRC would also conduct predator control practices to increase the effectiveness of the seed program.

Location: New Bedford Inner and Outer Harbor, Buzzards Bay

Resource Injury: Quahogs, bay scallops and softshell clams were identified as species of concern for PCB contamination (EPA 1990). All have shown some level of PCB contamination though the actual amounts vary by species and location. Fishing for all three species has been prohibited in the Inner Harbor and some areas of the Outer Harbor because of closures for fecal coliform and PCB contamination.

Resource Benefits: The reintroduction of shellfish species to larger areas of the Harbor will increase the biodiversity of the Harbor. Shellfish larvae can be released into the water column where they swim freely until setting on the bottom. The pre-set larvae provide a food source to other species in the Harbor Environment. Increased numbers of shellfish seed and adults will benefit other species in the food chain and there would be potential water quality benefits due to the filter feeding of the shellfish. Additional benefits are derived from the recreational and commercial fishery for adult shellfish occurring in specified areas open for harvest off of Dartmouth, Fairhaven and New Bedford.

Environmental Impacts: Direct physical impacts can occur during shellfish harvest through the use of shellfish hydraulic power dredges and rakes or tongs for hand digging. Such impacts are expected to be minimal but would be recurring. The effects of the gear would be localized and the bottom conditions are such that sites return to pre-disturbance conditions relatively quickly. Care must be taken to ensure that areas seeded are allowed to grow to maturity before being disturbed by harvest activities.

Requested Funding: \$781,041.50

Estimated Match: \$0

Rationale for Non-preference: This project scored low in the merit ranking of all submitted project applications. Insufficient funds were available for the low ranked projects.

2.3.6 Endangered Species

Endangered species are those recognized by statute or law as requiring special attention because of their rarity. In the broadest sense, and as used in this EA, endangered species (also known as "listed species") include those designated as "endangered" by the federal government or the Commonwealth, as well as species that are recognized as rare or vulnerable but not in imminent danger of extinction. These lesser designations include "threatened" status at the federal and Commonwealth level and "of special concern" at the Commonwealth level only. This EA gives special consideration to listed species in order to avoid adverse impacts on them and, of equal importance, to increase the likelihood of survival and success of listed species in the New Bedford Harbor Environment.

In the New Bedford Harbor Environment, the listed species most affected by PCB contamination are common and roseate terns (*Sterna* spp.), which reside in Buzzards Bay from May through September, nesting on certain islands. Common terns are listed by the Commonwealth as "species of special concern" while roseates are listed by both the Commonwealth and the federal government as "endangered." Terns feed in the Harbor Estuary and, as described in Chapter 3 of the RP/EIS, ingest PCBs, with subsequent documented lethal and reproductive effects. Section 3.3.8 of the RP/EIS describes other listed species known to inhabit the Harbor Environment, but since PCB impacts have not been documented for any of these, the preferred alternative for near-term endangered species restoration in New Bedford Harbor pertains to common and roseate terns.

2.3.6.1 No-action Alternative: No Endangered Species Restoration

Pursuant to the no-action alternative, the Trustee Council would provide no further restoration of endangered species in the New Bedford Harbor Environment. This approach would rely on environmental improvements resulting from remediation efforts to reduce the threat posed by the contamination to common and roseate terns. As PCB levels decline in the Harbor, so should impacts on the terns that feed there. The no-action alternative would also rely on the tern restoration and management conducted under Rounds I and II which has resulted in an increase of common terns (3,824 pairs 1999 to 5,330 pairs in 2004) but mixed results for roseate terns (1,778 pairs in 1999, 2,118 pairs in 2000 and 1,499 pairs in 2004). (MNHESP 2004)

At best, this scenario could lead to some further recovery of tern populations in Buzzards Bay. However, since the reduced tern populations are stressed by habitat loss and degradation, such recovery, if it was still to occur, would take many years. Moreover, in the context of continuing loss of quality nesting habitat, it is possible that tern populations in Buzzards Bay would never recover from the effects of PCB contamination in New Bedford Harbor, and that roseate terns, in particular, would continue to decline.

2.3.6.2 Preferred Alternative

The preferred alternative is to continue to restore and enhance nesting habitat for the endangered species most severely affected by PCB contamination in New Bedford Harbor--common and roseate terns. To ensure success, the process would continue before tern populations decline further, and for a number of years, as the Harbor is cleaned up and an uncontaminated food supply once again becomes available. Monitoring would be undertaken to measure the success of the restoration and to ensure that PCBs remaining in the Harbor Environment do not undermine the effectiveness of the proposed action.

The preferred alternative is expected to substantially enhance the ability of tern populations to recover from the effects of PCB contamination in New Bedford Harbor. In addition to this ecological benefit, recovery of tern populations holds the potential for economic and aesthetic benefits as well, through bird watching and other passive uses of the Harbor Environment.

Of the restoration options identified as preferred alternatives by the NBHTC, this is one that would require significant action outside of the designated boundaries of the Harbor Environment, although the benefits are expected in the Harbor Environment since the birds are likely to travel to this area to feed. Terns are a mobile resource of the Harbor. The terns were injured by PCBs in the Harbor Environment, and are threatened by habitat loss as well. The Council has determined that the most effective way to restore this injured Harbor resource is through restoration of nesting habitat which, of necessity, would take place outside of the designated Harbor Environment, on the islands of Buzzards Bay.

2.3.6.2.1. Restoration and Management of Tern Populations in Buzzards Bay

Project Description

Proposed Action: The idea proposes to continue for an additional three years the tern restoration and stabilization efforts funded by the Trustee Council at three island nesting locations in Buzzards Bay. The project would strive to stabilize nesting populations at Bird Island, Marion and Ram Island, Mattapoisett, restore habitat at Ram Island, and continue management efforts to manage and restore terns at Penikese Island, Gosnold.

Specifically the project would:

1. Restore and manage tern colonies at Bird, Ram, and Penikese Islands to enhance abundance and productivity of Common and Roseate Terns. The applicant would install signs, distribute educational pamphlets, and greet visitors at the nesting colonies to advise visitors of the birds' protected status, their sensitivity to disturbance, and project history and goals. A website would be developed about the project to increase public understanding of tern restoration efforts. Protective fencing would be erected

around a portion of the Bird Island colony. The applicant would harvest vegetation and install nest boxes around the islands to enhance tern nesting habitat. There would be a daily presence on the islands during the nesting season to deter predators and competitors, and to detect and respond to threats to the terns.

2. Conduct a program of scientific monitoring to measure population abundance, distribution, productivity and the level of ongoing exposure to PCBs. Monitoring would be conducted throughout the nesting season each year to measure progress in enhancing reproduction and numbers. A census of nesting terns would be conducted for each island. The applicant will monitor nests to assess productivity (hatching and fledging success). Information on survival and other demographic parameters will be collected through trapping and resighting marked adults and banding chicks. Abandoned/failed tern eggs will be analyzed for PCBs to assess effects of remediation efforts in the New Bedford Harbor Environment.

3. Control *Phragmites australis* and restore nesting habitat at Ram Island. The applicant proposes to control 3,500 ft.² of *Phragmites australis*, an invasive non-native plant that is reducing tern nesting habitat. An eroded area (a 2,640 ft.² portion of the *Phragmites* area) in the interior of the island would be filled to create suitable substrate for tern nesting. The area would then be revegetated with appropriate native plants to provide suitable cover for nesting terns. The applicant would annually monitor success of this component of the project by documenting the presence and coverage of *Phragmites*, the survival and coverage of native plantings, and the abundance of terns in the restored area.

Location: Bird Island, Marion, MA (N 41° 40' 08", W 70° 43' 03"); Ram Island, Mattapoisett, MA (N 41° 37' 05", W 70° 48' 16"); and Penikese Island, Gosnold, MA (N 41° 27' 08", W 70° 55' 08"). All three sites are in Buzzards Bay but outside of the NBHE. Bird Island is owned by the Town of Marion; the latter two sites are owned by the Massachusetts Division of Fisheries & Wildlife (MDFW).

Timeframe: 3 years; July 2006 to June 2009; field seasons mainly April through August of each year, except for habitat restoration work, which would be accomplished outside this window.

Affected Resources Addressed: Common and roseate terns.

Rationale for Adoption

Nexus to PCB Injury: Scientific evidence developed for the trial in this case indicated that terns were poisoned by PCBs as a result of feeding on fish within the New Bedford Harbor Environment. The Trustees argued in 1991 that terns were natural resources of New Bedford Harbor Environment and had been damaged by PCBs from New Bedford Harbor. Settlement of the case and funding for restoration was based in part on this evidence. This project will help restore the tern population.

Benefits to Resource: Populations of both common and roseate terns would be restored, increased and stabilized. By continuing the previously implemented restoration efforts the applicant expects gradual improvement such that 8,500 pairs would be expected by 2009 (a 25% increase over 2004 levels of 6,829 pairs). Such progress is important to restoring the populations to historic levels of 15,000 pairs.

Benefits to Community: The community at large would benefit by tern restoration both aesthetically and economically. Restoration of terns as a functional part of the New Bedford Harbor Environment will contribute to the public's enjoyment of the Harbor Environment by increasing species richness and abundance. Recreational and commercial fishermen would benefit directly since terns are an important aid in locating schools of fish. Economic benefits have resulted from increased wildlife watching activities in Massachusetts including boat tours to view whales and seabirds.

Technical Feasibility

Achievability: The overall goal of this project is attainable. Portions of this project have been underway since 1990. Partial success has already been achieved, in particular successful partial restoration of the Ram Island colony and successful nesting of terns at both Bird and Ram Islands. From 1999 through 2004 Common Tern numbers increased by 59%. This proposal is for the continuation and extension of an already successful technique.

The speed with which the goal is ultimately achieved is likely to be dependent on the extent to which specific, enumerated underlying objectives are met and future actions completed. This will entail continued monitoring and management of sites already restored, restoration of a third colony site at Penikese Island and the restoration of eroded habitat at both Bird and Ram Islands.

Reliability of Techniques: This project would employ proven techniques with which the managing agencies have had experience, and does not involve untried or speculative ideas. Management programs to protect terneries and to enhance tern productivity have been in place in Massachusetts at different sites since the 1920s. Restoration of former terneries using proven gull control methodologies has been accomplished successfully at several sites in New England, including Ram Island, Mattapoissett. Toxicological testing of tern eggs and young to monitor post-remediation background levels of PCBs in the tern population would employ standard chemical testing methodologies.

Impact of Remediation: Remediation activities involving the removal of PCBs would not be expected to have any material adverse effect on the activities envisioned in this project.

Monitoring: Monitoring of overall project progress would be accomplished by continuous oversight provided by the MDFW and the USFWS. Ultimate success in restoration of terns in the Buzzards Bay area and in the New Bedford Harbor Environment would be

measured by biological monitoring systems, some of which are already in place, to assess tern abundance, distribution and productivity in the entire area.

This project could also be expected to benefit from technical assistance provided by the Roseate Tern (Northeastern Population) Recovery Team.

Progress reports for each project year report favorable results with Common Tern numbers increasing by 59% over the Trustee Council's previous funding earlier phases of the project. Roseate Tern results have been mixed but there is promise for Penikese Island where nesting pairs showed up during the 2004 season.

Requested Funding: \$833,336.15

Estimated Match: \$59,796.28

Impacts on the Environment

Biological: Beneficial biological effects are anticipated for the tern species discussed above through increased protection and creation of favorable nesting habitat.

Impacts on injured resources: No adverse impact effect is expected to occur to injured resources. Positive effects would be anticipated for terns through increasing tern population size and health.

Impacts on other resources/habitats:

This activity may require various state and federal permits and may require extensive documentation of the impacts of the action.

Vegetation: The physical rebuilding and stabilization of tern nesting areas at Ram Island would involve the removal of *Phragmites australis* through herbicide treatment, the deposition and stabilization of clean fill material and replanting the area with native plants (e.g. *Solidago sempervirens* (seaside goldenrod) or *Lathyrus japonicus* (beach pea). This would result in a change in vegetation cover at this site. The applicant has proposed to conduct a detailed assessment to determine what other plant species are present and whether the area proposed for fill and stabilization would be considered to be a wetland which would require an additional level of regulatory review.

Wildlife: Active management and monitoring of existing terneries may involve the occasional taking of predators. The applicant will focus on non-lethal methods of deterring predators and competitors from the sites. Restoration of the tern nesting area on the "Tubbs Island" portion of Penikese Island involved discouraging gull nesting on Tubbs Island. Techniques used to date for discouraging gull use have included auditory and visual harassment, the use of herding dogs and the destruction of gull and goose nests. If predators such as gulls or mink are documented to kill terns or their eggs, individual predators may be removed under state and federal permits. Such predators

can have a major impact to a colony either through taking adults, juveniles or eggs, or by causing large numbers of terns to desert the colony.

Fish & shellfish: No adverse impacts on fish would be expected to result from this project. The filling of lowlying interior areas of Ram Island is not expected to cause a negative effect on fish and shellfish species but a detailed assessment proposed for this project would provide specific information on the resources present and impacts expected.

Physical: Physical impacts from the filling on the interior portion of Ram Island can be expected. These impacts cannot be evaluated at this time since the project has not been designed and details are unavailable.

Both Bird and Penikese Islands have historic resources present. No negative impacts on cultural resources (archaeological or historical) or on land use patterns at the three ternery sites are foreseen. Bird Island Light, no longer in service, is an historical resource of interest, but would not be effected by the project activities. Penikese Island contains assets of considerable historic interest. Louis Agassiz established the John Anderson School of Natural History on the island and after the school closed, the island served as the site of a leper colony. The remaining historic aspects would not be affected.

Human. No negative effects are expected.

Preliminary Determination: The Council has preliminarily approved the idea for possible implementation pending consideration of public comments received. The project will directly benefit an endangered species injured by PCB contamination.

Preliminary Funding: \$833,336.15 If approved, it is likely that \$141,140.15 would be placed in reserve for the Ram Island construction until such time as a feasibility study is completed, accepted by the Trustee Council and permits are obtained for the project.

2.3.7 Studies, Plans or Educational Activities

The Trustee Council received several ideas to conduct studies, plans or educational activities (studies). Studies may be undertaken by the Trustee Council to further advance the restoration planning process. Studies do not directly correct a specific natural resource injury and cannot be considered to be restoration *per se*. Rather, these studies would provide information to assist the Trustee Council in further identifying beneficial restoration opportunities. Any studies ultimately selected will be implemented at appropriate times throughout the restoration process.

The Trustees believe that appropriate educational exhibits and activities can result in changes in human behavior that will benefit the Harbor.

2.3.7.1 Preferred Studies, Plans or Educational Activities

2.3.7.1.1 Apponagansett Bay Resource Restoration Feasibility Study

Study Description

Proposed Action: The project would investigate the feasibility of restoring a more natural tidal exchange between inner Apponagansett Bay, outer Apponagansett Bay and Buzzards Bay by installing additional openings in the Padanaram causeway. A feasibility study would be conducted to determine whether modifying the Padanaram causeway will increase tidal flushing with the inner Bay with the goal of restoring upstream degraded resources, including salt marsh and shellfish beds.

The feasibility study would consist of two phases. The first phase would consist of data collection and developing and running a hydrodynamic model. The results of the first phase will present the modifications of the causeway (likely installing additional culverts in the causeway) necessary to improve the resources of Apponagansett Bay and would quantify the effects of such actions. The results of the feasibility study would be presented to the Trustee Council. Should conclusive results determine that the project is worth their continued support, the second phase of the feasibility study would be implemented. This phase consists of the development of conceptual restoration plans that could be used to produce construction cost estimates and discuss regulatory approvals. Once this study is complete, the effects of additional openings in the causeway and the costs of implementing these changes will be known and a preferred restoration alternative will be developed. Funds for the further design, permitting and construction for such a project could be requested in a future Trustee Council funding round.

Location: Padanaram Causeway, Apponagansett Bay, Dartmouth, MA. Coordinates: N 41° 35' 15", W 70° 56' 50"

Nexus to PCB Injury: This project would benefit salt marsh, shellfish resources and the water column, resources that were injured through contamination by PCBs within the New Bedford Harbor Environment.

Benefits of the activity: The study is a necessary first step to a project that, if found feasible, would contribute to the productivity of the New Bedford Harbor Environment. The project enhance fish and wildlife habitat, would improve habitat diversity, increase biological productivity and enhance the ecosystem of Buzzards Bay for both finfish and shellfish resources. By allowing increased volumes of water to enter Apponagansett Bay and Dike Creek, this would potentially reduce the need for shellfish closures which occur each spring through nutrient loading from the watershed and fecal coliform concentrations. The increased volumes would increase circulation and decrease water temperatures within the system.

Time Frame: Fall 2005 to Summer 2006: data gathering and hydrodynamic modeling.
Summer 2006 to Winter 2006: Conceptual Plan development.

Impacts on the Environment: The study would collect or generate information to support a Trustee Council decision to conduct a future restoration project. Should an affirmative decision be made, the data collection and planning under this study would provide necessary information for regulatory permit applications for the project. Where the study focuses on data collection and planning, no impacts to the environment are anticipated. One aspect of the study would require subsurface sampling through boring to characterize the sediment present. This would result in a minor, localized disturbance to the sediment and vegetation at the boring location.

Requested Funding: \$175,000

Estimated Match: \$2,000

Preliminary Determination: The Trustee Council has preliminarily chosen to include the study as a preferred study for possible funding and implementation after consideration of the public comments received. Funding would be provided for the initial feasibility investigation (data gathering and hydrodynamic modeling) and if the results are favorable, and the Trustee Council approves, funding would then be provided for the second phase to produce and the conceptual plan.

Preliminary Funding: \$175,000

2.3.7.1.2. Round Hill Salt Marsh Restoration Project

Study Description

Proposed Action: The project would conduct an investigation exploring the feasibility of restoring up to 24 acres of coastal salt marsh through the removal of significant amounts of fill material and re-grading to historic marsh elevations at the Round Hill Salt Marsh Restoration Site. A phased approach would be taken with Phase I involving a feasibility study and Phase II involving the conceptual design of the proposed project.

Under Phase I, a contractor would be hired to complete a full feasibility investigation including development of historical background / site history, base mapping (vegetation, topographic and bathymetric maps as necessary), hydrologic and alternatives analyses and cut and fill calculations. Upon completion of Phase I there would be presentation to the Trustee Council. If approved by the Trustee Council and project partners, the second Phase (Phase II) would proceed with conceptual design.

Conceptual design would include development of conceptual alternatives and estimates of project costs. The Town of Dartmouth will sponsor this project and include assistance from staff at the NOAA Restoration Center, the Massachusetts Coastal Zone

Management - Wetlands Restoration Program (WRP), and additional project partners as the project progresses. Completion of conceptual designs and cost estimates will be used to further develop the project with partners and regulatory authorities and aid in identifying a potential preferred alternative. Upon successful completion through Phase I with a conceptual design, the project team would re-apply for additional Trustee Council funding through future funding opportunities to complete final design, permitting and construction.

Location: The site contains up to 24 acres of filled historic salt marsh and is located directly north of the Town of Dartmouth-owned beach at Round Hill Point and to the east of the Meadows Shore Marsh complex in Dartmouth, MA. Coordinates: N 41° 32' 25", W 70° 56' 30"

Nexus to PCB Injury: This project would benefit salt marsh and the water column, resources that were injured through contamination by PCBs within the New Bedford Harbor Environment.

Benefits of the activity: The study is a necessary first step to a project that, if found feasible, would contribute to the productivity of the New Bedford Harbor Environment. The project would restore an historic coastal saltmarsh and barrier beach coastal ecosystem that was filled for human use (private airport, farm, dwellings, research facilities and pumping stations) that has since been discontinued. The area now is characterized by forested upland and degraded freshwater wetlands. Restoring these areas would provide fish and wildlife habitat, improve habitat diversity, increase biological productivity, provide food and pollutant cleansing.

Time Frame: feasibility investigation (11 months)
conceptual design and alternative development (7 months)

Impacts to the Environment: The study would collect or generate information to support a Trustee Council decision to conduct a future restoration project. Should an affirmative decision be made, the data collection and planning under this study would provide necessary information for regulatory permit applications for the project. Where the study focuses on data collection and planning, no impacts to the environment are anticipated. Some sampling of the soils present has already occurred on site and may need to be supplemented. This may result in a minor, localized disturbance to the sediment and vegetation at the sampling locations.

Requested Funding: \$164,000

Estimated Match: \$3,000

Preliminary Determination: The Trustee Council has preliminarily chosen to include the project as a preferred study for possible funding and implementation after consideration of the public comments received. Funding would be provided for the initial feasibility investigation and if the results are favorable, and the Trustee Council

approves, funding would then be provided for the second phase to produce the conceptual design and alternatives analysis.

Preliminary Funding: \$164,000

2.3.7.2 Non-preferred Studies, Plans or Educational Activities

2.3.7.2.1 New Bedford Harbor Bluefish: Restoration of an Injured Resource

Study Description

Proposed Action: The proposed work would assess the current state of an injured resource, bluefish (*Pomatomus saltatrix*) to determine the success of habitat restoration work in New Bedford Harbor. Remediation begun in 1990 to remove PCB-laden sediments from the harbor is expected to be reflected in reduced contamination or resources overall.

Using a “PCB fingerprinting” technique (Deshpande and Dockum *in prep*), the investigation would identify remaining areas that are contributing PCBs to the food web. Young-of-the-year (YOY) bluefish would be sampled at a minimum of ten sites throughout the NBH estuary (and reference sites) from the time fish first arrive in late spring or early summer until they leave in late summer. Statistical analysis (undergoing quality assurance procedures) would identify candidate cleanup areas where PCBs are differentially accumulating in this predatory, tertiary trophic level species. Individual fish would be analyzed for distribution of lipid classes.

Environmental Impacts: Approximately 200 samples of bluefish would be taken by a combination of beach seine, gillnet and rod and reel gear. This could result in short term minimal impacts to bluefish, other species taken incidentally depending on the fishing gear used with beach seines and gill nets resulting in a greater likelihood of incidental catch. Minimal bottom impacts would be expected from the gear employed. The activity would be of short-term duration and conducted at specific locations.

Requested Funding: \$225,500

Estimated Match: \$72,484

Rationale for Non-preference: This project scored low in the merit ranking of all submitted project applications. Insufficient funds were available for the low ranked projects.

2.3.7.2.2 Pope Beach Master Plan

Study Description

Proposed Action: The Town of Fairhaven would hire a design consultant to prepare a master plan for the site to enhance the recreational opportunities and the natural resources on the site which was purchased using Trustee Council Round II funding. The design process would consist of surveying the existing condition and all natural resource areas, conducting public meetings, design development and preparing final design plans. Pope Beach is a 3.28 acre parcel located on Scoticut Neck on the south side at the terminus of Manhattan Street (Assessors' Map 28A Lot 497, Fairhaven, MA), Coordinates: N 41° 37' 45", W 70° 52' 37"

Environmental Impacts: No environmental impacts would occur at the project location since this is a planning/design activity only. Information generated is expected to be used for required regulatory permits should recreational development at this occur.

Requested Funding: \$30,000

Estimated Match: \$5,340

Rationale for Non-preference: This project scored low in the merit ranking of all submitted project applications. Insufficient funds were available for the low ranked projects.

2.3.7.2.3 Coastal Birds and Forage Fish as Indicators of Restoration Achievements in the New Bedford Harbor Environment

Study Description

Proposed Action: The goal of the project is to measure the effectiveness of remediation efforts by gaining a better understanding of tern (*Sterna* spp.) feeding ecology, including marine distribution and analysis of contaminant levels.

Aerial surveys: To accomplish this goal 15 aerial transect surveys of the New Bedford Harbor/Buzzards Bay marine environment would be conducted each season for three years. These surveys would document foraging distribution of terns and other marine seabirds in order to aid in the identification of biodiversity "hotspots" from the pre- to post-breeding season. All foraging flocks would be recorded at their geographical location using onboard geographic positioning system computer mapping software. All birds and marine mammals will be recorded.

Forage fish sampling: Thirty-five non-random boat surveys would be conducted each season for three years using a local charter boat from the New Bedford area. Observations of numbers and ratios of Common and Roseate tern feeding flocks will aid

in aerial survey data. At each identified feeding flock, the forage fish species present will be documented along with a relative index of fish abundance, and samples will be taken for species composition and size. A subsample will be taken for PCB congener analysis. Data on tidal stage, air and surface water temperature, sea state and water clarity will be collected at each feeding flock location.

Restoration: Monitoring and habitat restoration work would occur as Salters Point, Round Hill and Allens Pond in Dartmouth, to address Piping Plover (*Charadrius melodus*) and Least Terns (*Sterna albifrons*). Nesting areas would be fenced to prevent erosion of beach areas by human use and limit the presence of predators in nesting areas.

Outreach and educational programming would be conducted by the staff of the Mass Audubon's Allens Pond Wildlife Sanctuary in conjunction with this project.

Environmental Impacts: The proposed study consists of surveys conducted both from the air and on the water. Aerial surveys would be conducted at 500 feet (152.4 meters) which the applicant believes is sufficient to avoid interaction with the terns. The boat surveys would consist of acoustic sampling and taking samples of forage species by cast net. The collected would be held in tanks on board the vessel, and would be identified and measured. A subsample would be taken and frozen for later analysis. The remaining fish would be returned to the water. The number of forage fish to be retained for sampling is small and minimal negative impacts are expected.

The applicant also proposes to erect fencing around Piping Plover nesting areas on land in an effort to protect the nests and prevent erosion from human use. Minimal negative impacts should occur to the surrounding land and vegetation since the area of fencing is limited and the results should stabilize the the areas around the nests.

Requested Funding: \$380,842 for 3 years

Estimated Match: none specified

Rationale for Non-preference: This project scored low in the merit ranking of all submitted project applications. Insufficient funds were available for the low ranked projects.

2.3.7.2.4 Acushnet River View Park Restoration Project

Study Description

Proposed Action: The Town of Acushnet proposes to revise conceptual project plans to include an existing paved parking area, complete preliminary design plans, secure all necessary environmental permits, finalize design plans and prepare full bid-ready construction documents for improvements to the existing Acushnet River View Park.

The Park is located on the east bank of the Acushnet River directly north of the intersection of River Street and Guillotte Street in Acushnet. Coordinates: N 41° 40' 45", W 70° 55' 01"

Environmental Impacts: No environmental impacts would occur at the project location since this is a planning/design activity only. Information generated is expected to be used for required regulatory permits should park development occur.

Requested Funding: \$120,000

Estimated Match: \$10,000

Rationale for Non-preference: This project scored low in the merit ranking of all submitted project applications. Insufficient funds were available for the low rank projects.

2.4 Cumulative Effects of the Preferred Alternatives

The Council on Environmental Quality defines cumulative effects as, "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions," (CEQ, 1997a). A cumulative effects analysis must take into consideration both direct and indirect effects of the proposed action as well as the actions spatial and temporal effects when considered with other past, present or future actions.

A description of the affected environment (summarized below) can be found in Chapter 3 of the RP/EIS (NBHTC, 1998) from which this EA is derived. New Bedford Harbor is an estuary at the mouth of the Acushnet River on Buzzards Bay. Within the Harbor Environment can be found freshwater and upland habitats, tidal marsh, tidal flats and soft bottoms, beaches and rocky shores, subaquatic vegetation and open water habitat. It is home to approximately 150,000 people living and working in the four communities along the river and estuary. The original inhabitants of the area were members of the Wampanoag Tribe until European settlers arrived. After settlement in the late 17th/ early 18th centuries the area was initially used for farming and timber harvest along with agriculture and grazing. Whaling was an early industry and support services to the whaling industry grew. This was followed by milling and manufacturing with use of the river in these operations. As these industries developed, more people settled in the area with a need for housing and support services. Ship repair and construction developed along the harbor. In the early 1900s there was a significant growth of the textile industry followed by metal works and tanneries. This period also saw the growth of the fishing industry replacing the former whaling industry.

Accompanying this development and growth were impacts to the Harbor Environment. Land cleared for farming increased erosion into the river. Tidal marshes were filled for

commercial development. As sediment entered the river and harbor, dredging was required to keep the river open for vessel traffic. Wharves and piers were built along and into the harbor. Mill operations required the use of water and dams were constructed impeding the flow of the river and presenting a barrier to fish passage. As the human population grew, bridges were built to allow travel across the harbor and river. These bridges created an impact by narrowing the river and further restricting river flow. Accompanying the population and industrial growth were increases in discharges of both sewage and industrial waste. Both commercial and residential development is still occurring along the harbor and river and the river is still being dredged to allow vessels to enter and travel within the port.

One of the major impacts to the area was the release of PCBs and other contaminants into the New Bedford Harbor Environment from two manufacturing facilities over a period spanning four decades. The preferred alternatives from all of the Trustee Council's funding rounds (Rounds I, II and III) are intended to address the impacts caused by this release of PCBs and other contaminants and the associated injury to natural resources. Further transport of PCB-laden sediments subsequently occurred through tidal movement as well as the wastewater treatment system causing the contamination to spread within the defined Harbor Environment. CERCLA requires that the preferred alternatives restore, replace or acquiring the equivalent of those natural resources that were injured by the releases. By design, these actions are designed to provide a positive benefit for the injured natural resources by enhancing the habitat, correcting previous problems or protecting and preserving the natural resource or habitat.

Dredging is occurring in the Harbor to address two purposes: 1) reduce the contaminant load; and 2) allow ships to travel safely within the harbor. As part of the CERCLA remedy, EPA is overseeing the dredging and removal of contaminated sediments. The goal of the dredging is to reduce harbor sediment contamination to a level that is safe for the intended uses and users (i.e. human or natural resources) of that area. The combination of this dredge activity and the preferred alternatives of Round III as well as the actions from Rounds I and II are designed to increase the overall health of the Harbor Environment. Navigation dredging is occurring because of the sediment deposition occurring from the river and the shoaling of the harbor. This dredging will also remove some contamination since there is some lower level contamination in this sediment. Clean sediment from this dredging is being used to cap other contaminated areas of the Harbor. Contaminated sediment from the dredging is being placed in containment cells dug into the Harbor bottom to be covered by clean material.

While the preferred alternatives must address the injury from the PCB contamination, the alternatives also address past impacts as well as prevent future impacts. The land acquisition projects (Acushnet North, Acushnet Sawmill, Marsh Island South and Viveiros Farm) would permanently protect and preserve up to 334 acres of upland along the river and harbor from future development and associated impacts. The projects would contribute to the amount of protected open space within the four towns (approximately 11,867 acres) as well as the Buzzards Bay Watershed (over 50,000

acres) (BBP, 2005). This provides continuing benefits to both humans and wildlife and the resulting impacts of increased human use are considerably less than if commercial or residential development were to occur at these sites. The choice of sites also provide a buffer to the bay, harbor and river that they border providing further protection to the marine and freshwater organisms and that live and use these areas.

The tern restoration project addresses the injury to terns caused by the introduction of PCBs into the food chain of the harbor by managing tern nesting islands, discouraging predation and creating usable nesting areas. While addressing the PCB-related injury the project also addresses the decline in tern numbers resulting from an increase in gulls which take over nesting areas and feed on tern eggs and chicks. As the human population increased, the associated solid waste also increased requiring the creating and use of landfills. Gulls fed on the contents of the landfills and with an easy source of food and little competition, caused the gull population to increase in numbers. This led to competition with terns for nesting locations with the terns being forced out. As landfills close and the gull population numbers drop, efforts are made to move the gulls off historical tern nesting locations since other favorable gull nesting areas exist. The Roseate Tern restoration efforts are guided by the Roseate Tern Recovery Plan-Northeastern Population (USFWS, 1998) which is designed to increase and expand the population throughout the range of the species.

The remaining preferred alternatives (West Island Beach Saltmarsh Restoration and River Road Restoration) and preferred studies (Apponagansett Bay Resource Restoration Feasibility Study and Round Hill Salt Marsh Restoration Project) involve restoring tidal marshes. The first two involve the actual analysis, design, permitting and construction of marsh projects. The remaining two examine the feasibility of restoring the marshes with a eventual goal of implementing a project. These projects would provide many benefits including shelter, food, flood storage and habitat for a variety of natural resources. Marsh restoration is a focus of both state and federal efforts as well as local communities and organizations. Atlases have been produced documenting the candidate sites for restoration and funds have been provided for replacement of culverts, tide gates and plantings.

The marsh restoration projects provide benefits to the injured natural resources while at the same time addressing impacts caused by previous activities. The need for the projects are typically caused by roads being placed across tidal inlets to marshes and inadequately sized culverts being placed under these roads. In other cases bridges across tidal areas have restricted the flow impacting marshes at the upper reaches of the tidal range. By correcting these problems, years of continuing impacts will be reduced or reversed.

The impacts on the New Bedford Harbor Environment have been occurring for centuries since the settlement of the area. The types and sources of impacts have been similar but differ by degrees as technology advanced and the population grew. The impacts continue, and will continue into the future as development occurs but with associated economic and sociological gains.

By definition, the natural resource restoration preferred alternatives proposed for implementation should provide a net benefit to offset the injury caused by the release of contamination in the Harbor Environment. While CERCLA requires that restoration projects address the specific injury caused by the release of PCBs and other contaminants, the preferred alternatives also provide benefits by preventing future impacts through preservation and protection of open space and by correcting past actions. The minimal impacts caused by the implementation of the preferred alternatives will be more than offset by the benefits to be experienced by the natural resources and the public.

3: Listing of Agencies and Persons Consulted

Federal Agencies

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
U.S. Department of the Interior
U.S. Fish and Wildlife Service
U.S. Department of Justice

Commonwealth of Massachusetts Agencies

Executive Office of Environmental Affairs
Coastal Zone Management
Department of Environmental Protection
Department of Fisheries, Wildlife and Environmental Law Enforcement
Division of Fisheries & Wildlife
Natural Heritage and Endangered Species Program
Division of Marine Fisheries

Local and Regional Government Organizations

City of New Bedford
Town of Acushnet
Town of Dartmouth
Town of Fairhaven

New Bedford Harbor Trustee Council

Trustees:

Michael Bartlett	Field Supervisor, U.S. Fish and Wildlife Service, U.S. Department of the Interior
To be designated	Secretary, Massachusetts Executive Office of Environmental Affairs
Christopher Mantzaris	Deputy Regional Administrator National Marine Fisheries Service National Oceanic and Atmospheric Administration U.S. Department of Commerce

Delegates:

Dale Young	Natural Resource Damage Coordinator, Massachusetts Executive Office of Environmental Affairs
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Staff Support

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Marcia Gittes U.S. Department of the Interior
Marguerite Matera National Oceanic and Atmospheric Administration

Technical Advisory Committee

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John Catena National Marine Fisheries Service, Restoration Center
Paul Craffey Massachusetts Department of Environmental Protection
Michael Hickey Massachusetts Division of Marine Fisheries
John Terrill (Chair) National Marine Fisheries Service, Restoration Center
Jim Turek National Marine Fisheries Service, Restoration Center
Veronica Varela U.S. Fish and Wildlife Service
David Whittaker Massachusetts Division of Marine Fisheries

Technical Advisors

Bruce Carlisle Massachusetts Coastal Zone Management
Katherine Clark National Ocean Service, Damage Assessment Center
Joseph Costa Buzzards Bay Project
David Janik Massachusetts Coastal Zone Management
Edward Reiner Environmental Protection Agency
Jan Smith Massachusetts Coastal Zone Management

Public Consulted

Trustee Council Meetings: 09/24/2003 Dartmouth Town Hall, Dartmouth, MA
11/14/2003 Days Inn, New Bedford, MA
09/21/2004 Holiday Inn Express, Fairhaven, MA
05/31/2005 NMFS, Gloucester, MA (closed meeting)

Public Hearing
To be added

Public Comments For comments submitted during the public comment period, see Section 6.

4: References

Bigelow H. And W. Schroeder. 2002. Fishes of the Gulf of Maine. Edited by B. Collette and G. Klein-MacPhee. Smithsonian Institution Press, Washington and London.

BBP. 2005. Open Space Protection. Buzzards Bay Project National Estuary Project. www.buzzardsbay.org

Castro et. al. 1996. Habitat enhancement for lobsters in Narragansett Bay. Mitigation proposal to Habitat Restoration Group. NMFS.

CEQ. 1997. Considering Cumulative Effects Under the National Environmental Policy Act. Council on Environmental Quality. January 1997.

DeAlteris, J. 1996. Site selection analysis for an experimental reef project for lobster enhancement in Narragansett Bay, RI. Final report to the Habitat Restoration Group, NMFS.

Deshpande, A.D. and B.W. Dockum. Correlation of young-of-the-year bluefish habitat and PCB fingerprints. (*in prep*).

Dickerson, D., EPA New Bedford Harbor Site Manager. Personal communication, 16 Feb 1996.

EPA. 1998. Declaration for the Record of Decision New Bedford Harbor Superfund Site, Upper and Lower Harbor Operable Unit, New Bedford Massachusetts. Unpublished report dated September 25. Boston, MA

----- . 1990. Baseline Ecological Risk Assessment, New Bedford Harbor. EPA. 1996.

Matthews, H. 1979. Artificial reef site selection and evaluation. Florida Cooperative Extension Program Service Publication MAFS-20. Marine Advisory Program. Florida Sea Grant.

McConnell K.E., and IEc. Inc. 1986. The damages to recreational activities from PCBs in New Bedford Harbor. Unpublished report prepared for NOAA Ocean Assessment Division, Rockville, MD. December.

MDFW. 2004. The Buzzards Bay Tern Restoration Project: Six Year Overview, 1999-2004. Unpublished report. Westborough, MA

----- . 2000. Buzzards Bay Tern Restoration Project: 2000 Field Season Report. Unpublished report dated November 15, 2000. Westborough, MA

-----, 1999. Buzzards Bay Tern Restoration Project: 1999 Field Season Report. Unpublished report dated December 1, 1999. Westborough, MA

Mitsch, W.J. and J.G. Gosselink. 1993. Wetlands. New York: Van Nostrum Reinhold.

MNHESP. 2005. Letter to Steven Block, NOAA Restoration Center from Thomas French, Assistant Director MNHESP. March 9.

NBHTC. 2005. Resolution 77 of the Trustee Council requiring that future projects of the Trustee Council be monitored according to the Trustee Council's minimum monitoring requirements. May 31. Gloucester, MA.

-----, 1998. New Bedford Harbor Trustee Council: Final Restoration Plan/ Environmental Impact Statement for the New Bedford Harbor Environment. April 28. Gloucester, MA.

-----, 1998b. New Bedford Harbor Trustee Council: Final Restoration Plan/ Environmental Impact Statement for the New Bedford Harbor Environment - Record of Decision. September 22. Gloucester, MA.

-----, 1993. New Bedford Harbor Trustee Council: Our plan for moving forward. Unpublished report dated October 1. Gloucester, MA.

Neckles, H.A. and M. Dionne, Editors. 2000. Regional Standards to Identify and Evaluate Tidal Wetland Restoration in the Gulf of Maine. Wells National Estuarine Research Reserve Technical Report, Wells, ME.

NOAA. 2005. Announcement of Federal Funding Opportunity - New Bedford Harbor Restoration Projects Grants. February 1. [http:// www.GRANTS.GOV](http://www.GRANTS.GOV)

Pruell, R.J. et al. 1990. Geochemical Study of Sediment Contamination in New Bedford Harbor, Massachusetts. 29 Mar. Env. Res. 77-101.

USFWS. 1998. Roseate Tern Recovery Plan - Northeastern Population, First Update. U.S. Fish and Wildlife Service. Hadley, MA.

VHB. 1996. New Bedford Harbor: Historic overview and natural resources and uses status report. Prepared for the New Bedford Harbor Trustee Council by Vanasse Hangen Brustlin, Inc. Gloucester, MA.

Weaver, G. 1982. PCB pollution in the New Bedford, Massachusetts area: A status report. Boston: Massachusetts Office of Coastal Zone Management.

5: Relationship to Other Laws

As discussed in the RP/EIS, the two major federal laws guiding the restoration of New Bedford Harbor are CERCLA and NEPA. CERCLA provides the basic framework for natural resource damage assessment and restoration, while NEPA sets forth a specific process of impact analysis and public review. However, the Trustees must also comply with other applicable laws, regulations, and policies at the federal, state and local levels. The relevant laws and their applicability with respect to Round III are discussed below.

Clean Water Act (CWA) (Federal Water Pollution Control Act), 33 USC §1251 et seq.

CWA is the principal law governing pollution control and water quality of the nation's waterways. Section 404 of the law authorizes a permit program for the disposal of dredged or fill material in the nation's waters, administered by the ACOE.

In general, restoration projects which move significant amounts of material into or out of waters or wetlands--for example, hydrologic restoration of salt marshes or the placement of artificial reefs--require Section 404 permits. It is probable that some of the New Bedford Harbor Round III restoration projects will require such permits. In such cases the Trustee Council might be the permit applicant; alternatively, the project proponent--for example, a municipality or local natural resources trust--might apply for the permit. In granting dredge and fill permits the ACOE might require the applicant to undertake mitigation measures such as habitat restoration to compensate for losses resulting from the project.

Under Section 401 of the CWA, restoration projects that entail discharge or fill to wetlands or waters within federal jurisdiction must obtain certification of compliance with state water quality standards. The Massachusetts Department of Environmental Protection implements the Section 401 Water Quality Certification Program through 314 CMR 9.00. In general, restoration projects with minor wetlands impacts (i.e., a project covered by an ACOE Programmatic General Permit) are not required to obtain Section 401 Certification, while projects with potentially large or significant cumulative impacts to critical areas require certification.

Coastal Zone Management Act (CZMA), 16 USC §1451 et seq.

CZMA establishes a policy to preserve, protect, develop and, where possible, restore and enhance the nation's coastal resources. The federal government provides matching grants to states for the realization of these goals through the development and implementation of state coastal zone management programs. Section 1456 of the Act

requires direct federal actions in the coastal zone to be consistent, to the maximum extent practicable, with approved state programs. It stipulates that no federal licenses or permits may be granted without giving the state the opportunity to concur that the project is consistent with the state's coastal policies.

In order to comply with CZMA, the Trustee Council sought and received concurrence of the Commonwealth that the RP/EIS is consistent with the 27 program policies of the Massachusetts Coastal Program. Moreover, specific restoration projects which may be selected in the current and future restoration rounds must be consistent with the state program. The Trustees anticipate that continued close cooperation between the Massachusetts Coastal Zone Management Program (MCZM) and the Trustee Council will ensure consistency of future actions.

MCZM determined that the RP/EIS was consistent with the MCZM's enforceable program policies. The Round III restoration projects selected for funding are consistent with the RP/EIS. The determination that the individual Round III restoration projects are consistent with the state program will be sought at the time of permit application rather than seeking concurrence on the Round III Environmental Assessment and then again on the individual projects.

Endangered Species Act (ESA), 16 USC §1531 et seq.

ESA establishes a policy that all federal departments and agencies seek to conserve endangered and threatened species and their habitats, and encourages such agencies to utilize their authorities to further these purposes. Under the Act, the Departments of Commerce and Interior publish lists of endangered and threatened species. Section 7 of the Act requires that federal agencies and departments consult with the Departments of Commerce and/or Interior to minimize the effects of federal actions on endangered and threatened species. In the case of New Bedford Harbor, the identification of endangered species as a restoration priority (RP/EIS Section 2.6) means that specific restoration actions can help conserve and recover endangered and threatened species and so further the goals of ESA.

The Trustee Council determined that the preferred restoration activities for Round III would not have any adverse effects upon threatened or endangered species. For most of the projects, no threatened or endangered species are expected to be present at the site of the activity. The project **Restoration and Management of Tern Populations** is expected to provide direct and indirect benefits to federally endangered roseate terns. One additional projects (**West Island Beach Salt Marsh Restoration**) will be conducted in the area where species identified by the Massachusetts Natural Heritage and Endangered Species Program may be present, but the restoration activities should not have an adverse impact on these species. As the individual project plans become finalized, the Council will review and evaluate whether there are any impacts to endangered or threatened species to determine whether or not a Section 7 consultation is required pursuant to the ESA.

National Environmental Policy Act (NEPA), 42 USC §4321 et seq.

NEPA is the basic national charter for protection of the environment. Its purpose is to "encourage productive and enjoyable harmony between man and the environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; and to enrich the understanding of the ecological systems and natural resources important to the Nation." The law requires the government to consider the consequences of major federal actions on human and natural aspects of the environment in order to minimize, where possible, adverse impacts. Equally important, NEPA establishes a process of environmental review and public notification for federal planning and decisionmaking.

The Trustee Council integrated the Restoration Plan with the NEPA EIS process in order to comply with NEPA. The Restoration Plan complied with NEPA by serving as a "programmatic EIS" that assesses impacts of the restoration as a whole, as well as impacts of specific restoration projects. The Council prepared an Environmental Assessment (EA) for Round II in order to ensure public input to the decision-making process and assist the public to understand why specific projects were or were not chosen. (Several of the projects could have received categorical exclusions but the Council chose to prepare an EA instead.) The Council now seeks public review and comment on the restoration projects proposed for funding under Round III. At the conclusion of the Council's public review process, the comments received will be incorporated into the EA as well as the response to those comments. After reviewing the preferred Round III restoration projects and the public comments, the Council will render a final decision for those projects to receive funding.

Magnuson-Stevens Act (16 U.S.C. 1801 et seq.) as amended and reauthorized by the Sustainable Fisheries Act (Public Law 104-297) - Essential Fish Habitat

The Magnuson-Stevens Act established a program to promote the protection of essential fish habitat (EFH) in the review of projects conducted under federal permits, licenses, or other authorities that affect or have the potential to affect such habitat. After EFH has been described and identified in fishery management plans by the regional fishery management councils, federal agencies are obligated to consult with the Secretary of Commerce with respect to any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, by such agency that may adversely affect any EFH.

From the 1940s through the 1970s electronics manufacturers released polychlorinated biphenyls (PCB) and other hazardous materials contaminating portions of the Acushnet River and Upper Buzzards Bay. The PCB contaminant levels occurring in the bottom sediments of the Acushnet River were among the highest found in a marine estuary leading to New Bedford Harbor's being designated on the Environmental Protection

Agency's (EPA) Superfund National Priorities List. The site is also listed by the Massachusetts Department of Environmental Protection as a priority Tier 1 disposal site. To date, the most contaminated sediments (greater than 4000 ppm PCB) have been dredged and disposed of off-site. A large volume of contaminated material still remains within the New Bedford Harbor Superfund Site (over 800,000 cy) which is the subject of the next phase of cleanup.

The New Bedford Harbor natural resource restoration activities occur within a defined area referred to as the New Bedford Harbor Environment² based upon the Superfund Site determination. The Trustee Council prepared a RP/EIS in preparation for the implementation Round I restoration projects and prepared an EA to implement Round II restoration projects to address the injury to natural resources. The EFH requirements were in place for Round II and the EA contained an EFH Assessment on which a consultation was based. For both rounds, the projects were determined after a solicitation of restoration ideas from the public, academia, and municipal, state and federal government agencies. All projects were conceptual, subject to procurement competition and/or development of specific scopes of work.

The Round III projects assessed in this EA are based upon a formal grant solicitation. The projects are more developed than just the ideas presented in previous rounds. As such, more information is available on which to base an EFH Assessment and consultation. Specific scopes of work and potential permitting requirements were presented in the applications. Specific timeframes, locations and funding levels were also presented. The EFH Assessment that follows incorporates this information in determining potential impacts to EFH.

For the New Bedford Harbor/Upper Buzzards Bay area, EFH has been designated for one or more life stages for the following species: Atlantic cod (*Gadus morhua*), haddock (*Melanogrammus aeglefinus*) red hake, (*Urophycis chuss*), winter flounder (*Pleuronectes americanus*), Atlantic sea herring (*Clupea harengus*), bluefish (*Pomatomus saltatrix*), long finned squid (*Ioligo paelei*), Atlantic mackerel (*Scomber scombrus*), summer flounder (*Paralichthys dentatus*), scup (*Stenotomus chrysops*), black sea bass (*Centropristus striata*), surf clam (*Spisula solidissima*), king mackerel (*Scomberomorus cavalla*), Spanish mackerel (*Scomberomorus maculatus*), cobia (*Rachycentron canadum*), little skate (*Leucoraja erinacea*) and winter skate (*Leucoraja ocellata*). These species are managed by the New England, Mid-Atlantic, South Atlantic and Gulf of Mexico Fishery Management Councils under the following fishery management plans (FMP): Northeast Multispecies; Atlantic Bluefish; Atlantic Mackerel,

²The New Bedford Harbor Environment means New Bedford Harbor, Massachusetts, and the adjacent waters and shore areas containing natural resources which have been or may be injured, destroyed or lost as a result of releases of hazardous substances from the Facilities. This includes the New Bedford Harbor Superfund Site, located in portions of New Bedford, Acushnet and Fairhaven, Massachusetts, including New Bedford Harbor, the Acushnet River Estuary extending north to the Wood Street Bridge, and any adjacent marine waters and sediments and shoreline areas which are the subject of the United States Environmental Protection Agency's current Remedial Investigation and Feasibility Study, including at least Areas 1, 2 and 3 as defined in 105 CMR 260.005.

Squid, and Butterfish; Summer Flounder, Scup and Black Sea Bass; Atlantic Surf Clam and Ocean Quahog; and Northeast Skate Complex. In addition, EFH has been designated for sandbar shark (*Charcharinus plumbeus*) and bluefin tuna (*Thunnus thynnus*) which are managed by the NMFS under the FMP for Atlantic Tuna, Swordfish and Sharks.

The following table summarizes EFH for the area:

Species	Eggs	Larvae	Juveniles	Adults
Atlantic cod	X	X	X	X
haddock	X	X		
red hake		X	X	X
redfish	n/a			
winter flounder	X	X	X	X
windowpane flounder	X	X	X	X
Atlantic sea herring			X	X
bluefish			X	X
long-finned squid	n/a	n/a	X	X
short finned squid	n/a	n/a		
Atlantic butterfish	X	X	X	X
Atlantic mackerel	X	X	X	X
summer flounder	X	X	X	X
scup	X	X	X	X
black sea bass	n/a	X	X	X
surf clam	n/a	n/a	X	X
ocean quahog	n/a	n/a		
spiny dogfish	n/a	n/a		
king mackerel	X	X	X	X
Spanish mackerel	X	X	X	X
cobia	X	X	X	X
little skate			X	X
winter skate			X	X
sandbar shark				X
bluefin tuna			X	

EFH is determined by the habitat requirements needed for the species or for the particular life stage of that species. EFH can be described in terms of bottom types, temperature, depth and salinity range required for the species and life stage. New Bedford Harbor is a net depositional area characterized by fine grained sediments such as muds, silts and clays. Coarser sediments (sand and gravel) can be found in the higher energy areas of the Outer Harbor (VHB, 1996). The Upper Estuary portion of the Harbor is a mixing zone characterized by higher temperatures and lower salinities owing to the influx of freshwater from the Acushnet River.

While several species reside in this area and EFH is designated for a variety of species, winter flounder spawning habitat is a concern for this area. Avoiding or minimizing impacts to winter flounder EFH will be a consideration in all in-water and onshore activities along the Harbor. In-water work will be avoided during the time period January through May of any year when spawning winter flounder may be present in the area. At other times, Best Management Practices to minimize silt resuspension and movement will be used to minimize impacts to winter flounder and other species present in the area.

The following preferred projects are discussed for their potential to impact EFH.

(a) Land Acquisition Projects

One preferred restoration project (**Acushnet River: Headwaters to Bay Land Conservation Project**) selected for potential implementation involves funding for the outright purchase and/or conservation easements of upland properties. This project is composed of four subprojects (**Acushnet River North, Acushnet Sawmill, Marsh Island South and Viveiros Farm**) which are located throughout the Acushnet River watershed. The ultimate goal of the land acquisition is to provide greater protection to the Acushnet River and Upper Buzzards Bay by permanently preventing development of these sites. Appropriate pre-acquisition tasks (fair market appraisal, title exam, environmental site assessment, property boundary surveys and conservation restriction to be held by a grantee acceptable to the Council) must be completed prior to the Council's funding of the acquisition. Since the Council is only funding the acquisition and will not be funding any upgrades to or development on these properties, no adverse impacts to EFH are expected. Should future habitat restoration opportunities arise at these locations, a separate assessment of impacts would occur. These opportunities would be the subject of another funding solicitation and is not part of this proposed action.

The one exception is the **Marsh Island South** acquisition. This would compliment the purchase already made of the northern parcel of the island allowing the Trustee Council to pursue a salt marsh restoration project to remove fill and restore the salt marsh historically present on the island. This action was considered in Round II EA. To date a feasibility study has been conducted and conceptual plans have been developed.

(b) Salt Marsh Restoration Projects

The Council is proposing to conduct a salt marsh restoration project at **West Island Beach**, a location off of Buzzards Bay on Sconticut Neck, Fairhaven.

The project would restore full tidal exchange with a tidally restricted 8-acre salt marsh which discharges into Buzzards Bay. The project would replace an undersized culvert and install a new culvert under the beach access road. Before any of this work is initiated, an ecological and hydrological alternatives analysis will be performed on the marsh. The alternatives will likely look at the need for plantings, and the appropriate culvert size to increase tidal exchange and restore the normal salinity, vegetation and productivity of the salt marsh. While no adverse effects to EFH are expected from the construction activities associated with this project, an EFH assessment will be conducted as project plans are finalized.

A second salt marsh restoration project is proposed for the **River Road** site in New Bedford, Massachusetts. A 23,000 square-foot salt marsh would be restored through fill removal, regrading and replanting of salt marsh species (*Spartina* sp.) This location is along the Acushnet River in the Upper Estuary of the New Bedford Harbor. Contaminated sediments have already been removed through a damming of the river and excavation of the dry river bed. No further remediation is expected at this location allowing the Trustee Council to consider natural resource enhancements through the restoration of the salt marsh. Potential winter flounder spawning habitat is present at this location and work in-water work would not be conducted during the time period January through May when spawning activity may be occurring.

(c) Tern Restoration

The **Restoration and Management of Tern Populations** project is a continuation of a project from Rounds I and II. It involves the Massachusetts Division of Fisheries and Wildlife (MDFW) placing contract tern managers on each of three islands (Bird Island - Marion, Ram Island - Marion and Penikese Island - Gosnold) in Buzzards Bay where Common and Roseate Terns nest from May through July of each year. Both species have been injured as a result of eating fish contaminated with PCBs. In addition, Roseate terns are an endangered species for which a recovery plan has been developed. The managers monitor the tern colonies keeping track of the nests and eggs laid and frightening away predators to increase the chicks chances for survival. The work is being done in conjunction with an ongoing research study and there are other researchers present on the islands. The project reports that over the period covering 1999-2004, the number of Common Terns has increased by 59% and that a colony is growing in numbers at Penikese Island.

As described below, one aspect of the project may have an impact on EFH. A goal of the project is to increase nesting availability and to do this, fill would be placed on the interior of Ram Island. Ram Island now supports the largest colonies of Roseate and Common Terns of the three islands. Storms have eroded a 3,500 square-foot section of

the interior resulting in a low-lying area now dominated by *Phragmites australis*. This area no longer provides suitable nesting habitat for terns. The applicant considered filling a portion of the exterior of the island but determined that there were too many potential impacts to smooth cordgrass (*Spartina alterniflora*) and eelgrass (*Zostera marina*), valuable habitat requiring greater regulatory review.

To correct the problem, MDFW has proposed as Phase I to remove the *Phragmites* using an application of glyphosate (an herbicide). Phase II would involve filling approximately 2,640 square feet with rock topped by a suitable sandy nesting substrate. This would likely be accomplished using crane barge and constructing a temporary haul road on the island. The final phase (III) would be to revegetate the area with native plants (e.g. *Solidago sempervirens* (seaside goldenrod) or *Lathyrus japonicus* (beach pea). Nesting terns are present on the island from roughly May through July during which time no work would be conducted on the island.

Before any of this work is started, the applicant will conduct a detailed assessment of the area to determine what conditions/species exist which will have a direct impact on the permitting process. The applicant will be responsible for determining and preparing the necessary permits for the final alternatives from which a recommended alternative will be selected. An EFH assessment will be included as part of the permitting process.

At this stage minimal impacts are expected to occur to EFH. The subject of this project, the interior portion of the island, is characterized primarily by the invasive *Phragmites*. The detailed assessment will determine whether there are habitat conditions that would support EFH species at this locations. The use of the crane barge will minimize impacts to offshore subaquatic vegetation (SAV) and care will be taken to place anchors in areas to avoid impacts to EFH.

(d) Studies

The following two projects will first require the satisfactory results of individual studies before funding for the project occurs.

(1) Round Hill Salt Marsh Restoration Project

Round Hill Salt Marsh is located along Buzzards Bay at Round Hill Point in Dartmouth, Massachusetts. This study would explore the feasibility of restoring up to 24 acres of coastal salt marsh through the removal of significant amounts of fill material and regrading to historic marsh elevations. A phased approach would be used with Phase I determining feasibility and Phase II including a conceptual design for the project. Phase I would involve development of the historical background/site history, base mapping (vegetation, topographic, bathymetric) hydrologic and alternatives analysis, and cut and fill calculations. If the project is determined to be feasible, and the Trustee Council approves, the applicant could then submit an application in a future Trustee Council's funding round. A decision would then be made on whether to commit funds for the actual restoration project. Such a project would require an Order of Conditions from the

Dartmouth Conservation Commission, a Section 404/10 programmatic general permit (Category II) from the ACOE; a 401 Water Quality Certificate and Chapter 91 license from MDEP, and a consistency determination from the Massachusetts Office of Coastal Zone Management. An EFH Assessment for the proposed project would be submitted at the time for the purposes of a EFH consultation.

Since this study would not involve any disturbance to in-water resources, no adverse impacts to EFH are anticipated.

(2) Apponagansett Bay Resource Restoration Project

This project would investigate the feasibility of restoring a more natural tidal exchange between inner Apponagansett Bay, outer Apponagansett Bay and Buzzards Bay by installing additional openings in the Padanaram causeway. The Padanaram causeway is a bridge between Padanaram Village and South Dartmouth which bisects Apponagansett Bay. The overall goal is to restore upstream degraded resources including salt marsh and shellfish beds. Two phases would be conducted with the first phase consisting of data collection and developing and running a hydrodynamic model. The results would be presented to the Trustee Council for approval and assuming a feasible alternative is determined, the second phase would commence consisting of the development of conceptual restoration plans. Further work would then be subject to the applicant applying for funding in future funding rounds. A decision would then be made on whether to commit funds for the actual restoration project. An EFH Assessment for the proposed project would be submitted at the time for the purposes of a EFH consultation.

Since this study would not involve any disturbance to in-water resources, no adverse impacts to EFH are anticipated.

Fish and Wildlife Coordination Act (16 U.S.C. 661-667e)

This Act requires consultation with the U.S. Fish and Wildlife Service for the review of proposed federal actions that may affect any stream, wetland or other body of water and to make recommendations for the purpose of preventing loss of and damage to wildlife resources.

Anadromous species and shellfish resources are covered under the Act. The proposed New Bedford Harbor restoration projects impacts to the anadromous river herring (*Alosa aestivalis*) must be avoided or minimized. In-water work for the **River Road Restoration** would be scheduled to avoid the upstream (March 1 -July 31) and downstream (June 15 - October 31) migration runs. The actual timing of spawning activity is dependent on water temperature and may vary by 3-4 weeks depending on locality (Bigelow and Schroeder 2002).

Extensive shellfish resources exist in the Inner and Outer Harbors. None of the restoration projects proposed for implementation are expected to impact the shellfish

resources. The types of activities or locations proposed are not in areas where shellfish would be impacted.

National Historic Preservation Act (16 U.S.C. 470 et seq)

This Act requires Federal agencies to take into account the effects of their undertakings on historic properties and afford the Advisory Council on Historic Preservation an opportunity to comment on such undertakings. Undertakings include such actions as funding, licensing or permitting.

Before undertaking an action the federal agency determines whether an historic property would be affected by an action. The federal agency then consults with the State Historic Preservation Office and/or the Tribal Historic Preservation Office to avoid, minimize or mitigate the effect to the historic property.

The proposed restoration projects are not expected to impact historic or archaeologically important properties or artifacts. Under separate letters, NOAA and the Trustee Council will consult with the Massachusetts State Historic Preservation Office and the Tribal Historic Preservation Office of the Wampanoag Tribe to confirm that the activities proposed will be protective of their trust resources.

6: Comments/Responses

This section is reserved for comments received through the application process and during the public comment period and the agency's response to those comments.

Index of Restoration Ideas

Proposed Restoration Project	Page
Acushnet River View Park.....	57
Acushnet River: “Headwaters to Bay” Land Conservation Project	
Acushnet River North	30
Acushnet Saw Mill	33
Marsh Island South.....	36
Viveiros Farm	39
Apponagansett Bay Resource Restoration Feasibility Study	52
Coastal Birds and Forage Fish as Indicators of Restoration Achievements in the New Bedford Harbor Environment	56
Community Boating Center’s Clarks Cove Pier Restoration and Shore Side Improvements	26
Enhancement of Bottom Habitat for Marine Species in Buzzards Bay as related to the New Bedford Harbor Clean-up.....	42
Expansion and Diversification of the Shellfish Restoration Effort in New Bedford Harbor through Expansion of Shellfish Production Infrastructure: Developing a Shellfish Hatchery	44
New Bedford Harbor Bluefish: Restoration of an Injured Resource	55
Pope Beach Master Plan.....	56
Regional Shellfish Restoration	45
Regional Waterways Public Access Project at Clarks Cove in Dartmouth, MA.....	26
Restoration and Management of Tern Populations in Buzzards Bay	47
River Road Restoration	20
Round Hill Salt Marsh Restoration Project	53
West Island Beach	16

MAP TO BE INCLUDED AT TIME OF PRINTING