Feasibility Report For Navigation Improvement Including Environmental Assessment

APRIL 1983
(REVISED MARCH 1984)

Portsmouth Harbor & Piscataqua River

US Army Corps of Engineers
New England Division

DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
WASHINGTON, DC 20310-0103

28 JAN 1986

Honorable Robert T. Stafford
Chairman
Committee on Environment
and Public Works
United States Senate
Washington, D. C. 20510

Dear Mr. Chairman:

I am transmitting herewith a report dated February 25, 1985, from the Chief of Engineers, Department of the Army, on Portsmouth Harbor and Piscataqua River, New Hampshire and Maine, together with other pertinent reports. These reports are in response to a resolution adopted April 23, 1970, by the United States Senate Committee on Public Works.

The views of the States of Maine and New Hampshire, the Departments of the Interior and Transporation, and the Environmental Protection Agency are set forth in the enclosed communications, together with other pertinent replies.

I concur with the plan recommended in the report of the Chief of Engineers, subject to enactment of generic cost sharing legislation.

The Office of Management and Budget concurs in the above with enactment and application to this project of appropriate navigation cost-sharing and user-fee legistation and advises that there is no objection to the submission of the Chief of Engineers report to the Congress. A copy of its letter is enclosed.

Sincerely,

(Signed)

Robert K. Dawson
Assistant Secretary of the Army
(Civil Works)

Enclosures

CF: New England Division w/cy OMB cmts & dtd COE rept.

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON, D.C. 20503

December 5, 1985

Honorable Robert K. Dawson
Acting Assistant Secretary of the
Army for Civil Works
Room 2E570 - Pentagon
Washington, D.C. 20310

Dear Mr. Dawson:

On July 3, 1985, you sent this office a copy of the report of the Chief of Engineers on Portsmouth Harbor and Piscataqua River, New Hampshire and Maine, with your recommendations and draft transmittal letter to Congress. We have completed our review of this project as required under Executive Order 12322.

The Office of Management and Budget does not object to your submitting this report to Congress. The Administration supports authorization of the project, provided that appropriate navigation cost-sharing and user-fee legislation is enacted and applied to this project.

Sincerely,

Randall E. Davis

Randall E. Davis
Associate Director
for Natural Resources,
Energy and Science

DEPARTMENT OF THE ARMY
OFFICE OF THE CHIEF OF ENGINEERS
WASHINGTON, D.C. 20314-1000

REPLY TO
ATTENTION OF:

DAEN-CWP-A February 25, 1985

SUBJECT: Portsmouth Harbor and Piscataqua River, New Hampshire and Maine

THE SECRETARY OF THE ARMY

1. I submit for transmission to Congress my report on Portsmouth Harbor and Piscataqua River, New Hampshire and Maine. It is accompanied by the reports of the Board of Engineers for Rivers and Harbors and the Division Engineer. These reports are in response to a resolution adopted 23 April 1970 by the United States Senate Committee on Public Works. The Committee requested the Board to review prior reports on Portsmouth Harbor and Piscataqua River with a view to determining whether any modifications of the existing project are advisable.

2. The Division Engineer recommends that the project for Portsmouth Harbor and Piscataqua River be modified to provide for implementation of navigation improvements, as described in his report. The plan consists of widening the 35-foot-deep channel between Badgers Island and the Maine-New Hampshire Interstate Bridge from 600 feet to 1,000 feet, widening the bend by 100 feet at the northern limit of the channel adjacent to Badgers Island, and widening the bend approach by 150 feet at the southern limit of the channel adjacent to Goat Island. Excavated material would be disposed of at the established deepwater site known as the Boston Foul area.

3. The Board of Engineers for Rivers and Harbors concurs in the views and recommendation of the reporting officer. The first cost, based on October 1984 prices, is estimated to be $21,700,000, all of which would be Federal, based on traditional cost sharing policies. Average annual costs, based on an interest rate of 8-3/8 percent and a 50-year period for economic analysis, would be $1,955,000. Average annual benefits are estimated at $4,013,000, and the benefit-cost ratio is 2.1. The Board recommends the plan in accordance with cost sharing and financing arrangements satisfactory to the President and the Congress.

DAEN-CWP-A
SUBJECT: Portsmouth Harbor and Piscataqua River, New Hampshire and Maine

4. In concurring in the findings, conclusions, and recommendation of the Board, I note that the recommended plan maximizes net benefits. In addition, the cost recovery analysis has shown that imposition of a user fee would have no significant impact on project justification.

5. The recommendations contained herein reflect the information available at this time and current Departmental policies governing formulation of individual projects. They do not reflect program and budgeting priorities inherent in the formulation of a national Civil Works construction program nor the perspective of higher review levels within the Executive Branch. Consequently, the recommendations may be modified before they are transmitted to the Congress as proposals for authorization and/or implementation funding.

E. R. Heiberg III
Lieutenant General, USA
Chief of Engineers

PORTSMOUTH HARBOR AND PISCATAQUA RIVER
MAINE AND NEW HAMPSHIRE

FEASIBILITY REPORT
FOR
IMPROVEMENTS TO THE EXISTING
FEDERAL DEEP-DRAFT NAVIGATION PROJECT

Department of the Army
New England Division, Corps of Engineers
Waltham, Massachusetts 02254

April 1983
(Revised March 1984)

SYLLABUS

Purpose and Scope

The New England Division, Corps of Engineers has prepared this report in response to a request of the U.S. Senate Committee on Public Works to determine the advisability of modifications to the existing Federal navigation project in Portsmouth Harbor.

* Harbor users and local officials expect Portsmouth Harbor to continue to play a significant role in the economy of the region by handling an increasing amount of commerce. Waterborne commerce in the harbor has increased from 1.8 million tons in 1969 to 3.1 million tons in 1981. The harbor also serves as the home of the Portsmouth Naval Shipyard and the avenue of fuel deliveries to Pease Air Force Base. *

Hazardous conditions in the river make it difficult for local users to realize the full potential of the existing navigation project. The harbor is one of the fastest flowing commercial waterways in the northeastern United States. These currents, in combination with sharp bends, narrow lift bridges and inadequate maneuvering areas, produce a condition where harbor users are being constantly stressed in finding ways to accommodate the larger size ships which are becoming more prevalent in the world fleet. In an unsafe practice, some larger ships in the 40,000 deadweight ton (DWT) range now use the project. The direct impact to users is that the harbor will be unable to remain competitive and that they cannot realize savings in waterborne transportation costs associated with larger size ships.

* The conditions in the channel also represent a safety hazard for ships using the harbor. With petroleum representing 80 percent of the marine commerce in the port, an accident involving a petroleum carrier could result in an oil spill with catastrophic environmental and economic consequences.

The study considered a wide array of management measures to address the navigation problems of the harbor, including: the use of favorable tides, the use of additional tugs, navigation aids, multiport operations, lightering, the use of other ports, transfer facilities, bridge modification, bridge replacement and alternative channel improvements. These measures were formulated into alternative plans which were evaluated in terms of efficiency, effectiveness, acceptabillity and completeness as well as economic and environmental response.

The selected plan includes the following major features:

- creating a 35-foot deep emergency maneuvering area between the two vertical lift bridges by widening the channel from 600 feet to 1,000 feet; *

*Asterisks denote changes from previous report. Rev. 3/84

. widening, by 100 feet, the northern limit of the channel adjacent to Badgers Island; and,

. widening the southern limit of the channel at Goat Island from 400 feet to 550 feet.

The proposed plan would result in transportation savings by allowing users to bring in a larger number of vessels in the 40,000 to 45,000 DWT range -- a size ship which presently has trouble navigating the Portsmouth channel but which is becoming more prevalent in the world fleet.

* The project first cost is estimated at $21,280,000 representing an average annual cost of $1,837,000. The project would realize an estimated $3,853,000 in annual benefits resulting in net benefits of $2,016,000 and a benefit to cost ratio of 2.1 to 1. *

Construction time for the project is estimated at 16 months. The project involves the removal of 228,000 cubic yards of sand and gravels and 305,000 cubic yards of rock. A bucket or clamshell dredge would be used to remove the overburden material. Rock removal would require
* drilling and blasting. Disposal of the dredged material and rock would be at the Boston Foul Area. *

The Division Engineer recommends the implementation of a Federal project for navigation in accordance with the selected plan. This recommendation is made with the provisions that non-Federal interests meet
* certain requirements as outlined in the report. These include providing all lands, easements and rights of way, reimbursing the Federal Government for special and local benefits, and reimbursing the Federal Government, in accordance with the cost sharing policy of the United States, for expenditures for construction of navigation features of the recommended plan and subsequent expenses for operation and maintenance. *

*Asterisks denote changes from previous report. Rev. 3/84

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ACKNOWLEDGEMENTS

ENVIRONMENTAL ASSESSMENT

*Asterisks denote changes from previous report. Rev. 3/84

* FINDING OF NO SIGNIFICANT IMPACT

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*Asterisks denote changes from previous report. Rev. 3/84

INTRODUCTION

STUDY AUTHORITY

Concern over potential hazards to navigation in Portsmouth Harbor and along the Piscataqua River prompted local interests to request the U.S. Army Corps of Engineers to conduct a study of the harbor. Recognizing the economic importance of the deep-water channel at Portsmouth, the Committee on Public Works of the U.S. Senate at the request of local interests adopted a Resolution on 23 April 1970, authorizing a study to determine the advisability of making improvements to the existing project. The Resolution reads as follows:

> "RESOLVED BY THE COMMITTEE ON PUBLIC WORKS OF THE UNITED STATES SENATE, the Board of Engineers for Rivers and Harbors, created under the provisions of Section 3 of the River and Harbor Act approved June 13, 1902, be, and is hereby requested to review the report of the Chief of Engineers on Portsmouth Harbor and Piscataqua River, Maine and New Hampshire, published as House Document Numbered 556, Eighty-Second Congress, and other pertinent reports, with a view to determining whether any modifications of the existing project are advisable at the present time."

On 23 June 1976, the U.S. Senate provided funds for the first stage in the development of a feasibliity study and environmental impact investigation to commence on 1 October 1976.

PURPOSE AND SCOPE

This report presents the findings of a study concerning the feasibilty, economic justification and environmental acceptability of modifying the existing Federal project in Portsmouth Harbor to improve commerical navigation conditions.

The investigations described in this report encompass Portsmouth Harbor and the land adjacent to the Piscataqua River in the city of Portsmouth, New Hampshire, and the towns of New Castle and Newington in New Hamsphire and the towns of Eliot and Kittery in Maine, as shown on Figure 1.

Investigations were made of the immediate and future regional needs for expansion of deep draft navigational facilities. Strong emphasis was placed on assuring safe passage of deep draft vessels into and out of Portsmouth Harbor. Numerous measures capable of satisfying existing and future needs were examined and evaluated based on engineering, economic and environmental considerstions. The planning effort was coordinated with concerned agencies and the public.

This study responds to the 1970 Congressional resolution which requests the Corps to determine whether any modifications of the existing

navigation project are advisable at the present time. Normally the Corps, in its feasibility studies, makes a comprehensive analysis of all water resource issues and needs. In the case of the Portsmouth study, the area is included in the Southeastern New Hampshire region study which considered all water resource uses in more detail. To avoid duplications, this study will concentrate primarily on the navigation aspects of the river.

This report is presented in two parts. The main report is a nontechnical presentation setting forth problems, needs and opportunities of the study area, formulation of alternative plans for their solution, evaluation and comparison of these plans, and assessment of their economic, social and environmental impacts. Based on the analysis and supporting data, it presents conclusions, a selected plan, an environmental assessment (EA) and recommendations for implementation.

The appendices support the main report with more detailed descriptions, data, and analyses for the technical reviewer and contain pertinent correspondence received, comments from interested agencies and others, and summaries of comments expressed at public meetings. The appendices are not intended to be read alone but rather as supporting documents for the main report.

STUDY PARTICIPANTS AND COORDINATION

Several public workshops have been held throughout the course of the study which was initiated with the issuance of a public notice on 15 November 1976. Due to strong support and interest in the project, local interests organized the Portsmouth Harbor/Piscataqua River Safety Improvement Committee. This committee, comprised of members from private industry, local and State agencies and harbor users, played an active role throughout the entire planning process. Communication and correspondence has been maintained with the U.S. Fish and Wildlife Service, Concord Area Office; Environmental Protection Agency; Department of Health and Human Services; National Marine Fisheries Service; State of Maine, Department of Environmental Protection; Resource Planning Division, State of Maine Planning Office; State of New Hampshire, Fish and Game Department and Office of State Planning; and the Greater Portsmouth Chamber of Commerce.

OTHER STUDIES

Navigation Studies

The Corps of Engineers has been instrumental in the progressive development of the existing 35-foot deep Federal channel in Portsmouth Harbor and the Piscataqua River. Congressionally authorized navigation improvement studies conducted by the Corps have resulted in a current Federal project which now provides for a 35-foot deep channel, turning basins for large vessels, and a breakwater to help control the swift currents in the river. Studies of the area undertaken by the Corps are listed in Appendix 1, "Existing Conditions."

CORPS OF ENGINEERS

U. S. ARMY

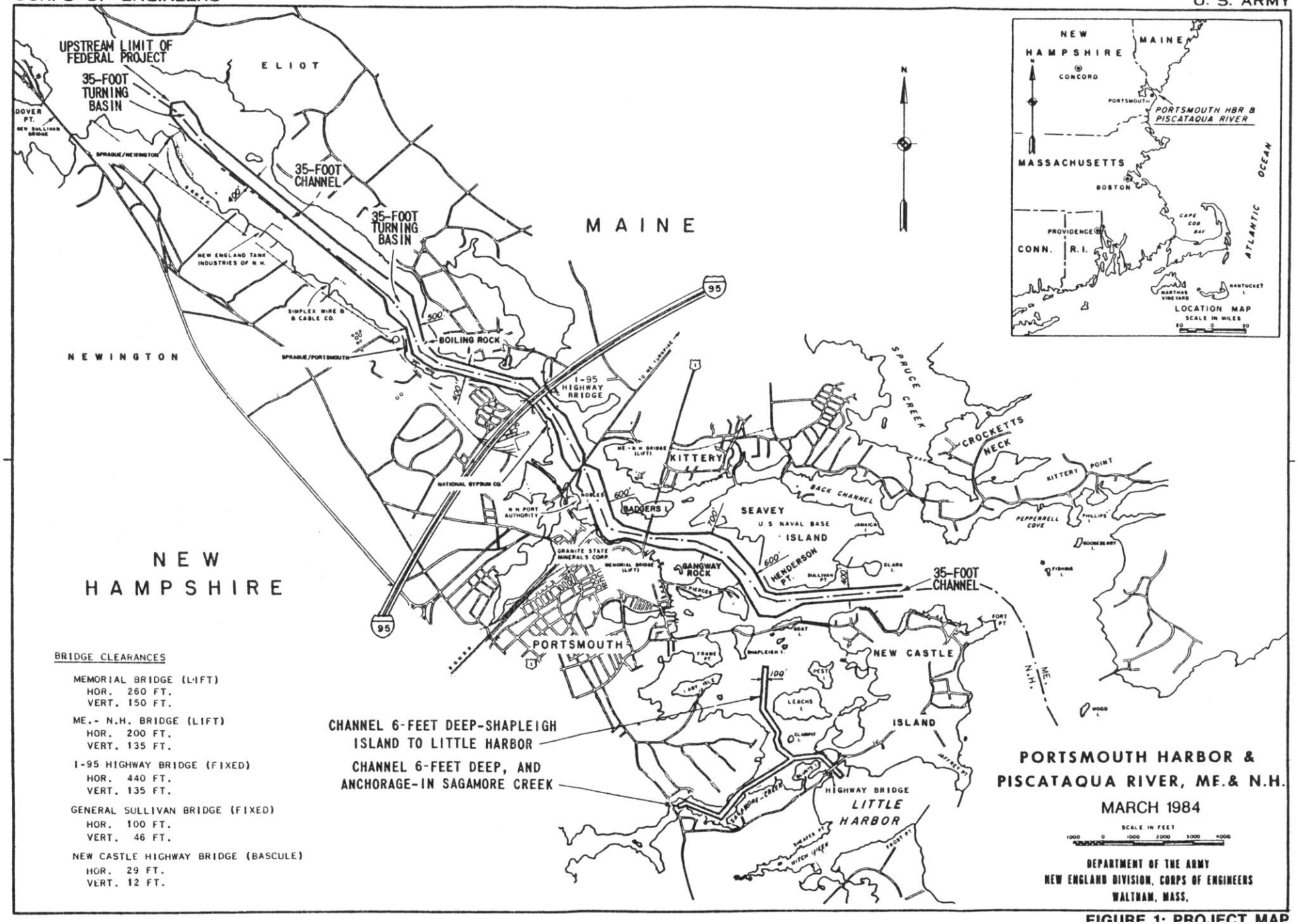

FIGURE 1: PROJECT MAP

As a part of this present study the Corps summarized its initial findings in the Plan of Study entitled, "Portsmouth Harbor - Piscataqua River, New Hampshire and Maine, Channel Improvements for Deep-Draft Navigation," dated May 1978. This document indicated that navigation improvements were needed and justified and recommended that the study proceed to more detailed evaluation which eventually led to the development of this feasibility report.

In addition to this Congressionally authorized navigation improvement study for Portsmouth Harbor and the Piscataqua River, the Corps completed a reconnaissance report in June 1979 that evaluated the feasibility of constructing a small boat navigation project in the area of Kittery, Maine. The preliminary study findings were positive and recommended a detailed project study. However, local interests have requested that the study be held in abeyance to provide them time to establish if other land sites could accommodate their proposed land-based facilities.

Southeastern New Hampshire Water Resources Study

The New England Division has completed a water resources investigation of the region where Portsmouth Harbor is located. Emphasis of this study was on water supply although other improvements to the region's water resources for all water uses were considered. A total of 50 communities and approximately 1,000 square miles were included in the study area.

The New England River Basins Commission Overview

The New England River Basins Commission prepared a Piscataqua amd New Hampshire Coastal River Basins Overview which provides a uniform information base with respect to demands on water resources. The Commission was terminated in September 1981 and its function partially incorporated in the New England/New York Water Council under the New England Governors Conference. Problems associated with the use of the resource, and programs and projects relevant to the management of the water resources are included. The study concentrated on identifying gaps in the existing network of planning and resource management programs, and provide the basis for the investigation of interstate resource issues while advancing recommendations to correct known deficiences. The Overview report can be used as a guide for additional planning by State and Federal planning efforts.

A number of other reports have been prepared for the area by the Soil Conservation Service, the Environmental Protection Agency, the U.S. Geological Survey, the States of Maine and New Hampshire and several regional planning associations.

EXISTING CONDITIONS

PHYSICAL RESOURCES BASE

Project Area

Portsmouth Harbor, formed by the mouth of the Piscataqua River, is located 45 miles northeast of Boston Harbor, Massachusetts, and 37 miles southwest of Portland Harbor, Maine. The river is about 13 miles long and forms a portion of the boundary of the States of Maine and New Hampshire. Towns located along the river include New Castle, Portsmouth and Newington in New Hampshire and Kittery and Eliot in Maine. (See Figure 1).

Federal Harbor and Channel Improvements

The Federal Government has constructed several improvements in the interest of navigation at Portsmouth Harbor as described below:

a. A commercial channel extending 6.2 miles from deep water at the mouth of the harbor to a point 1,700 above the Sprague Dock in Newington, 35 feet deep, 400 feet wide with additional width at the bends in the vicinity of Henderson Point, Gangway Rock, Badgers Island, the Maine-New Hampshire Interstate Bridge and Boiling Rock.

b. A turning basin 35 feet deep, 950 feet wide just above Boiling Rock.

c. A turning basin 35 feet deep, 850 feet wide located at the head of the navigation project.

d. A 6-foot deep channel, 100 feet wide from Little Harbor through the Rye-New Castle drawbridge and then turning northerly between the mainland and Leachs Island to deep water near Shapleigh Island.

e. A 6-foot deep channel, 75 feet wide up Sagamore Creek with an anchorage area of the same depth, 75 feet wide covering 3 acres.

The 35-foot deep-draft channel was completed in February 1969, and construction of the small boat channels was completed in February 1971. The total cost of the new work was $5.4 million.

Terrain

The Piscataqua lowlands are characterized by extensive sand plains and terraces, with elevations rarely rising above 100 feet. Large quantities of silt, sand and gravel were deposited from glacial outwash to form the present landscape. Additional glacial deposits of sand and gravel, known as eskers, extend into the upland valleys of most of the major tributaries.

The New Hampshire Coastal Area consists of a flat or gently rolling plain. The coastal divide is poorly defined, with maximum elevation usually less than 60 feet. Glacial hills, known as drumlins, are notable exceptions, forming a portion of the coastal divide with 200-foot elevations. The surficial geology of the coastal area consists mainly of unstratified glacial deposits that have been overlaid with marine deposits. Wave and current action has formed the present beaches and sand bars.

Climate

The area's climate is characterized by four distinct seasons with variable weather conditions. The area lies in the path of the "prevailing westerlies" and cyclonic disturbances that cross the country from west or southwest toward the east or northeast. It is also affected by occasional coastal storms, some of tropical origin, that travel up the Atlantic Seaboard. The average annual temperature in Portsmouth is about 45°F. The lowest temperatures usually occur in January, averaging 22°F, while the highest temperatures occur in July averaging 68.4°F. The mean annual precipitation over the area is 41 inches and it is distributed relatively uniformly throughout the year.

Hydrology

The Piscataqua River, formed by the confluence of the Cocheco River and Salmon Falls River, flows southeastly for 13 miles until it enters the ocean at Portsmouth Harbor. The entire 13 miles of the river is tidal.

The Piscataqua River, through which the extensive tidal basin of Great Bay funnels (see Figure 2) constitutes one of the fastest flowing tidal waterways of any commercial port in northeastern United States. Due to abrupt channel changes and the strengths of flood and ebb currents, hazardous cross-currents and eddies are found in the main channel passing north and east of Pierces and New Castle Islands. The average current velocity at full strength in the main harbor varies from about 2.6 to 4.0 knots, whereas in the back channels the velocity varies from less than 1 to 2 knots.

The tide at Portsmouth is semidiurnal. The average tidal range at Portsmouth Harbor is 8.4 feet. The average mean spring range is 9.7 feet.

Water Quality

New Hampshire and Maine have an agreement to maintain acceptable water quality in the Piscataqua River and both States regulate their effluent discharges into the river. The river is designated by the State of New Hampshire as a Class B segment and by the State of Maine as Class SB-1. New Hampshire Class B waters are acceptable for bathing, other recreational purposes, fish habitat and public water supply after adequate treatment. Maine Class SB-1 waters are suitable for all clean water

usages including water contact recreation, fishing, shellfish harvesting and propagation, and fish and wildlife habitat.

The Piscataqua estuary near the project area of Portsmouth has a good water quality except for two localized areas in which the coliform counts exceed New Hampshire standards. Even though there is much industrialization centered around the project area and there is considerable indutrial discharge to the Piscataqua, the water quality remains high primarily because of the great tidal exchanges between the estuary and the Atlantic Ocean. This strong semidiurnal exchange has the effect of diluting the pollutant loadings to the point where the water quality is acceptable within the New Hampshire and Maine standards.

Aquatic Ecosystem

Extensive study for the Newington Generating Station, located about one mile upstream of the new I-95 bridge, has provided a great deal of information on the benthic invertebrate composition of the Piscataqua River. The organisms collected reflect a variety of substrate types, ranging from fine silt to sand and cobble. The amphipods, *Ampelisca abdita* and *A. vadorum* and the barnacle *Balanus crebatus* have been found to be the most abundant benthic organisms in the Piscataqua sediment. These invertebrate species populations although susceptible to dredging and blasting operations are capable of rapid recolonization.

Lobster and crab are numerous, especially in the harbor entrance and lower portions of the river, while soft shelled clams and oysters can be found in the Great Bay area (see Figure 2). The species are sought after by commercial interests and sportsmen.

The Piscataqua River estuary offers excellent game fishing for striped bass, mackerel, flounder and salmon. Rainbow smelt, shad, alewives, and Atlantic salmon seasonally migrate through the area to spawn in the bays and tributaries of the estuary. The New Hampshire Fish and Game Department stock shad and salmon on an annual basis.

The aquatic ecosystem is described in more detail in the Environmental Assessment.

Threatened and Endangered Species

* There is no evidence that any threatened or endangered plants or animals inhabit the project area or disposal sites. The National Marine Fisheries Service (NMFS) raised the possibility that the shortnose sturgeon (*Acipenser brevirostrum*), a rare and endangered species, may occur in the area as it has been observed in the Merrimack River Estuary 20 miles south. Continued coordination with NMFS provided an opinion of no impact on the shortnose sturgeon. *

*Asterisks denote changes from previous report. Rev. 3/84

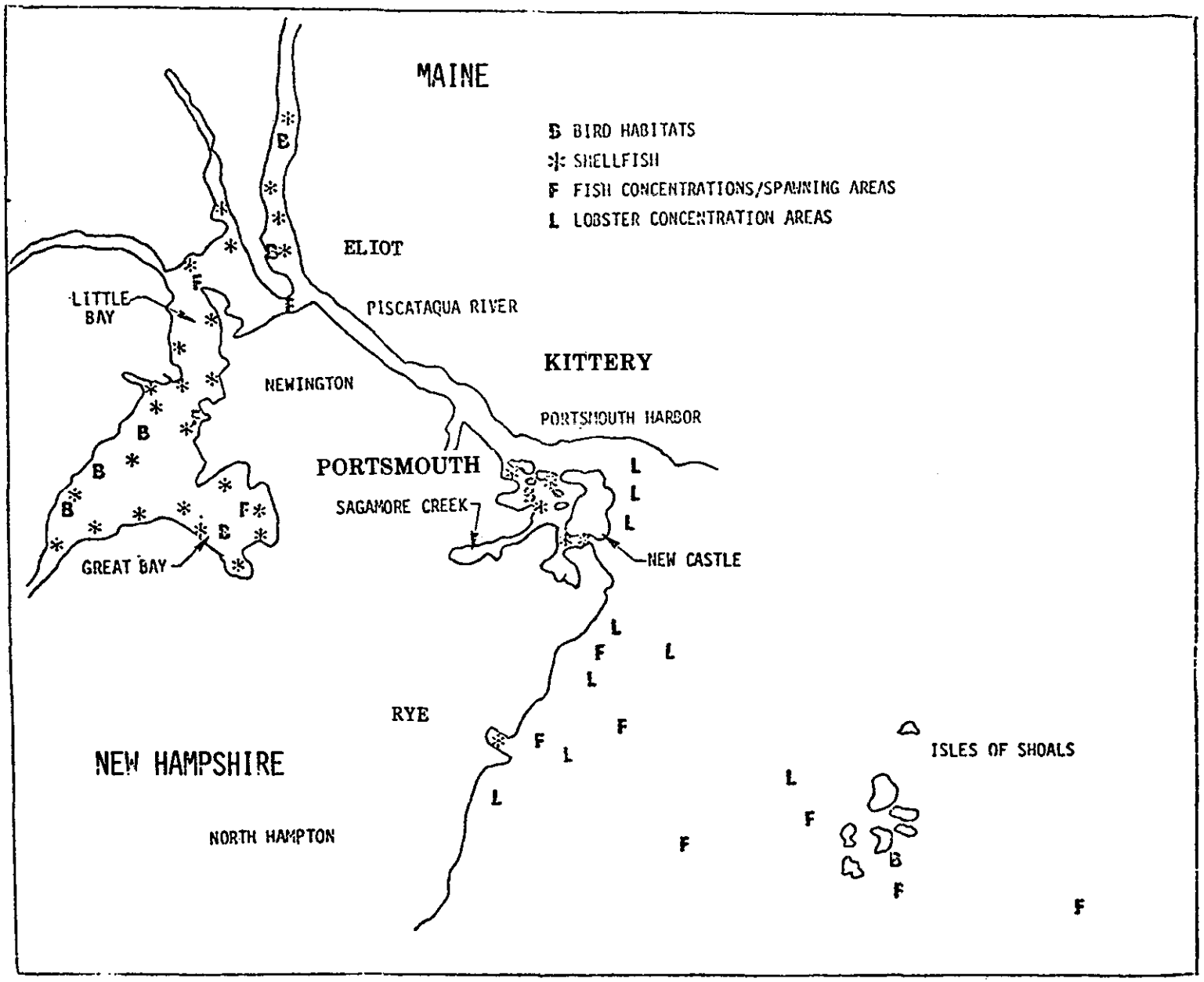

FIGURE 2: STUDY AREA

Historical-Archaeological Features

As one of the oldest settlements in New Hampshire, Portsmouth has a charming and quaint atmosphere because many of its historic sites have been preserved with buildings and homes dating from the 17th century. Many have been restored and are maintained for public viewing, particularly in the Strawbery Banke section. Homes, shops and stores in this area recreate many facets of daily life in the 1600's. Shops and restaurants lining Ceres Street, located along the waterfront, have also been restored to reflect the city's colonial marine heritage.

New Castle Island, at the mouth of the river, was the scene of one of the earliest military events of the American Revolution, namely when the patriots captured Fort William and Mary from the British on 14 December 1774.

The Portsmouth Naval Shipyard, established in 1800, is located on Seavey Island within the State of Maine's boundaries. In 1905 the Treaty of Portsmouth, ending the Russo-Japanese War, was signed in the "Peace Building" at the naval base. During the 20th century, the yard became a center for building and repairing submarines.

The Piscataqua drainage was inhabited by prehistoric populations exploiting the varied marine, fresh water, and terrestrial resources available in such estuarine environments. Therefore, onshore prehistoric archaeological sites may exist near the project area. However, the swift currents and alternating erosion and deposition during coastal subsidences in early prehistoric times result in little chance of significant prehistoric resoures existing within the project limits.

From the 17th century onward, the Piscataqua has been a major shipbuilding and port area. The Maine Historic Preservation Officer (by letter dated 9 September 1981) noted that the project area may contain underwater archeological sites of the 17th, 18th and 19th centuries. Specifically, the area immediately adjacent to Badgers Island was the site of a colonial shipyard. The Goat Island Area is at the entrance to the pool, an important anchorage throughout the early colonial period. Close by is the suspected site of a 17th century wreck.

EXISTING SOCIOECONOMIC CONDITIONS

Population

According to census figures, the population of Portsmouth, New Hampshire has experienced steady growth throughout the 20th century increasing from 10,637 in 1900 to 25,833 in 1960 and to 26,214 in 1980.

The population of the area surrounding Portsmouth has also been steadily increasing. During the past two decades, the growth rate for Rockingham County, of which Portsmouth is a part, has been even greater than Portsmouth. County population has increased from 99,029 in 1960 to 190,047 in 1980.

The entire State of New Hampshire has been experiencing a population boom, due partially to improved highway systems, relatively low taxes, and increasing industrialization. The growth trend is expected to continue with populations projected to reach 32,100 in Portsmouth and 348,500 in Rockingham County by 2030.

Housing

The 1980 census figures reported that Portsmouth's population is housed in approximately 9,861 housing units, the majority of which were built prior to 1940. Multi-family dwellings predominate by a slight margin over single family units.

Employment

The generally healthy state of Portsmouth's economy is reflected by its excellent employment situation. As of February 1981, the unemployment rate was just 5.3% compared to the National average of 8.0%. In the past 12 years, 15 new firms located or expanded in Portsmouth creating 3,000 new jobs. The civilian labor force in the Portsmouth Labor Market Area numbered 46,050 in February 1981.

The area's largest employer, the Portsmouth Naval Shipyard, is located on Seavey Island in Kittery, Maine. Current employment at the shipyard exceeds 8,000 persons. The remaining labor force is employed in diversified sections, which include manufacturing, construction utilities, trades, finance and service industries.

Land Use

Portsmouth has a land area of about 8,109 acres, over half of which is developed. Developed land includes an urban commerical district near the harbor, other outlying commerical areas, residential areas consisting primarily of single family homes, and several industrial areas. Other major land uses in Portsmouth include transportation facilities and rights-of-way, including Pease Air Force Base, major highways, a railway and facilities for ocean shipping. Open land uses include power easements, parks, preserves and wetlands.

Transportation Facilities and Service

There is a good network of rail and highway systems and services within the region. Interstate 95 greatly enhances the potential of the port of Portsmouth providing speedy access into Maine and Massacusetts. U.S. Route 4 and State Routes 101 and 16 provide direct access to Manchester, Concord and Northern New Hampshire. Limited air service is provided at small airports at Eliot, Maine and Hampton and Rochester, New Hampshire. However, Portsmouth is within one hour travel time from major airports at Boston, Massachusetts and Portland, Maine. The area is also serviced by the Boston and Maine railroad which connects Portsmouth with Manchester, New Hampshire, Portland, Maine, and Boston, Massachusetts.

Commerical Fishing Resource

The commerical fishing industry in the area represents a multi-million dollar industry, supporting approximately 500 licensed lobstermen and 50 to 60 licensed finfishermen. A new fishing pier opened in 1979 is expected to provide for continued growth in the fishing industry.

The town of Kittery, Maine, currently has eight docks used by local fishermen. In 1976 approximately 62 fishing boats utilized these facilities and landed 185 tons of lobster and 1,125 tons of finfish.

Port Activities

* A total of 28 piers, wharves and docks are located along the lower 4.5 miles of the Piscataqua River. There are nine docks that are located in Kittery, Maine, with the remaining 19 located along the southern bank of the harbor in New Hampshire. The facilities which handle commercial deep-draft vessels, are listed below:

Dock	Draft
Sprague/Newington	36 ft
New England Tank (Also used by U.S. Air Force)	38 ft
Simplex (Also used by U.S. Navy)	35 ft
Sprague/Portsmouth	36 ft
National Gypsum	36 ft
Port Authority	36 ft
Granite State Minerals	35 ft

In the immediate area there are no commercial facilities available for making extensive repairs, dry docking or hauling out large deep draft vessels. Some minor repairs can be made by local repair shops on vessels at berth in the harbor. *

*Asterisks denote changes from previous report. Rev. 3/84

Waterborne Commerce

* Portsmouth Harbor is the sole deep draft harbor located in the State of New Hampshire. The chief commodities that move on the existing waterway are petroleum products which comprise approximately 80 percent of the marine commerce shipped through the harbor. Significant quantities of limestone (gypsum) and salt are also received. The chief products shipped out of Portsmouth are petroleum products and steel scrap. Total tonnage through Portsmouth has increased from approximately 1,796,000 tons in 1969 to 3,072,000 tons in 1981 as seen in Table 1. Petroleum products during the same time period have increased from approximately 1,467,000 tons to 2,201,000 tons.

Table 1
COMPARATIVE STATEMENT OF COMMERCE

Year	Tons
1969	1,795,915
1970	2,187,303
1971	2,174,425
1972	2,188,071
1973	2,314,900
1974	2,364,290
1975	2,943,343
1976	3,143,313
1977	3,499,854
1978	3,305,303
* 1979	3,519,926
* 1980	2,783,781
* 1981	3,072,214

Vessel Traffic

Most of the commodity tonnage shipped through Portsmouth arrives on vessels in the 30-35,000 DWT range with an increasing trend toward the 40 to 45,000 DWT class. These vessels typically draw 30-37 feet. In addition, approximately 15 percent of the petroleum tonnage is delivered by barge. An indicator of the sizes of vessels which use the harbor is shown in Table 6 of Appendix 3.

* There are about 600 vessel-trips each way through the Federal channel each year. About 120 of these trips involve ships with drafts greater than 18 feet.

The port plays an important role in the operation of defense installations and suppliers in the harbor area. Portsmouth Harbor is the home of the Portmsouth Naval Shipyard which presently is an important submarine repair and refurbishing facility. The Navy is dependent on the river for access for its submarines and also dependent on the railroad bridge for delivery of nuclear fuel. *

*Asterisks denote changes from previous report. Rev. 3/84

* The harbor also serves as the avenue for delivery of fuel to Pease Air Force Base. The terminal for fuel deliveries is at New England Tank Industries located near the head of the Federal channel. About 94,000 tons of fuel are delivered annually.

The channel is also used by cable ships to load and ship underwater sensor cable for the Navy. The Simplex Wire and Cable Company is the primary supplier of this cable for the Navy. *

FUTURE CONDITION IF NO FEDERAL ACTION IS TAKEN

When examining the desirability of any proposed plan, it is necessary to have a well defined control condition for comparison. This control condition should not necessarily be the current condition since gradual non-Federal changes will impact the region over the years. Instead, the condition used for comparison should be the best possible estimate of a future scenario that accounts for all current trends in existing programs.

* Portsmouth Harbor should be expected to continue to play a significant role in the economy of the state by handling an increasing amount of waterborne commerce for a rapidly growing region. Being the home of the Portsmouth Naval Shipyard, the avenue of jet fuel deliveries to Pease Air Force Base and the Navy's principal source of underwater sensor cable, it will continue its importance to the defense of this nation.

The New Hampshire State Port Authority is expected to proceed with plans to expand their facilities. The State legislature has appropriated approximately $400,000 for the preparation of plans and specifications for construction of a second pier. The legislature has also appropriated approximately $280,000 for the preparation of a site development plan in the vicinity of Cutts Cove. These development plans are ongoing and are expected to continue without Federal action. *

For Portsmouth Harbor and the Piscataqua River, the without project condition would mean that the existing channel would be maintained with no additional improvements or modifications. The river will remain difficult to navigate and the safety hazard would remain as a vital concern. The absence of serious accidents on the river, to date, is largely due to pilot expertise and adequate tugbot assistance, but the risks involved are becoming greater each year.

The Portsmouth pilots have the responsibility of navigating the deep draft vessels into and out of Portsmouth Harbor and the Piscataqua River.

*Asterisks denote changes from previous report. Rev. 3/84

Current Operating Condition

Captain Richard Holt, a veteran pilot with over 20 years of experience in the harbor discusses navigation on the river, and presents the following example of the normal operating procedures in bringing in a deep-draft vessel to the Sprague/Portsmouth petroleum handling terminal which is located approximately 4,000 feet upstream of the I-95 bridge.

"The Piscataqua River is tidal in the area of the deep-draft Federal channel. The tide ranges from a maximum of about 11.0 feet above mean low water (MLW) to a minimum of 2.0 feet below MLW. The currents average about 4 to 5 knots but there are extremes of about 7 knots at various times. Periods of slack water in the channel last only minutes, with the current going from one direction to the other almost immediately. It is extremely critical that the large vessels arrive at their destination during the period of slack water. The timing is so critical that should a ship arrive 30 minutes later than the predetermined pickup time, the pilots will not bring the vessels in until the next acceptable slack water period.

Ships with drafts in excess of 27 feet are navigated safely only at the end of the flood tide, meaning they are brought in with the current. One of the major reasons for this is that the channel has so many sharp turns, that ships having these drafts cannot make the turns going against the current. The current increases noticeably as vessels proceed up the channel upon entering the harbor. Most of the terminals on the river are located beyond the two vertical lift bridges, which means in most cases when the larger vessels enter the channel they have to contend with a strong flood current.

Vessels with drafts of 27 feet or less can come in during the high or low slack water. If they miss the slack tide, the delay to the next is not as long as for the larger vessels, since they can take advantage of both slack high and low water.

The pilot boards the vessel about 2 hours before the predetermined dock time at the anchorage area which is located about 2 miles outside the harbor entrance. After getting underway, the plan is to be at Fort Point, New Castle Island, one hour before the predetermined docking time. At that time, the tugs come alongside the vessel -- three tugs in the case of a large vessel: two foreward on opposite sides and one aft on starboard side. Three tugs are necessary for the larger vessels to help negotiate the sharp turns, turn the vessel around if there is a problem, assist if any mechanical problems occur on the ship, and help dock the vessel and hold her while lines are secured.

At about 45 minutes before docking, the pilots plan to arrive at Henderson Point on Seavey Islsnd, the first bad turn, using speeds of slow and dead slow on the vessels as necessary to steer. This area is designated as AREA 3 on Figure 4. The ship must go extremely slow on all turns because tugboats are not effective while handling a fast moving ship.

In order to make the turn in the channel around Henderson Point, a vessel must begin its turn about 2,000 feet eastward at Sullivan Point. If the turn is begun too late, the swift current in combination with the operating speed of the vessel could force the vessel into Pierces Island. This situation is aggravated further by a back eddy which reflects off the west bank of Seavey Island at Henderson Point and travels across the channel towards Pierce Island. If the turn is begun before Sullivan Point, the stern of the vessel could be forced into the ledge located in AREA 3 at the south edge of the channel.

As the vessel nears Henderson Point, the pilot contacts the Memorial and Maine-New Hampshire Bridge operators by radio to have them raise the bridges. They are still a long way off, but due to the fact they are coming in with the current, it is important to know as soon as possible if either bridge is inoperable, so as to allow enough time and room to turn the vessel and go back out. If they go beyond a certain point in approaching the Memorial Bridge and the second bridge develops a problem, the situation could be disastrous because, under existing conditions, there is not sufficient room to turn a large ship between the two bridges. This area is labeled as AREA 1 on Figure 4.

Assuming the bridges function properly, the Memorial Bridge is passed about 30 minutes before docking time. After negotiating the turn at Badgers Island, which is particularly bad, the ship must stop the sharp swing to the right and come left to go through the Maine-New Hampshire Interstate Bridge, which is a hazard in itself due to its angle across the river. After the ship is properly aligned and fair with the bridge, the forward tugs must release the vessel and precede it through the bridge in order to rejoin it on the other side. The 200-foot horizontal clearance of the bridge, which is effectively reduced by the skew of the vessel approach, is not wide enough for both the vessels and tugs to pass through at the same time.

At this time, the vessel is about 20 minutes from the dock and the current, now nearing the end of the flood tide, is slowing down gradually. The tugs then come back alongside the vessel and position themselves for docking, one aft and two forward, all on the starboard side. After the ship is positioned alongside the dock, the ship lines are run out. At the Sprague/Portsmouth Dock, about 1 mile beyond I-95, it is necessary to put out 17 lines, and it usually takes about one hour. The current usually begins to ebb just as the ship comes alongside the dock, and within 20 minutes it becomes a strong ebb of 3 or 4 knots. The tugs are needed to hold the ship until all the lines are secured."

Ships that are destined to the Sprague/Newington petroleum dock further up river require additional maneuvering. They must first be turned at the turning basin at the head of the Federal channel (Area 2 on Figure 4). Under present and expected conditions it is difficult to maneuver these 700-foot tankers in the 850-foot turning basin.

Waterborne commerce in Portsmouth Harbor and the Piscataqua River has been steadily increasing. The trend in the size of the cargo vessels, especially tankers, is toward larger ships that are more economical to operate. In the case of Portsmouth this would not mean any significant increase in the size of the vessels brought in, but more of the larger vessels would use the port. A major portion of the existing and anticipated future deep-draft commerce on the Piscataqua is involved with the transport of petroleum products. The smaller petroleum tankers in the 15,000 to 25,000 dead weight tons (DWT) range are steadily being phased out by vessels in the 30,000 to 40,000 DWT range. Currently, the largest vessels to utilize the channel are fully loaded 40,000 DWT vessels having lengths of approximately 700 feet and drafts of 37 feet.

Many of the deep-draft vessels being brought in are in the 15,000-35,000 DWT range. Unless the channel improvements are made, this range of vessel size will continue to dominate future traffic flow in the harbor, and the economic gains that could be achieved by utilizing 40,000-45,000 DWT vessels will not be achieved. In addition, the world-wide availability of the smaller vessels will decrease in the future. A shortage of vessels will force business persons to chose between using other harbors or accepting the additional risk of bringing 40,000 DWT vessels into the harbor.

Without any changes to the project, economic growth of the harbor area could be hampered. Also, as more of the 40,000 DWT vessels are brought in, the potential for grounding or a collision that results in a catastrophic oil spill will greatly increase.

PROBLEMS, NEEDS AND OPPORTUNITIES

With the trend toward the use of larger vessels to transport petroleum products in order to reduce costs, this study has focused on the movement of these products as the limiting factor in development of the port. Solving the harbor's problems with the larger vessels now coming into use would give those in the study area the opportunity to keep pace with the changing petroleum trade.

An improved Portsmouth Harbor is important to the economy of the region and the State of New Hampshire, as well as the defense of the nation. Safe access and support to the Portsmouth Naval Shipyard and Simplex Wire and Cable Company and continuous safe entry of petroleum to Pease Air Force Base are critical needs.

Existing navigational difficulties for deep-draft ships using the Federal channel cause the following major problems at Portsmouth Harbor.

1. There is a safety hazard due to the difficult navigation situation with very small margins of clearance and safety as already noted.

2. Economic inefficiences result from the use of smaller ships and the difficulty in bringing in larger ships. High shipping costs result and are added to the cost of shipyard goods.

3. Potential economic losses can be expected through the loss of business.

4. There is potential for oil spill occurrences to increase in frequency and severity. It should be noted that about 80 percent of the harbor tonnage is comprised of petroleum products and the channel bottom is largely ledge. There has never been a major navigation accident in Portsmouth Harbor but there have been incidents which point to potential impacts. In 1979 an equipment failure at an oil handling terminal resulted in the spilling of 25,000 gallons of oil. The tides and currents quickly carried the oil throughout the Piscataqua River and Great Bay. A grounding of an oil tanker within the harbor could result in an oil spill which would have serious environmental impact on the area. Strong currents in the river would tend to spread any oil spill and make containment operations impossible. The impact on the aquatic habitat and species in the Piscataqua River and in Great Bay would be catastrophic.

With the assistance of vessel operators and harbor users, this study has identified the following major navigational difficulties:

1. Channel Width: users have identified difficulties in maneuvering, turning and navigating the bends located in the harbor. They have specifically noted the problems associated with navigating the bends in the vicinity of Henderson Point and at Badgers Island between the two lift bridges.

* 2. Emergency Maneuvering Area: users have also identified hazardous conditions that exist while a vessel is downstream of the I-95 bridge and coming into port. When navigating through the project in this reach, the ship is riding in on the rapid flood current. When travelling around the bends at Henderson Point and Badgers Island the pilot is unable to stop the vessel with the tugs. This inability is a result of two factors, first the velocity and direction of the current at the bends, and second the momentum of the ship itself. The direction of the current restricts the tugs ability to maneuver the ship. Pilots strive to keep the ships in a direction parallel to the streamlines of the current. At each bend the current works to turn the ship across the channel. At Henderson Point the pilot has a means of escape. There is a deep area *

*Asterisks denote changes from previous report. Rev. 3/84

* which permits a large vessel to turn at the Naval Shipyard and pilots have done so on several occasions. At Badgers Island, however, it is impossible to stop and the ability to turn is limited to the 600-foot wide channel where there is the necessary depth. Although there is additional deep water in this area the Maine-New Hampshire Interstate bridge restricts is availability. There are a number of emergency situations which require the need to turn. Such situations include human error, engine failure, rudder malfunction, or rapidly deteriorating weather conditions. These conditions are responsible for the majority of all single ship accidents nationwide. In this channel, there have been at least 2 occasions in the past 10 years when ship engines have completely stopped and at least three occasions when steering systems have malfunctioned. Fortunately, these situations did not occur in the two critical areas in the channel. The need to turn in an emergency is limited to two areas in the channel. At the first area, Henderson Point, there is enough room to turn at the Naval shipyard. At Badgers Island, there is not enough room to turn because there is not sufficient naturally deep water available. *

The existing 600' wide channel is also used by vessels using the terminal facilities at the New Hampshire State Port Authority and Granite State Minerals. Larger vessels at these terminals have difficulty turning in the present channel.

3. Turning Basin: Users also noted that the turning basin located at the head of the navigation channel is not large enough to turn some of the larger vessels that utilize the Sprague/Newington terminal.

4. Bridges: The bridges, especially the Maine-New Hampshire Interstate Bridge, present restrictions to navigation.

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With the trend toward the use of larger vessels to transport petroleum products in order to reduce costs, this study has focused on the movement of these products as the limiting factor in development of the port. Solving the harbor's problems with the larger vessels now coming into use would give those in the study area the opportunity to keep pace with the changing petroleum trade.

Problem and Opportunity Statements

The following statements offer a positive approach to achieve opportunities or address problems in the project area. They evolved throughout the study and reflect the input of technical studies and the desires of local interests. They are applicable for the 50-year period of analysis from 1985 to 2035.

> Improve the safety related to the movement of deep-draft commercial vessels in Portsmouth Harbor and the Piscataqua River.
>
> Reduce transportation costs for waterborne commerce destined for Portsmouth Harbor.
>
> Contribute to maximizing use of existing and future port facilities in conjunction with regional plans and development.
>
> Contribute to the preservation of environmental quality of Portsmouth Harbor and adjoining areas by reducing the potential for oil spills and preserving valuable habitat.

PLANNING CONSTRAINTS

In the process of developing and evaluating management measures and plans to address the identified problems and opportunities, the following constraints and restrictions have been identified. They relate to dredging, disposal of dredged material, the existing ship channel and associated restrictions, and institutional restraints.

The proposed dredging work would have to be planned with protection of the environmental resources as a project feature. Of the major disposal areas identified, all three have specified contraints or restrictions. Ocean disposal sites require approval by the U.S. Environmental Protection Agency; land disposal sites are limited in availability and require acceptance by local interest; and in-harbor sites require permits and may also require mitigation. There is also a call by fisherman and fishery interests to avoid disposal of rock where commercial fishing operations occur because of potential damage to fishing gear.

The existing ship channel, the existing wharves and berths, and the three major bridges over the channel all limit the extents of possible improvements.

Although two States are involved in the project, New Hampshire is the primary beneficiary, since most of the shipping terminals are located in that State. The views of Maine as expressed by its Department of Environmental Protection, reflect opposition to any improvement plan calling for the deepening of the channel that would allow for use of vessels greater than 45,000 DWT.

FORMULATION OF PRELIMINARY PLANS

This section of the report describes the preliminary planning process and rationale and outlines various ways in which problems and needs at Portsmouth Harbor might be met. An initial assessment and evaluation of each option indicates its probable effectiveness and determines whether or not it should be carried forward for more detailed consideration.

MANAGEMENT MEASURES

In order to formulate plans for solving Portsmouth Harbor's problems, preliminary management measures were identified. Consideration was given to both structural and nonstructural measures during the study process. Some of the individual management measures, each of which address one or more resource needs, were then developed into alternative plans.

Table 2 lists the management measures that were identified as possible ways to improve navigation in the area.

Table 2
MANAGEMENT MEASURES

1. Utilize Favorable Tides
* 2. Utilize Additional Tugs
3. Navigation Aids
4. Multiport Operations
5. Lightering
6. Utilize Other ports
* 7. Bridge Replacement
* 8. Transfer Facility
* 9. Bridge Modification
10. Channel Improvement

PLAN FORMULATION RATIONALE

The planning process involved the development and evaluation of structural and nonstructural plans formulated from the measures outlined in Table 2. These measures were evaluated for their potential as independent plans or as elements of broader plans. Each element was screened to determine its engineering and economic feasibility and degree of public acceptance. Those which were not practicable or not economically feasible were eliminated from further consideration. The

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plans which remained in consideration were then evaluated according the Principles and Guidelines of the U.S. Water Resources Council. Each plan was studied in detail to determine its impacts on national economic development, environmental quality, social well-being, and regional eonomic development. A comparative analysis of all alternatives then led to the selection of a recommended plan.

PLANS OF OTHERS

The Granite State Minerals Corporation has facilities located on the south bank of the Piscataqua River between the two vertical lift bridges. The corporation has preliminary expansion plans, which call for the addition of a wharf, a gantry crane and refueling capacity. These plans are contingent upon adequate improvements being made to the channel between the two vertical lift bridges. The Simplex Wire and Cable Company is exploring the potential for expanding its berthing area to accommodate larger cable ships.

* The New Hampshire State Port Authority has plans to develop a new pier facility and also create fast land in the vicinity of Cutts Cove. The State legislature has appropriated approximately $700,000 for the design of these proposals. Work is underway and is expected to continue with or without the Federal channel improvements. *

Other activities include the New Hampshire Coastal Zone Management (CZM) Program review of the need for designating specific Portsmouth waterfront sections for water related activities. Also, the Maine Department of Transportation is investigating the need of a state fish pier at Kittery.

DESCRIPTION OF MANAGEMENT MEASURES

1. Utilizing Favorable Tides

A common procedure at ports is for ships to wait for high tides to accommodate deep draft vessels. The average tidal range at Portsmouth Harbor is 8.4 feet. While waiting for high tides does cause delays, it does allow deeper draft ships to move safely through channels they could not navigate at low tide.

Vessel operators in Portsmouth Harbor currently schedule movement of vessels through the channel during period of favorable tides. Because of the swift currents in the river, ships are generally moved during periods immediately surrounding slack-water periods. In addition, vessels with drafts in excess of 27 feet must wait for flood tides to move into the channel. Under these current operating procedures, the use of favorable tides is being fully taken advantage of and does not offer any further capability to improve port efficiency.

2. Utilizing Additional Tugs

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*

Currently, 3 tugs are employed for larger vessels using the channel and in some instances, 4 tugs are used. Pilots indicate that the present number of tugs is adequate and that additional tugs would not ameliorate the navigation difficulties. *

3. Navigation Aids (buoys)

The system of aids currently in use apparently provides adequate guidance to vessel operators navigating the main ship channel. However, in the event that changes to channel dimensions were undertaken, the need for new or additional aids would be included as part of the proposal.

4. Multiport Operations

Discussions with shipping interests at Portsmouth indicate that multiport operations currently play a small role in the delivery of petroleum products and salt to the Portsmouth market area. For example, fully loaded vessels bring in petroleum to a nearby port, say Boston, and then transship partial loads on barges to Portsmouth. In the case of salt deliveries, a fully loaded 50,000 DWT vessel would make a partial delivery to another port before proceeding on to Portsmouth.

To implement an increase in multiport operations, changes in institutional arrangements, such as multiport cooperative agreements would have to be effected.

5. Lightering

This procedure involves offloading or "lightering" of cargo from
* large, deep-draft vessels to barges or coastal tankers prior to entering the harbor. In some cases after the vessel has been generally offloaded it could continue up the river to the appropriate terminal to unload. The use of lightering would require a suitable site offshore where the transfer could take place. There is no such sheltered location outside of Portsmouth Harbor. *

6. Utilize Other Ports

The concept of alternative delivery sites entails diverting traffic from one port to one or more locations. This would be difficult since the nearby ports of Portland, Maine and Boston, Massachusetts, are nearing capacity. Also, Portsmouth Harbor is the only deep water port in New Hampshire and is important to the economy of the region. Since the port has an established array of receiving, handling and distribution facilities, capital and cost considerations dictate that it remain a major petroleum receiving port.

*Asterisks denote changes from previous report. Rev. 3/84

7. Bridge Replacement

* Of the three bridges crossing the ship channel, the middle bridge (the Maine-New Hampshire vertical lift bridge) is the most troublesome to ship traffic. Present U.S. Coast Guard regulations do not require that clearance between the piers be increased beyond the present clearance.

Replacement of this bridge with a fixed high level bridge at the same location would eliminate the restriction and the need for an emergency maneuvering area because naturally deep water would be available for ship to turn without being wedged across the channel. This measure would eliminate rail service to the Naval Shipyard and is therefore impractical.

Replacement of the bridge with a very long moveable span of approximately 800 feet would allow ships to turn in the naturally deep channel and allow rail service to the Naval Shipyard to be maintained. A bridge with an 800 foot moveable span may be engineeringly feasible, but would be accomplished at considerable expense.

Replacement of the bridge with a tunnel would allow ships to turn in the naturally deep channel but would not allow continued rail service to the Naval Shipyard. This measure would be accomplished at considerable expense and would be disruptive in terms of traffic and real estate requirements.

8. Transfer Facility

Most of the larger vessels currently using the channel are tankers. An alternative to the tankers using the channel could be construction of a petroleum transfer facility with pumping and manifold equipment for distribution to upstream terminals.

9. Bridge Modification

Modification of the Maine-New Hampshire Interstate Bridge by increasing the length of the lift span would not obviate the need for an emergency maneuvering area, but would allow larger vessels to pass through the bridge. This measure would be disruptive to navigation, road, and rail traffic. Because bridge modification does not provide the necessary emergency turning capability in Area 1, it is a feature to be added to the channel improvement plan.

10. Improving Navigation Facilities

The existing 35-foot deep, 400-foot wide Federal channel as described is generally adequate to handle anticipated ship traffic. Therefore, overall deepening and widening of the channel was not considered necessary. There are, however, three areas where problems exist and improvements have been identified. *

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* Area 1. The most critical hazard to navigation is the area located between the two vertical lift bridges: the U.S. Route 1 Memorial Bridge and the Bypass Route 1 Maine-New Hampshire Interstate Bridge The problems identified include the inability to turn ships in this reach either prior to docking or if trouble develops for any reason. Vessel operators also have difficulty navigating the bend in this reach in conjunction with obtaining proper alignment to pass through the bridge. Improvements considered here include creating an emergency maneuvering area and widening the northern edge of the channel adjacent to Badgers Island.

Area 2. This area is located at the head of the existing Federal channel. Improvements include widening the existing 850-foot wide turning basin to provide more adequate space to turn the 700-foot long tankers which berth at the Sprague/Newington petroleum dock. Vessels using the other docks turn at their berths, using the width of the channel. While ships at Spraque/Newington operate in the same manner, there is no Federal channel to provide additional maneuvering capability upstream of the dock. *

Area 3. This area is located at the downstream end of the ship channel and involves widening the southern edge of the channel at the bend in the vicinity of Goat Island. As noted previously, the sharp turn at Henderson Point is complicated by currents in the river and requires vessel operators to make turns at this point in the river with extreme caution. Starting turns too early or too late could result in grounding of the ship.

DEVELOPMENT OF ALTERNATIVE PLANS

Initial Screening of Measures

* The initial measures were first screened on the basis of practicality. The following measures were deemed impractical:

1. Utilize Favorable Tides. Under current operating procedures, the use of favorable tides is being fully taken advantage of and does not offer any further capability to improve port efficiency.

2. Utilize Additional Tugs. Under current operating procedures, the optimum number of tugs is being utilized. Additional tugs would not improve port efficiency.

3. Navigation Aids. The current system of navigation aids is adequate. Additional buoys would not improve port efficiency.

4. Lightering. Implementation of lightering requires a suitable site offshore where the transfer could take place. There is no such site outside of Portsmouth Harbor and therefore lightering is physically infeasible. *

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* 5. Utilize Other Ports. Portsmouth Harbor is the only deep-draft harbor in New Hampshire. The nearby ports of Portland, Maine and Boston, Massachusetts are near capacity. The capital invested in the existing receiving, handling and distribution facilities at Portsmouth combined with the situation at nearby ports require that Portsmouth remain a major petroleum receiving port.

6. Bridge Replacement. Replacement of the Maine-New Hampshire Interstate Bridge with a fixed high level bridge or a tunnel are not practical alternatives because they eliminate vital rail service to the Portsmouth Naval Shipyard. Replacement with an 800 foot moveable bridge is a practical alternative.

The remaining measures were analyzed on an economic basis. A preliminary estimate of both costs and benefits was used to identify the feasibility of each measure. Only those measures which were economically feasible were developed into alternative plans. The results of the analysis are presented in Table 3.

TABLE 3
FEASIBILITY OF MANAGEMENT MEASURES

Measure	Approximate Annual Benefit	Approximate Annual Cost	Approximate Annual Net Benefits
Multiport Operations	$685,000	$685,000	$0
Transfer Facility	3,518,000	6,215,000	(2,697,000)
Bridge Replacement (800 foot span)	4,217,000	6,043,000	(1,826,000)
Channel Improvement	3,853,000	1,837,000	2,016,000
Bridge Modification	4,217,000	3,419,000	798,000

Based on the above information, the following measures were considered for further analysis. These measures were used in the formation of preliminary alternatives.

Channel Improvement
Multiport Operations
Bridge Modification *

Preliminary Alternative 1

Description. This alternative plan would involve making improvements at Area 1 as shown on Figure 4. The work would entail widening the existing channel between the two vertical lift bridges from 600 feet to 1,000 feet and widening the northern limit of the channel adjacent to Badgers Island by 100 feet. To accomplish this work would involve the removal and disposal of 194,000 cubic yards of overburden material and 278,000 cubic yards of ledge rock at a cost of about $18 million.

*Asterisks denote changes from previous report. Rev. 3/84

Evaluation. Alternative 1 was formulated to substantially eliminate the critical hazard which is at Area 1. The improvements will allow the turning of large size vessels and facilitate movement of all ships through the Maine-New Hampshire bridge. The basic shortcoming of this alternative is that the problems and hazards of other areas, especially at Area 3, are
* not addressed. Since remaining hazards exist, the alternative does not fully meet the objectives of providing a safe and efficient channel. Consequently, there are no transportation savings attributable to this alternative. The benefit cost ratio is approximately 0.

*

Preliminary Alternative 2

Description. In addition to the improvements mentioned in Alternative 1, this plan would widen the southern portion of the channel at the bend in the vicinity of Goat Island from the existing 400 feet to 550 feet. The plan with improvements at Areas 1 and 3, requires the removal and disposal of 228,000 cubic yards of overburden material and 305,000 cubic yards of ledge rock. The cost of this alternative is estimated at $21 million and has favorable net benefits.

Evaluation. Preliminary Alternative 2 was formulated to deal with the two main problem areas along the Federal channel. Included are the work at Area 1 plus the work at Area 3. The costs are about $3 million
* more than Alternative 1. This alternative would provide safe navigation throughout the Federal channel. The benefit cost ratio is approximately 2.1 to 1.

*

Preliminary Alternative 3

Description. This plan includes all the improvements described in Alternative 2, plus widening of the existing turning basin at the head of the Federal channel from 850 feet to 1,000 feet. The improvements to AREAS 1, 2 and 3, as shown on Figure 4, would involve the removal and disposal of 345,000 cubic yards of overburden material and 481,000 cubic yards of ledge rock. The cost of this work would be about $33 million.

Evaluation. Preliminary Alternative 3 was formulated to deal with each of the three major navigation problem areas along the main ship channel. This alternative includes work at Areas 1 and 3 plus the
* widening of the turning basin at the head of channel (Area 2). The widening of the turning basin in Area 2 would improve the efficiency of the project by allowing vessels at Sprague/Newington to turn free from constraint. The turning basin is not an essential safety feature for all ships using the project. The benefit cost ratio for this alternative is approximately 1.4 to 1.

*

Preliminary Alternative 4

Description: This alternative would entail the transshipment of cargo through a nearby deep-draft port prior to its final arrival at

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Portsmouth Harbor. Due to Portsmouth's proximity to the ports of Boston, Massachusetts and Portland, Maine, transshipment of cargo could occur through either or both of these ports. Data for determining the actual costs and benefits of this measure are difficult to obtain, however; this is the most feasible of all nonstructural measures considered.

Evaluation. Preliminary Alterantive 4, which centers around a multiport/transshipment operation, offers two factors which differentiate it from the above alterantives. First, it offers a nonstructural approach and second, it offers an approach which requires little or no capital investment at Portsmouth Harbor. Studies show that costs are equal to benefits and the economics of such a plan are expected to be marginal.

Preliminary Alternative 5

* Description. The plan includes all the improvements described in Alternative 2, plus widening the horizontal clearance of Maine-New Hampshire Interstate bridge from its present 200 feet to 300 feet. The cost of this work is approximately $40 million. The cost of dredging is estimated at $21.3 million while the cost of bridge alteration is estimated at $18.3 million.

Evaluation. The alternative provides a safe navigation project for nearly all vessels carrying petroleum products above the Interstate bridge. Widening the bridge provides an additional factor of safety by allowing the larger vessels to hold all three tugs while passing through the bridge. It also allows larger vessels to use the project. The number of larger vessels which could use the project with a wider bridge is limited by the 35-foot depth of the channel and the 135-foot air draft of the Interstate and I-95 bridges. *

DREDGED MATERIAL DISPOSAL OPTIONS

The proposed activities involve dredging and disposal of material consisting of sand, gravel, and rock. Alternative disposal options considered, can be broken down into the following categories; upland, within harbor, ocean disposal and habitat creation. All of these alternatives are described in detail in the environmental assessment.

Upland Sites

* (a) New England Tank Industries was the originally proposed upland disposal site. Only a small area is presently available for dredged material placement and local residents in the town of Newington objected to placement of the material at this site. This site may be one of the least environmentally sensitive.

(b) Pease Air Force Base involves three small sites all of which would require filling of wetlands. The size of the sites, transportation and rehandling logistics rendered this alternative less economical and feasible than the other sites. *

*Asterisks denote changes from previous report. Rev. 3/84

* (c) Iafolla Industries represents a sand and gravel and rock crushing operation located in Portsmouth, New Hampshire. As with all upland sites considerable costs result with the double and triple rehandling and transportation of the material. Environmentally, this option would rank high considering that the dredged materials would be stockpiled in an existing sand and gravel pit.

In Harbor Sites

(a) New Hampshire State Port Authority (NHSPA). It has expressed an interest in receiving the dredged material to fill certain intertidal and subtidal property for expansion of its existing facilities. The Port Authority Site(s) represents the most economically efficient plan. Approval for filling the site must be obtained from various State agencies and the U.S. Army Corps of Engineers under its regulatory program. Disposal at the NHSPA would result in the elimination of approximately 15 acres of intertidal and subtidal aquatic habitat. The Cutts Cove site would involve filling of 10 acres of mud flats including 0.6 acres of saltmarsh.

(b) Pepperell Cove. The Kittery Port Authority is interested in developing a breakwater between Fishing and Gooseberry Islands to provide additional protection to the mooring area. This site could accomodate approximately 18,000 cy of rock. The remainder of the material would have to go to another disposal site.

Ocean Disposal Sites. Potential ocean disposal sites considered include the Isles of Shoals (Historical Disposal Site), Foul Area (EPA interim disposal site), Portland (EPA interim disposal site), and Cape Arundel (EPA interim disposal site).

Disposal at the identified ocean disposal areas would have some, though minimal, impacts on water quality and local habitat. The relatively clean nature of the sand, gravel, and rock would serve to minimize impacts. The Foul Area, Portland, Cape Arundel sites could accept the clean sediments to be dredged from the Portsmouth project. Cape Arundel disposal site is within Maine State waters and would require approval from State regulatory agencies. The Isle of Shoals dumping ground or other areas along the New Hampshire coast are not designated disposal areas. The U.S. Environmental Protection Agency would have to designate such a disposal site.

(a) Cape Arundel is located 3.1 miles south southeast of Cape Arundel, Kennebunkport, Maine. It has been designated by EPA as an interim disposal site. This site was used in the 1975 maintenance dredging operation of the Kennebunk River and again in 1977 for the dredged material of Cape Porpoise Harbor. The site requires a water quality certificate from the state of Maine. *

*Asterisks denote changes from previous report. Rev. 3/84

* (b) Portland has been designated by EPA as an interim disposal site. EPA has recently completed a Draft of Environmental Impact statement for the disposal site prior to making a determination in its designation as a regional dredged material disposal ground.

(c) Isles of Shoals is the historical disposal area for Portsmouth Harbor dredge spoils. The dumping ground is centered about three nautical miles east of the Isles of Shoals. This site was last used in June 1971 when 39,160 cubic yards of shoal material was removed from the channel in the vicinity of the Simplex Dock, using a Government hopper dredge. Sediment distribution for this area is found also in the Navy's Portsmouth Shipyard Dredging Study dated 1978. The predominant bottom material is sand and gravel and ledge outcrops.

(d) Foul Area presently has an indefinite interim designation status pending the development of an EIS for final designation. The area has a history of being used for the disposal of industrial wastes and dredged material.

Coastal Disposal Sites for Habitat Creation.

Several coastal open water locations have been identified as potential sites for depositing rock material from the proposed project to create lobster habitat. Maine fishermen have indicated that disposal of dredged material and rock off the coast of Maine for habitat creation was neither needed nor desired. In New Hampshire, habitat creation sites would have to be located on an existing rocky bottom so as not to interfere with commercial fishing activities. The enhancement opportunities provided by placement of the material on existing rocky areas would be limited.

Value of Disposal Material.

Disposal material may have a value depending on its use at the disposal site. The material would only have a value if it is used to replace material for a secondary project which has a reasonable certainty of being undertaken. The test of reasonable certainty insures that the disposal material is not used to subsidize an inefficient secondary project. The requirement that the secondary project be undertaken independent of the Federal proposal implies that the sponsor of the secondary project has analyzed the secondary project and found it to be economically efficient.

Two options were found to make quantifiable use of the disposal material. They were: disposal at Iafolla Industries where the material would replace material used in their ongoing operations and disposal at the NHSPA where the material could be used as general fill for their ongoing site development plans. *

Constraints to Disposal Options.

*Asterisks denote changes from previous report. Rev. 3/84

* Each of the above disposal options presents an uncertainty regarding its availability at the time of construction. The degree of uncertainity naturally varies with the option considered. Presently, the only sites certain to be available at the time of construction are the constraint free ocean disposal sites. *

PRESENTATION AND EVALUATION OF DETAILED PLANS

The screening of preliminary alternative plans resulted in retaining four plans for detailed analysis.

Plan A centers around improvements at Areas 1 and 3.

Plan B includes measures of Plan A plus widening of the turning basin at Area 2.

Plan C considers expanding the use of multiport operations, namely transshipment and two-port deliveries.

* Plan D includes measures of Plan A plus bridge modification. *

This section presents the alternative plans which survived the screening process.

PLAN A

Description

Plan A centers around improvements to the navigation channel at Areas 1 and 3 as shown on Figure 4. The proposed project features are described below.

1. Widen the existing channel which is located between the vertical lift bridges near the western end of Badgers Island from its current 600-foot width to a proposed 1,000-foot width.

2. Widen, by 100 feet, the northern limit of the channel at the northern end of the bend adjacent to Badgers Island.

3. Widen, by 150 feet, the southern portion of the channel at the bend in the vicinity of Goat Island from its current width of 400 feet to 550 feet.

Plan A would require the removal and disposal of 228,000 cubic yards of ordinary overburden material and 305,000 cubic yards of rock. It is estimated that construction would extend over a 16-month period of time assuming a continuous year-round operation. Every effort will be made to schedule construction in Area 3 during the months of December through March. The overburden material is primarily composed of clean sands and gravel. A bucket or clamshell dredge would be used to remove this

*Asterisks denote changes from previous report. Rev. 3/84

* material. The removal of ledge rock and boulders would require drilling and blasting with dynamite. It is contemplated that the material would be loaded on barges and transported to the Foul Area. *

Plan Evaluation

Navigation Improvements. The improvements proposed by Plan A would provide transportation cost savings by allowing users to safely bring in the larger vessels which are becoming more prevalent in the foreign and domestic fleet. The proposal would also greatly reduce the risk of an accident in the channel.

* Creating an emergency maneuvering area would serve 5 purposes as outlined below

1. Improvements would provide an emergency maneuvering area. This emergency maneuvering area is not solely related to the possibility of bridge failure. It is related to the possibility of any type of emergency, or mechanical failure which could result in disaster. Should any type of malfunction occur, there is no place to turn or stabilize the position of the ship. The probable result of such a malfunction is that the current and momentum of the ship would work to turn the ship across the channel. It is likely, that the ship, wedged across the channel would break up. This particular area is unique in that respect. In other areas within the Federal channel there is enough room to either turn around or stabilize with the tugs.

2. When exiting from upper terminals with empty or light vessels, the ships sit higher in the water and are subject to forces from the prevailing winds coming from the Maine side of the channel. These winds sometimes force the ship to pass under the Interstate bridge at a right angle. The turning area would eliminate the possibility of running aground in this situation.

3. Because of their reduced draft, smaller ships do not have to be brought in on the flood tide. Therefore the current is not the controlling factor in passing under the Interstate bridge. In this case, the emergency maneuvering area would allow passage at a right angle to the bridge.

4. With the improvement at Badgers Island it would not be necessary to begin alignment for the bridge so close to the New Hampshire side of the channel. In this case, it would be possible to swing the stern partially into the emergency maneuvering area and approach the Interstate bridge at less of a skew than is currently necessary.

5. An incidental use of the area would be that ships at the NHSPA and Granite State Minerals could turn their vessels in a safe and efficient manner. The widening of the channel adjacent to Badgers Island in conjunction with the work on the turning basin will help alleviate the very tight turning situation in this reach. *

*Asterisks denote changes from previous report. Rev. 3/84

The removal of the ledge at Area 3 would alleviate navigational difficulties associated with a sharp bend and complicated by currents in the river.

Environmental Impacts. Potential impacts of the dredging operations on the water quality of the Piscataqua River estuary are short term only. They include increased turbidity, minor release of hydrogen sulfide odors, temporary disturbance and release to the water column of nutrients, small amounts of heavy metals, oil, grease and other potentially polluting materials in the sediments. The increased turbidity will be short term and minimal due to the coarse nature of the sediments. Since the sediment to be dredged is relatively clean, the release of the other materials should have minimal impacts, especially due to the strong currents and mixing which would result in rapid dilution of potential contaminants.

Removal of ledge rock requires blasting with dynamite, where potential impacts are possible but certain procedures would minimize impacts. (See section on Project Features to Minimize Impacts). It is anticipated that the amount of blasting to be performed would not result in any significant loss of fish and lobster and would not significantly affect the food web or natural productivity of the immediate area. Furthermore, no significant loss of habitat area would occur as a result of the proposed blasting activity.

* The disposal of the dredge material would be at the Boston Foul Area, which is an EPA approved, interim disposal site. *

With a safer channel and reduced chance of accidents, there is less chance of a major oil spill occurring in the habor. If such an oil spill were to occur the results could be catastrophic since containment would be impossible because of the swift currents.

Project Features to Minimize Impacts. By confining the nature and timing of the blastings the overall impacts will be minimized. Some applicable procedures that can be used include the use of warning charges (dynamite or pulsed electrical currents) outside the perimeter of the proposed work area to scare away any large fish schools or mobile invertebrate animals; scheduling of blasting to avoid peak periods of fish migration and spawning; and submerging the charges below the channel bottom which would buffer the pressure shock wave. The location of the proposed dredging area (off to the side of the main channel) would improve the effectiveness of these features.

* Blasting would be scheduled whenever possible to avoid peak periods of fish and lobster migration and spwaning. A joint or multiagency observation team will be established to quantify and report any significant impacts to fishery resources.

Intake locations of adjacent lobster pounds in the Piscataqua River would be identified and marked prior to conducting blasting *

*Asterisks denote changes from previous report. Rev. 3/84

* operations and arrangements made, if necessary, to provide a continuous supply of cool, clean salt-water to pounds.

Every effort will be made to schedule construction in Area 3 during the months of December through March. This will reduce the impact blasting and dredging might have on fish population and recreational and small commercial boating activity. *

Shoreline Impacts. Plan A would not result in any shoreline changes.

Socio-Economic Impacts. Short term impacts would occur while the project is under construction. Dredging operations would probably interfere with normal vessel passage in the harbor, slowing or even stopping the traffic at times. Since the passage of deep-draft vessels is governed by tidal cycles, it would be possible to minimize delays by coordinating the blasting schedule with expected vessel traffic. If not, there would be an adverse effect on firms which rely on shipping, causing temporary delays, both in goods shipped and income flows.

The long term impacts of the plan would be increased harbor safety and a reduction in transportation costs. Over the long run the project would support economic and community growth and marine-related businesses might be influenced to locate at Portsmouth. The channel improvements would allow greater usage of larger ships, resulting in fewer vessel trips for many shippers. The reduction in vessel trips would reduce the potential for accidents.

* Project Economics. The economic analysis considers costs and benefits. The cost of the channel improvement project has two basic components. They are the actual removal of the material and the disposal of the material. Similarly, the benefits have two basic components. They are the value of improved transportation and the value of the material being removed. A number of disposal alternatives were considered in an effort to identify the alternative which maximized net benefits. The following disposal options were examined:

Land Disposal

Iafolla Industries
New England Tank Industries
Pease Air Force Base

Within Harbor Disposal

New Hampshire Port Authority
Pepperrell Cove

Ocean Disposal

Cape Arundel
Portland *

*Asterisks denote changes from previous report. Rev. 3/84

* Foul Area
Isle of Shoals

Additionally, in combination with the above, disposal of rock material at Gunboat Shoals for the creation of lobster habitat was investigated.

Estimates of the costs and benefits of each plan are displayed in Table 4.

TABLE 4
ECONOMIC ANALYSIS: PLAN A DISPOSAL OPTIONS

Plan	Disposal Alternative	Annual Benefits	Annual Costs	Net Benefits
A1	Iafolla Industries	$3,886,000	$1,897,000	$1,989,000
A2	New England Tank Industries	3,853,000	1,792,000	2,061,000
A3	Pease AFB	3,853,000	1,959,000	1,894,000
A4	New Hampshire State Port Authority	4,074,000	1,791,000	2,283,000
A5	Pepperrell Cove and Cape Arundel	3,853,000	1,883,000	1,970,000
A6	Cape Arundel	3,853,000	1,793,000	2,060,000
A7	Portland	3,853,000	1,939,000	1,914,000
A8	Foul Area	3,853,000	1,837,000	2,016,000
A9	Isle of Shoals	3,853,000	1,738,000	2,115,000
	Ledge Material (27,000 CY) to Gunboat Shoals, Remaining Material to:			
A10	New England Tank Industries	3,853,000	1,789,000	2,064,000
A11	New Hampshire State Port Authority	4,063,000	1,789,000	2,274,000
A12	Cape Arundel	3,853,000	1,790,000	2,063,000 *

*Asterisks denote changes from previous report. Rev. 3/84

* A13	Foul Area	3,853,000	1,882,000	1,971,000
A14	Isle of Shoals	3,853,000	1,738,000	2,115,000

Clearly, all of the above disposal alternatives are economically justified. However, not all of these sites are currently available for the acceptance of dredged material. The most economical and currently acceptable disposal site is the Foul Area (Plan 8). If at the time of construction, one of the more economically efficient sites in Table 4 is available, disposal would be at that site.

The estimated first cost of Plan 8 is $21,280,000. The average annual cost including interest during construction based on an interest rate of 8-1/8 percent with a 50-year life is $1,837,000. The annual benefit due to transportation cost savings is estimated to be $3,853,000. Annual net benefits of Plan 8 are $2,016,000. A detailed breakdown of the costs and benefits is contained in Appendices 2 and 3.

PUBLIC VIEWS (Refer to letters in Appendix 6)

Views of Federal Agencies. The U.S. Navy stated that improvements would have an indirect benefit to them in that it would provide safer commercial operations and thus prevent the possibility of interruption to commercial supplies through Portsmouth Harbor. *

The Defense Fuel Supply Center, which is presently responsible for managing the fuel terminal which receives jet fuel for Pease Air Force Base, supports the channel improvements as an enhancement to waterborne transportation.

The U.S. Fish and Wildlife Service recommended that the dredging be undertaken between mid-November and mid-March in order to minimize the impact on anadromous fish and invertebrates. The service also favors using small repellant charges or electrical impulses to scare resident species away from the work areas. The service objects to within harbor disposal sites and encourages use of the rock to create lobster habitat offshore. To reduce future accident and oil spill potential, they also recommend setting limits on ship size based on risk analysis.

* The U.S. Environmental Protection Agency, concurs with the selection of Plan A. The agency opposes within harbor disposal and recommends ocean disposal. *

Views of Non-Federal Agencies and Others. Local users as well as State agencies from both New Hampshire and Maine have voiced their approval of this alternative. Local users felt that this plan would greatly reduce the hazardous navigation conditions that now exist.

* The State of Maine, Department of Environmental Protection (DEP), Division of Licensing and Review, notes that while the proposed project decreases risk in the improved areas, it questions whether as a *

*Asterisks denote changes from previous report. Rev. 3/84

* consequence the project could be increasing the navigational risk as larger ships pass through the bridges. The DEP also favors the USF&W suggestion to restrict dredging to the November to March time frame.

The State of New Hampshire requests that work in Area 3 be undertaken between December and March, to minimize impacts to fish and recreational and small commercial boating. *

The Maine-New Hampshire Interstate Bridge Authority, concerned over safe passage of ships through its bridge, supports the proposed project, especially the emergency maneuvering area immediately downstream from the bridge.

PLAN B

Description

Plan B proposes the navigation improvements of Plan A at Areas 1 and 3, along with widening the existing turning basin at the head of the Federal channel at Area 2. The turning basin would be widened from 850 feet to 1,000 feet. The work at Area 1 and 3 is described under Plan A. See Figure 4 for the location of Areas 1, 2 and 3.

The work would involve the removal and disposal of 345,000 cubic yards of ordinary overburden material and 481,000 cubic yards of ledge rock. The dredging procedures and disposal of the dredged material would be the same as for Plan A.

Plan Evaluation

Navigation Improvements. Plan B would provide navigation improvements at Areas 1, 2 and 3. The improvements at Areas 1 and 3 are described under Plan A.

The Plan would make a significant contribution to vessel safety and the potential for reducing oil spills. Increasing the width of the turning basin at Area 2 would facilitate the turning of vessels destined for the Spraque/Newington Terminal. The present 850-foot width of the basin provides an inadequate margin of safety when turning 700-foot long oil tankers. The area would primarily serve the Sprague/Newington
* Terminal. The widening of the turning basin in Area 2 would improve the efficiency of the project by allowing these vessels to turn free from constraint. Unlike Areas 1 and 3, this area is not an essential safety feature of the project, because it only serves the ships destined for Sprague/Newington. Area 1 and 3 are used by all ships. *

Environmental Impacts. With the exception that more material would be dredged and disposed, the impacts for Plan B are the same as those stated earlier for Plan A. Plan B would further reduce the possibility of an oil spill.

*Asterisks denote changes from previous report. Rev. 3/84

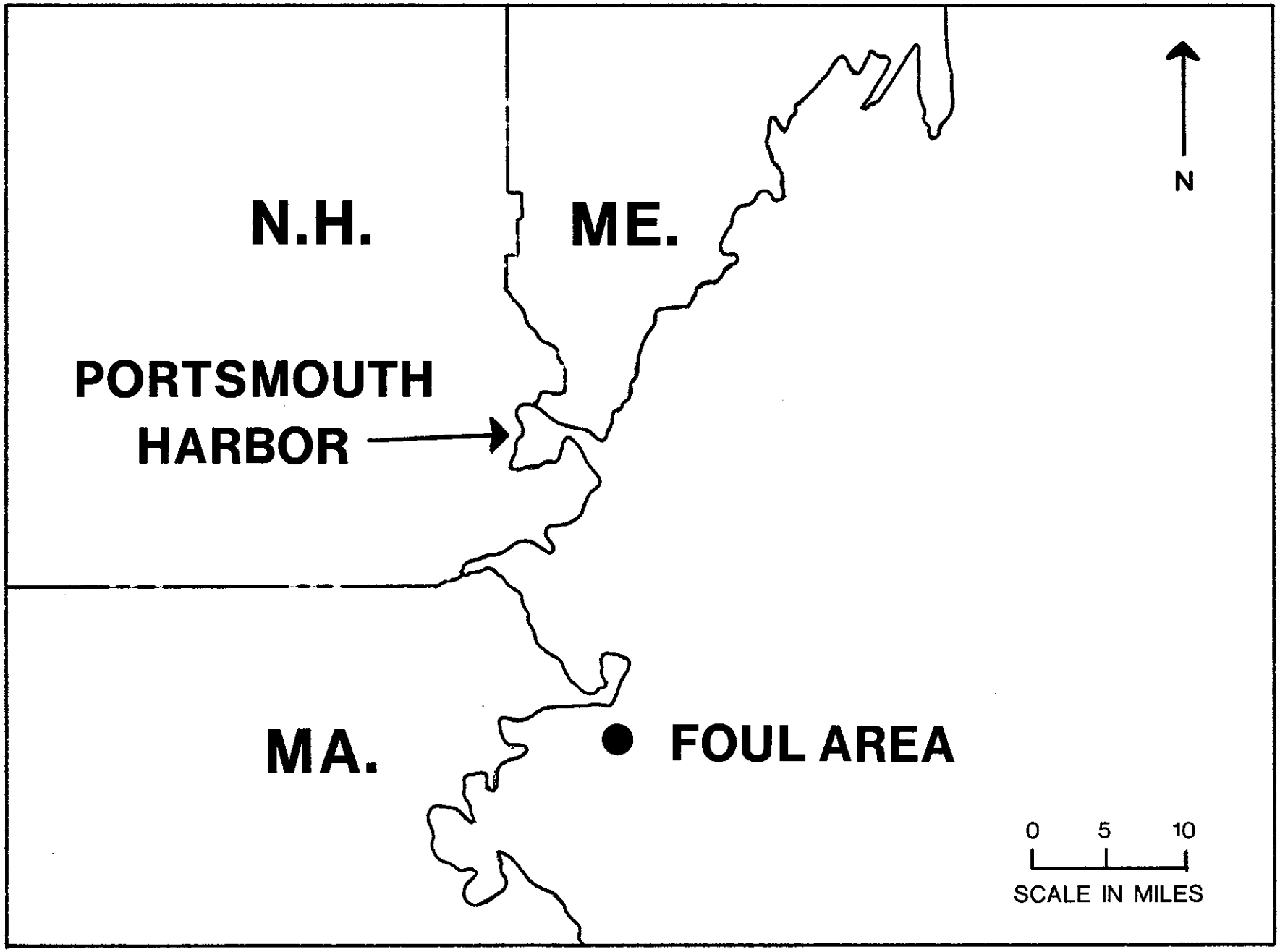

FIGURE 3: PROPOSED DREDGED MATERIAL DISPOSAL SITE

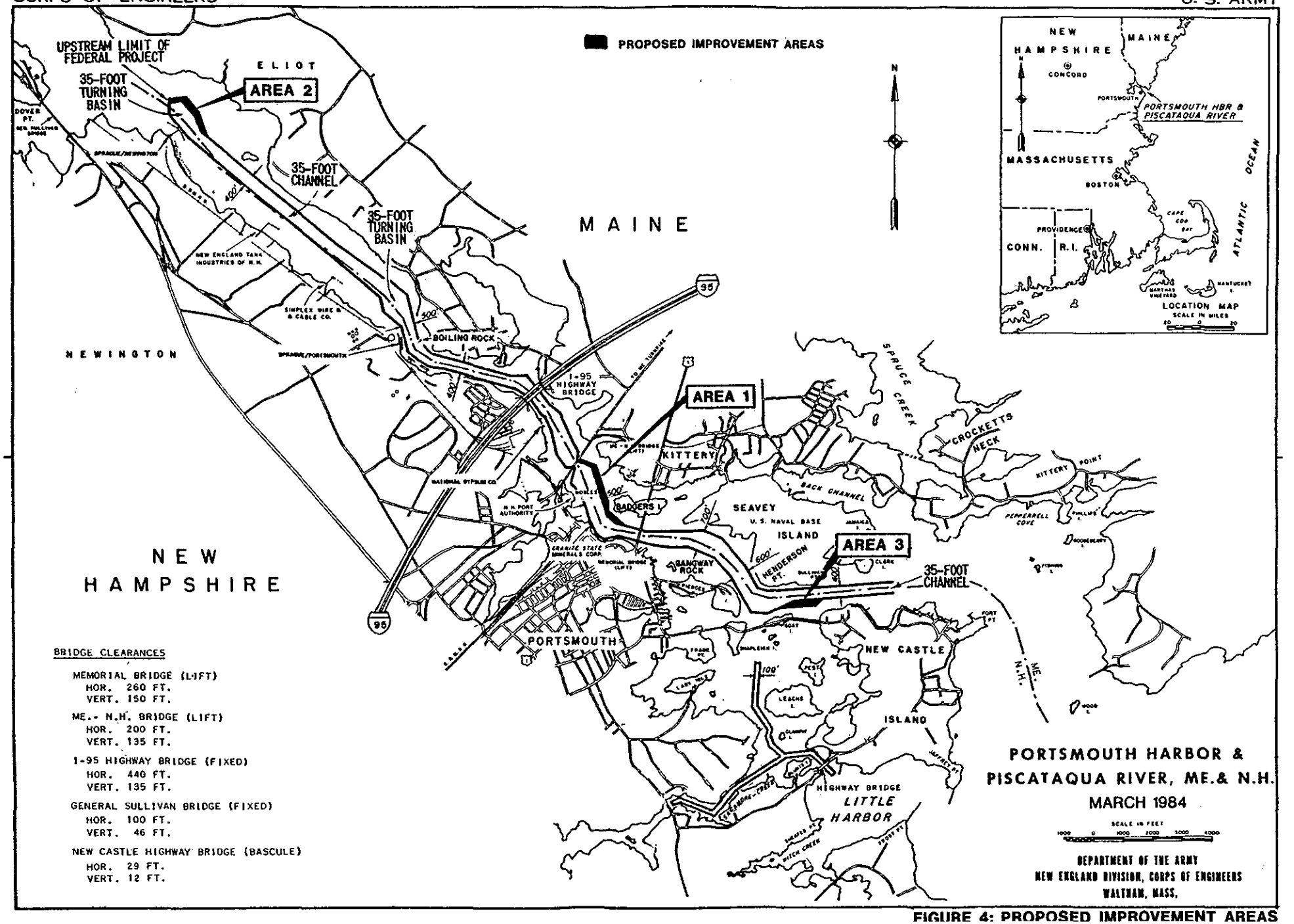

FIGURE 4: PROPOSED IMPROVEMENT AREAS

Shoreline Impacts. Plan B would not result in any shoreline changes.

Socio-Economic Impacts. The short term impacts of Plan B would be the same as the short-term impacts of Plan A. However, the widening of the turning basin at the head of the Federal channel would improve the maneuvering safety of the area and further reduce the possibility of an accident and oil spill.

* Project Economics. The economic analysis considers costs and benefits. The cost of the channel improvement project has two basic components. They are the actual removal of the material and the disposal of the material. Similarly, the benefits have two basic components. They are the value of improved transportation and the value of the material being removed. A number of disposal alternatives were considered in an effort to identify the alternative which maximized net benefits. The following disposal options were examined:

Land Disposal

Iafolla Industries
New England Tank Industries
Pease Air Force Base

Within Harbor Disposal

New Hampshire Port Authority
Pepperrell Cove

Ocean Disposal

Cape Arundel
Portland
Foul Area
Isle of Shoals

Additionally, in combination with the above, disposal of rock material at Gunboat Shoals for the creation of lobster habitat was investigated.

TABLE 5
ECONOMIC ANALYSIS: PLAN B DISPOSAL OPTIONS

Plan	Disposal Alternative	Annual Benefits	Annual Costs	Net Benefits	
B1	Iafolla Industries	$3,941,000	$2,803,000	$1,138,000	
B2	New England Tank Industries	3,908,000	2,667,000	1,241,000	*

*Asterisks denote changes from previous report. Rev. 3/84

* B3	Pease AFB	3,908,000	2,900,000	1,008,000
B4	New Hampshire State Port Authority	4,129,000	2,667,000	1,462,000
B5	Pepperell Cove and Cape Arundel	3,908,000	2,638,000	1,270,000
B6	Cape Arundel	3,908,000	2,642,000	1,266,000
B7	Portland	3,908,000	2,869,000	1,039,000
B8	Foul Area	3,908,000	2,793,000	1,115,000
B9	Isle of Shoals	3,908,000	2,558,000	1,350,000
	Ledge Material (27,000 CY) to Gunboat Shoals, Remaining Material to:			
B10	New England Tank Industries	3,908,000	2,664,000	1,244,000
B11	New Hampshire State Port Authority	4,118,000	2,664,000	1,454,000
B12	Cape Arundel	3,908,000	2,804,000	1,104,000
B13	Foul Area	3,908,000	2,949,000	959,000
B14	Isle of Shoals	3,908,000	2,558,000	1,350,000

Clearly, all of the above disposal alternatives are economically justified. However, not all of these sites are currently available for the acceptance of dredged material. The most economical and currently acceptable disposal site is the Foul Area (Plan B8). If at the time of construction, one of the more economically efficient sites in Table 5 is available, disposal would be at that site.

The estimated cost of Plan B8 is $32,360,000. The equivalent annual cost including interest during construction, based on an interest rate of 8-1/8 percent with a 50-year life is $2,793,000. The annual benefits, due to transportation cost savings are estimated to be $3,908,000. This figure includes $55,000 for operational savings provided by the widening of the turning basin in Area 2. Annual net benefits of Plan B8 are $1,115,000. A detailed breakdown of costs and benefits is contained in Appendices 2 and 3. *

PUBLIC VIEWS (Refer to letters in Appendix 6)

*Asterisks denote changes from previous report. Rev. 3/84

* Views of Federal Agencies. Excepting the Coast Guard, there is no indication that Federal agencies view Plan B8 differently than Plan A8. Statements regarding Plan A8 are assumed to be appropriate for Plan B8. The Coast Guard believes that Plan B provides the most significant contribution to vessel safety, disregarding economic considerations.

Views of Non-Federal Agencies and Others. As stated above, positions regarding Plan A8 are asumed to be appropriate for Plan B8, with the exception that local interests would prefer improvements to Areas 1, 2, and 3 over improvements to Areas 1 and 3. *

PLAN C

Plan Description

This plan involves the use of multiport operations playing a role in the delivery of petroleum products and bulk goods to Portsmouth Harbor. The ports that were examined as possible transshipment bases for Portsmouth include Portland, Maine, and Boston, Massachusetts. Portsmouth is about 45 miles sailing distance northeast of Boston and 37 miles sailing distance southwest of Portland.

Two types of multiport operations are possible. For bulk products, vessels could be partially unloaded before proceeding to Portsmouth with a light load. Additionally, with petroleum products, large vessels could be bought into Boston or Portland, where the cargo could be transferred to smaller tankers or barges and shipped to Portsmouth.

Plan Evaluation

Navigation Impacts. The multiport operations would allow the transport of cargo on larger vessels to achieve the economies of scale over large shipping distances. Full implementation of such a plan would reduce the size and draft of vessels using Portsmouth Harbor and could improve navigational safety. However, the physical navigation difficulties would still exist.

With the increased use of transshipment, the number of vessels using the ports of Boston, Portland and Portsmouth would increase. That would increase the risk of accidents and cause shipping delays. The additional vessels using Boston and Portland would cause travel and unloading delays because these harbors are currently operating at or near capacity.

Environmental Impacts. There would be an increase in the amount of ship traffic in Portsmouth Harbor as well as at Boston and Portland. This should not affect any of the habitat or wildlife species, provided that existing pollution discharge regulations are followed and enforced. There would be no dredging or structural changes in the channel or the shoreline.

*Asterisks denote changes from previous report. Rev. 3/84

Socio-Economic Impacts. This plan would provide for the operation of Portsmouth Harbor without major capital expenditures. It would be difficult to implement since the degree and type of multiport operations that occur are dependent on the economic viability of those operations. According to petroleum company representatives, many multiport activities are uneconomical compared with direct shipment because they cause charges to be doubled. Expenses for barges, stevedores, etc., must be paid at two or more ports rather than just one. Because of these added expenses shipping interests maintain that multiport operations are resorted to only if supply problems, navigation constraints, or other logistical considerations prohibit more economical methods. Given a choice between continuing operations that are currently the most economical (and are anticipated to remain economical) or switching to greater use of multiport operations, shippers would tend to maintain the status quo.

The plan would result in shipping delays that would increase costs to operations. The costs associated with transshipment would be borne by the users, and their costs would be passed on the customers.

With the increase in ship traffic in Portsmouth, there would be disruption and delays to other boat traffic in the harbor. The need to operate the two vertical lift bridges more frequently would result in traffic delays for land based transportation.

* Economic Analysis. A limited amount of transshipment currently takes place. Figures from 1978 indicate that around one percent of the petroleum tonnage arriving at Portsmouth was transported via Portland Harbor and approximately seven percent came by way of Boston.

Portsmouth shipping interests have not indicated a desire to increase the level of transshipment. The chief reason is that direct shipment is usually much less expensive for comparable size vessels. The current shipping cost for a 40,000 DWT tanker direct to Portsmouth from the U.S. Gulf is $15.64 per short ton or petroleum. Transshipment by way of Boston, using a 50,000 DWT tanker and barges would result in a $16.65 unit cost. Transshipment from Portland would raise costs even further due to the longer travel distance. Transshipment from Venezuela via Boston would result in a $10.27 unit cost compared to a $8.36 unit cost for direct shipment with a 40,000 DWT vessel. Cost comparisons for various vessels sizes and ports of origin are shown in Table 6.

According to the information in the table, transshipment with a large 50,000 DWT vessel and several barges appears less expensive than utilization of small vessels for direct shipment. However, the fact that Portsmouth shipping interests continue to use small vessels and limit the amount of transshipment that takes place seems to indicate that hidden costs are involved. Although transshipment is ostensively cheaper, logistical problems tend to make it both expensive and difficult to implement. *

*Asterisks denote changes from previous report. Rev. 3/84

* When a relatively small amount of petroleum is needed at a particular time it would be impractical to bring in a large amount and have it sit as excess inventory. Also, storage space is a limited commodity. Economics dictate that storage be allocated in such a manner that neither short falls nor excess capacity exists. Because storage is generally allocated on such a tight schedule, arranging for transshipment of large quantities of petroleum products proves to be difficult. Shipping interests at Portsmouth indicate that storage capacity at the harbor is not great enough to handle a significantly expanded level of transshipment.

Other problems also hinder expansion of transshipment operations. The transshipment of petroleum from tanker to barge greatly increases the risk of oil spills and associated clean-up costs. Also, the barges used for transshipment are very susceptible to difficulty due to inclement weather and therefore face a high probability of incurring delay costs. In addition, shippers indicate that current scarcity of large barges would prohibit a great increase in the level of transshipment. Barges with heating coils (needed for #6 oil) are in particularly short supply. Another deterrent is the fact that port charges are doubled when two ports are utilized. Also, special private business arrangements would have to be made for receivers at Portsmouth to use dock facilities belonging to other companies at other ports. *

*Asterisks denote changes from previous report. Rev. 3/84

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Table 6
COST COMPARISON: DIRECT SHIPMENT VS. TRANSSHIPMENT

Direct			Transshiped via Boston		
Origin	DWT	Cost/Ton	Origin	DWT	Cost/Ton
US Gulf	20,000	25.43	US Gulf	50,000 DWT plus barges	
	30,000	18.85			
	40,000	15.64			
Venezuela	20,000	13.17	Venezuela	50,000 DWT plus barges	$10.27
	30,000	10.11			
	40,000	8.36			

Because of the aforementioned problems it is unlikely that greatly expanded use of transshipment will occur at Portsmouth. The analysis assumes that as 20,000 DWT ships are phased out, an additional 5 percent of total petroleum tonnage could be shipped to Boston in 50,000 DWT tankers and then transshipped by barge to Portsmouth. Table 7 which displays the sensitivity analysis, shows that the annual savings arrived at is $685,000.

It must be noted that the "transshipment savings" fails to account for the additional costs that would be brought about by the change in shipping operations. These costs have not been detailed due to the extremely hypothetical nature of the situation. Although lack of information prevents detailed quantification of additional costs, the fact that Portsmouth shipping interests prefer to prevent additional transshipment indicates that these costs are indeed real. Given that these costs are deemed sufficient to prevnt any significant expansion of transshipment operations, the benefit to transshipment is assumed to be less than the cost. *

*Asterisks denote changes from previous report. Rev. 3/84

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Table 7
ECONOMIC ANALYSIS: TRANSSHIPMENT

Petroleum Products in Thousands of Short Tons

Year	1985	1990	1995
	2,957.7	3,027.7	2,904
Additional Transshipment	x. 05	x.05	x.05
	147.9	151.4	145.2

			Av. Weight	
Average Savings per short ton -	Foreign:	$2.90	x .7 =	2.03
	U.S.:	8.78	x .3 =	2.63
		8.02		4.66

Average Annual Savings in $1000

1985	1990	1995-2035
689.2	705.5	676.6

Equivalent Average Annual Savings -	$685,000
Additional Costs -	685,000
	Net Benefit = $0

*

*Asterisks denote changes from previous report. Rev. 3/84

PUBLIC VIEWS

View of Federal Agencies. We have not received any comments from Federal agencies regarding the use of transshipment.

Views of Non-Federal Agencies. Some of the local users have indicated that they currently transship approximately 8 percent of the petroleum products brought into Portsmouth. However, they do not wish to increase the amount of product being transshipped, citing higher transportation costs as their primary reason.

* PLAN D

Description

Plan D proposes the channel improvements of Plan A at Areas 1 and 3 along with widening the horizontal clearance of the Maine-New Hampshire Interstate bridge.

Plan D would require the removal and disposal of 228,000 cubic yards of ordinary material and 305,000 cubic yards of rock. The dredging procedures and disposal would be the same as for Plan A.

Bridge modification would be accomplished by constructing two new caissons and piers outside of the existing bridge and erecting towers on those piers. At that time, the existing lift span would be disconnected, floated out, the old towers would be removed, and the old piers and caissons demolished. A new lift span would be floated into place and connected to the towers.

Plan Evaluation

Navigation Improvements. Plan D would provide channel improvements and increase the horizontal clearance of the narrowest bridge in the project area.

The Plan would make significant contribution to vessel safety and the potential for reducing oil spills. Channel improvements would provide transportation cost savings by allowing users to safely bring in the larger vessels which are becoming more prevalent in the foreign and domestic fleets. By increasing the horizontal clearance of the bridge, tugs could accompany vessels through the bridge. Additionally, wider vessels could now use the project.

Environmental Impacts. Impacts due to channel improvements are expected to be relatively the same as those for Plan A.

Shoreline Impacts. The impacts of Plan D are the same as those for Plan A, except that a staging area would be required for construction of the major elements of the bridge alteration. *

*Asterisks denote changes from previous report. Rev. 3/84

* Socio-Economic Impacts. Impacts of Plan D are the same as those for Plan A, with the additional short-term impacts of interruptions to navigation, road, and rail traffic. The interruptions would be for 2, 8 and 4 months respectively.

Project Economics. Benefits of the channel improvements and bridge widening were determined through personal interviews with shipping interests. Shippers indicate that the desired channel improvements will induce them to actively seek additional vessels in the 40,000 DWT class. With alteration of the bridge, shippers will seek out larger vessels which cannot use the project because of their wide beams.

The estimated cost of Plan D is $39,600,000. The average annual cost, including interest during construction, based on an interest rate of 8 1/8% with a 50-year life is $3,419,000.

Annual benefits due to transportation cost savings and reduction of risk are $4,217,000. Annual net benefits of Plan D are $798,000. *

PUBLIC VIEWS

Views of Federal Agencies. Views of Federal agencies regarding Plan D are the same as those for Plan A. The Coast Guard has determined that the present horizontal bridge clearance is adequate for the size vessel currently using the project.

Views of Non-Federal Agencies. Positions regarding Plan A are assumed to be appropriate for Plan D, except that interruptions to traffic have not been assessed. The Maine-New Hampshire Interstate Bridge Authority is not opposed to bridge alteration, as long as cost sharing is satisfactory to them.

COMPARISON OF DETAILED PLANS

Current indicators are for the continued prosperity of Portsmouth and the region. It is also apparent that deep-draft navigation through the Federal channel will continue to play a role in importing petroleum and other products servicing Portsmouth's industries.

The plan formulation process has considered and evaluated alternative future scenarios in the form of:

1. the future without project condition,

2. Plan A which centers around improvements to the existing navigation channel at Areas 1 and 3,

3. Plan B which includes improvements to Area 2 in addition to the measures in Plan A,

*Asterisks denote changes from previous report. Rev. 3/84

4. Plan C which proposes increases in the amount of multiport operations, and

* 5. Plan D which includes modification to the Interstate Bridge in addition to the measures in Plan A.

The contribution of these plans to national economic development is presented in Table 8. The data in this table demonstrate that Plan A is the NED plan.

TABLE 8

CONTRIBUTIONS TO NATIONAL ECONOMIC DEVELOPMENT

Plan	Net Benefits
A	$2,016,000
B	1,115,000
C	0
D	798,000

The effects and impacts of these alternatives are compared below and summarized in Table 9. *

Contribution to Planning Objectives

Safety. Each of the plans (A, B, C or D) would improve the safety of deep-draft navigation in Portsmouth Harbor. In comparison, safety would become more strained for the future without project condition. Plans A, B and D both include improvements to the channel at Areas 1 and 3. These improvements are essential to harbor safety because of the difficulty in navigating in these areas and because all deep-draft traffic must navigate through these reaches of the river. Plan B includes additional improvements at Area 2 that improve the efficiency of the channel. This area is at the head of the Federal channel and is used only by tankers destined for the Spraque/Newington petroleum docks. Plan D includes additional safety by improving passage through the Interstate bridge.

Plan C would achieve safety improvements by the use of smaller, shallower draft ships. This gain would be offset by the increase in traffic required to carry the same amount of commerce.

* Transportation Savings . For Plans A and B, the improvement would allow for realizing $2,625,000 annually in transportation savings through the use of a higher proportion of larger, more economical ships. These savings are attained with the improvements at Areas 1 and 3. Additional annual benefits are; the reduction of transportation risk at Areas 1 and 3 valued at $1,173,000, incidental operational savings at Area 1 valued at $55,500, and incidental operational savings at Area 2 valued at $55,000. *

*Asterisks denote changes from previous report. Rev. 3/84

* Plan C would realize transportation savings of 685,000 through the use of multiport operations. Plan D provides benefits of $364,000 annually in addition to the benefits generated by Plan A. *

Preservation of Environmental Quality. Plans A, B and D would incur adverse environmental impacts during construction. These would take the form of increased turbidity from dredging and the destruction of intertidal, and subtidal habitat and associated benthos in the immediate area of work.

However, the potential for an oil spill represents the most significant threat to the environmental quality of the Portsmouth Harbor and the Piscataqua River system, which includes Great Bay. There are two potential causes for an oil spill: (1) an accidential oil spill during the unloading process, which this study cannot address, and (2) a spill resulting from an accidental grounding or ship accident. The plan that contributes the most to harbor safety probably contributes the most to environmental quality.

Evaluation Factors

* Completeness. Plans A, B and D are generally complete in themselves. All terminals and berthing areas are currently adequate to meet future needs and local interests would not have to expend additional funds. This does not include any potential plans for expansion of existing facilities which are expected to occur independently.

In an action independent of the Federal proposal, the State is proceeding with plans to develop sites in the vicinity of its present facilities. *

In constrast, Plan C would require additional arrangements or facilities at the ports of Boston, Portland or other ports involved in the multiport operation in order to handle the additional ship traffic and commerce. Also, shippers may have to make special accommodations or purchases to assure the availability of the small size ships which are becoming less prevalent in the domestic and foreign fleets.

Effectiveness. Each of the plans considered, to some degree, increases the safety of the harbor, realizes transportation savings and enhances the future integrity of the port.

* Efficiency. Plan A in the most economically efficient with net benefits of $1,721,000 and a BCR of 2.1 to 1. Plan B has net benefits of $655,000 and a BCR of 1.4 to 1. Plan B is similar to Plan A with the addition of improvements to Area 2. These improvements are not an essential safety feature of the project. Therefore an incremental analysis is appropriate. Using this analysis, B is not economically efficient. The efficiency of Plan C was evaluated, and costs were found to equal benefits. *

*Asterisks denote changes from previous report. Rev. 3/84

* Plan D provides additional safety features to Plan A by allowing the pilot to keep the tugs alongside the vessel when passing through the bridge. Plan D is not as economically efficient as Plans A or B. *

Acceptability. Local interests seek improvements in the harbor to provide for navigational safety and realization of transportation savings. They favor the work at the three areas in Plan B as they provide the highest degree of efficiency and safety Priority is given to improvement at Area 1 and then to Area 3. Therefore, Plan A is also acceptable. Local harbor users are not in favor of Plan C as the best
* approach to transportation savings or harbor safety. Plan D is also acceptable to local interests, dependent on cost sharing. *

Trade-Off Analysis

Plan A would provide significant savings in waterborne transportation costs and provides the largest contribution to net benefits. The plan would result in minor, short-term construction impacts, but would realize substantial improvements in overall harbor safety and reduced potential for oil spills.

* Plan B is similar to Plan A. Using an incremental analysis it is not economically efficient. It is the most desired improvement proposal from a public acceptance perspective. *

Plan C appears desirable because it provides transportation savings without any capital expenditure or construction impact at Portsmouth Harbor. This plan provides only a marginal increase in harbor safety. While it could result in use of smaller ships that would be safer to operate, there would also be an increase in ship traffic in Portsmouth and other ports involved in transshipment. The specific operating costs of the plan have not been evaluated, but they were found to be equal to the savings. With a lack of public acceptance, marginal economics and safety gains, this plan is not considered as desirable as Plans A or B.

* Plan D, provides an added factor of safety to Plan A, but does not maximize net benefits. *

Selection of the Final Plan

Plan A is the tentatively selected plan of improvement which produces the highest net benefits by improvements to the safety of the harbor.
* This plan recognizes that there are more efficient disposal sites which may become available prior to construction. Disposal will be at the most economically efficient site available at the time of construction. *

*Asterisks denote changes from previous report. Rev. 3/84

TABLE 9

SUMMARY OF COMPARISON OF ALTERNATIVE PLANS

	Without Project Condition	Plan A	Plan B	Plan C	Plan D
A. Plan Description	Maintain existing 35-foot deep channel.	Widen existing channel at Area 1 Widen turning basin at Area 2 Total excavation: 228,000 cy overburden 305,000 cy rock Disposal at Boston Foul Area Install new navigation aids as needed at Areas 1 and 3.	Improvements at Areas 1 and 3 - Same as Plan A Widen turning basin at Area 2 Total excavation 345,000 cy overburden 481,000 cy rock Same as Plan A Install new navigation aids as needed at Areas 1, 2 and 3.	Expand use of multiport operations. Transshipment from Portland, ME and Boston, MA. Two-port deliveries.	Widen existing channel at Area 1. Widen bend at Area 3. Total excavation 228,000 cy overburden 305,000 cy rock Same as Plan A Install new navigation as needed in Areas 1 and 3 Alter Maine-New Hampshire Interstate Bridge.
B. Impact Assessment					
1. National Economic Development					
a. Project First Cost					
Total		$21,280,000	$32,360,000	No capital improvements needed for harbor facilities.	$39,600,000
b. Annual Costs					
Amortization		1,837,000	2,793,000		3,419,000
O&M		-	-		
Total Annual		1,837,000	2,793,000	685,000 (assumed equal to benefits.)	3,419,000
c. Annual Benefits		3,853,000	3,908,000	685,000	4,217,000
d. Net Benefits		2,016,000	1,115,000	0	798,000

TABLE 9 (Continued)

	Without Project Condition	Plan A	Plan B	Plan C	Plan D
e. Benefit to Cost Ratio		2.1 to 1	1.4 to 1	1.0 to 1 (Based on assumed costs.)	1.2 to 1
2. Environmental Quality (EQ)					
a. Water Quality	Will continue to meet Maine and New Hampshire standards. (beneficial)	Same	Same	Same	Same
	Increased potential for oil spills because of navigational difficulties at Areas 1, 2 and 3. (Adverse)	Reduced potential for oil spill because of improvements at Areas 1 and 3. (Beneficial)	Least potential for oil spill because of improvements at Areas 1, 2 and 3. (Beneficial	Reduced potential for oil spill because of shallower draft vessels. (Beneficial)	Reduced potential for oil spill because of improvements at Areas 1 and 3 and alteration of bridge. (Beneficial)
		During Construction, there would be minor short term impacts such as increased turbidity, and reduction, in dissolved oxygen. (Adverse)	Same as Plan A	No Effect	Same as Plan A
b. Air Qualilty	No Changes	No effect	No Effect	No Effect	No Effect
c. Fishery	No Changes	Potential lethal effects from blasting would be addressed by use of warning charges, scheduling of blasting and submerging charges. (Adverse)	Same as Plan A	No Changes	Same as Plan A
d. Benthics	Periodic disruption during maintenance dredging	During construction, physical destruction of burrowing and immobile species.	Same as Plan A	No Changes	Same as Plan A
e. Plants/Wildlife	No Changes	No Effect	No Effect	No Effect	No Effect
f. Cultural	No Changes	No Effect	No Effect	No Effect	No Effect
g. Aesthetic	Increased turbidity during maintenance dredging. (Adverse)	Increased turbidity during construction (Adverse)	Same as Plan A	No Effect	Same as Plan A
h. Land Use	Continued shift to urban use.	No Effect	No Effect	No Effect	No Effect

TABLE 9 (Continued)

	Without Project Condition	Plan A	Plan B	Plan C	Plan D
i. Man-made Resources	Continued development in region.	No Effect	No Effect	No Effect	Economic life of lift bridge increased.
3. Other Social Effects (OSC)					
a. Displacement of People and Resources	None	None	None	None	Interruption of road rail and navigation traffic.
b. Noise	No Change	Increase during construction.	Same as Plan A	No Effect	Same as Plan A
c. Community Cohesion	No Change	No Change	No Change	No Change	Slight disruption during construction.
d. Community Growth	Continued regional growth	Minor increase	Same as Plan A	No Effect	Same as Plan A
e. Transportation	Lengthy vehicular traffic delays at two vertical lift bridges.	Slight decrease in vessel traffic, resulting in fewer vehicular traffic delays	Same as Plan A	Increase in ship traffic resulting in creased delays in vehicular traffic at lift bridges.	Same as Plan A, plus detours or delays during construction
f. Recreation Opportunities	Continued growth in recreational boating.	Minor temporary disruption during dredging operations.	Same as Plan A	No Effect	Same as Plan A
g. Safety, Health, Community Well Being	Continued threat of accidents and oil spill because of navigational difficulties.	Substantial increase in safety and decrease in oil spill.	Same as Plan A	Minor increase in safety because of use of smaller ships, increased safety hazard because of increase in vessel traffic.	Same as Plan A
4. Regional Development (RD)					
a. Income	Continued Growth	Positive effect from transportation savings and increased harbor activity.	Same as Plan A	No Effect	Same as Plan A
b. Employment	Continued growth.	Temporary increase in jobs during construction, and future port growth.	Same as Plan A	No Effect	Same as Plan A
c. Regional Growth Business and Industry Activity	Continued Growth.	Additional incentive for development because of transportation savings and safety.	Same as dPlan A	No Effect	Same as Plan A
d. Property Values	High value of waterfront will be retained.	No Effect	No Effect	No Effect	No Effect

TABLE 9 (Continued)

	Without Project Condition	Plan A	Plan B	Plan C	Plan D
e. Public Services and Facilities	No Change	Improved navigation channel.	Same as Plan A	No Effect	Same as Plan A, plus life of bridge extended.
C. Plan Evaluation					
1. Contribution to Solving Problems and Meeting Opportunities					
a. Improve Harbor Safety Related to Deep Draft Navigation	Continued navigation problems at Areas 1, 2, and 3.	Substantial increase in safety for all ships using channel.	Same as Plan A plus improved safety for ships turning at Area 2.	Improved safety through use of smaller ships, decrease in safety because of more ship traffic.	Same as Plan A, plus increased safety of ships passing through bridge.
b. Reduce transportation Costs for Waterborne Commerce	Users will seek most economical methods	Annual Savings of $3,853,000	Annual Savings of $3,908,000	No Effect	Annual Savings of $4,217,000
c. Contribute to Preservation of Environmental Quality.	Continuing Effort.	- Reduction in risk of ship accidents and oil spills.	Maximum reduction in risk of ship accidents and oil spills	No environmental impacts from construction.	Same as Plan A
		- Adapt dreding procedures to minimize impacts.	Same as Plan A	No Effect	Same as Plan A
2. Net Effects					
a. National Economic Development (NED)		Net Benefits of $2,016,000	Net Benefits of $1,115,000	No Effect	Net Benefits of $798,000
b. Environmental Quality(EQ)		Decrease potential for oil spill.	Slightly better than Plan A.	Less than Plan A	Same as Plan A
c. Other Social Effects(OSE)		Positive	Positive	No Effect	Positive
d. Regional Development(RD)		Positive	Positive	No Effect	Positive
3. Plan Response to:					
a. Completeness		Yes	Yes	No	Yes

TABLE 9 (Continued)

	Without Project Condition	Plan A	Plan B	Plan C	Plan D
b. Effectiveness		Yes	More than Plan A.	Partial	Yes
c. Efficiency		Yes	Yes, but not on incremental basis.	Marginal	Same as Plan B.
d. Acceptability		Yes	Yes	No	Yes, dependent on cost sharing.
4. Implementation Responsibility					
a. Design, Plans and Specs., Construction		Federal	Federal	None	Federal
b. Maintenance	Federal	Federal	Federal	None	Federal/Non Federal
c. Disposal Site		Non-Federal	Non-Federal	None	Non-Federal
d. Reimbursement Proposed Legislation		Federal Government would recover 100% of costs that are apportioned to non-Federal interests.	Same as Plan A	None	Same as Plan A, plus bridge alteration cost shared under principles of Truman Hobbs Act.

THE TENTATIVELY SELECTED PLAN

Description

Plan A was selected as the plan that best solves the navigation problems at the Portsmouth Harbor and Piscataqua River project area. Its selection is supported by technical analysis and the public. The Plan, as described in the previous sections includes navigation improvements at Areas 1 and 3 and includes:

- widening the existing channel at Area 1 from 600 feet to 1,000 feet;

- widening by 100 feet the northern limit of the channel adjacent to Badgers Island; and,

- widening the southern limit of the channel at Goat Island from 400 feet to 550 feet.

These areas are shown on Figure 5.

Design and Construction Consideration

Fleet Vessels. The previous navigation improvements were designed for a 35,000 DWT design vessel with a draft of 35 feet. At this time, there is an increasing frequency of ships with drafts of 36 and 37 feet more common to vessels in the 40,000 - 45,000 DWT class. Through judicious use of the tides, ships with these drafts have a safe margin (4 feet) of clearance.

Portsmouth Harbor pilots report that the ships using the channel vary in their handling ability, with new ships exhibiting better maneuverability than the older ships. Therefore, while the new, larger ships have smaller channel bottom clearances, they may actually be safer than the smaller older vessels.

Navigation Procedures. River currents will continue to be a major navigation factor and harbor pilots must continue to exhibit care and professional competence in procedures for handling ship traffic. All deep-draft ships navigating the harbor will continue to be tugboat assisted. Ships with the deeper drafts will continue to come in at slow or dead slow speeds near the end of the flood tide to arrive at their destination at high slack water. The limitation to one-way traffic in the channel was assumed because of the need for multiple tugboat assistance, the difficulty in establishing an anchorage area because of the river currents and because there is not a sufficient level of traffic to require two-way traffic.

Physical Conditions. The navigation improvements were formulated with the knowledge that the channel bottom and channel side slopes consist

*Asterisks denote changes from previous report. Rev. 3/84

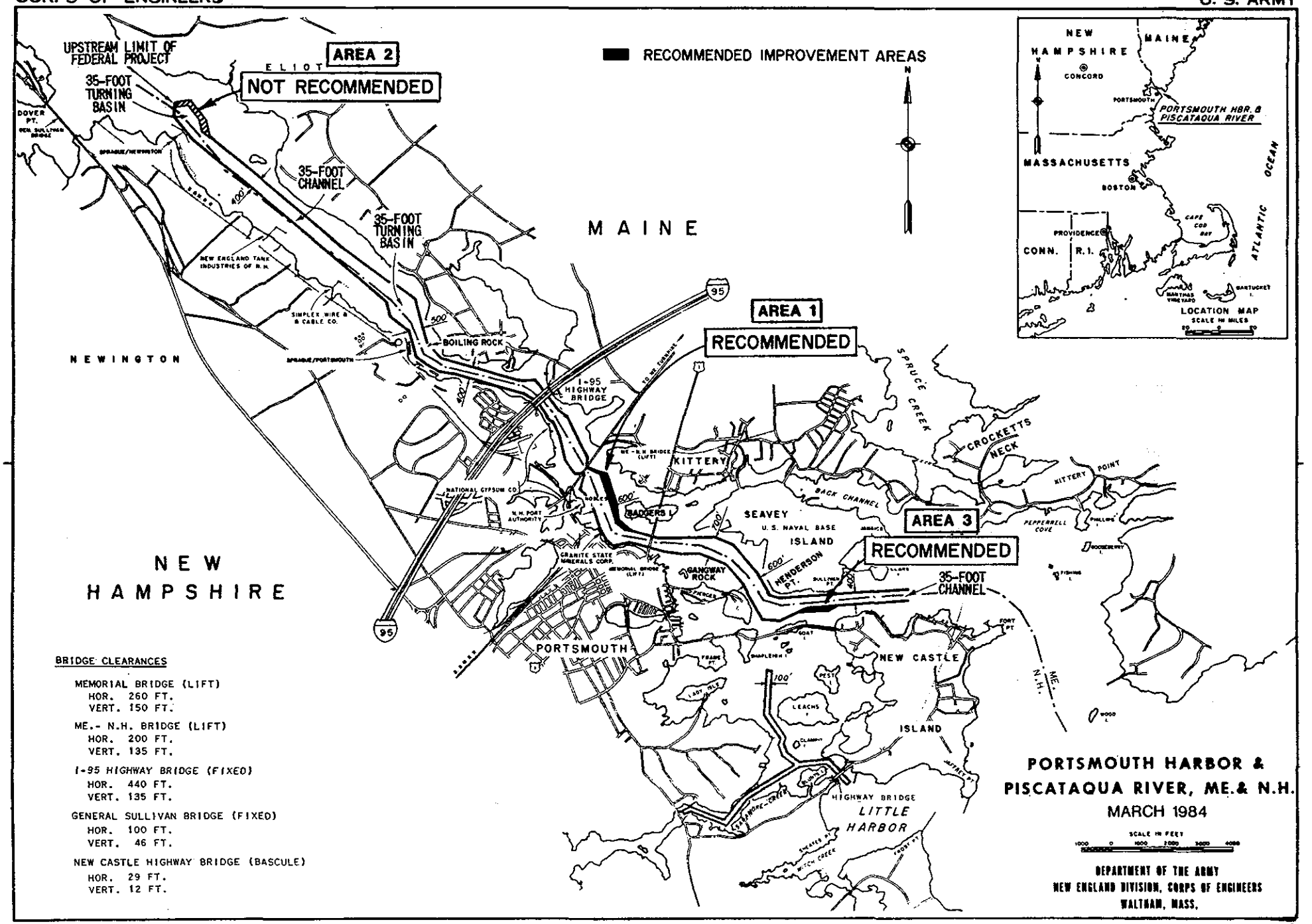

FIGURE 5: RECOMMENDED IMPROVEMENT AREAS

of ledge rock. Therefore, additional allowances are made for bottom and side clearances to attain adequate margins of safety.

Sampling of the overburden material indicates that the material proposed for dredging consists of sands and gravels. The presence of this material lessens the impacts of dredging and disposal operations.

A total of 14 disposal alternatives were evaluated for Plans A, B and
* D, the dredging alternatives. The plan which provides the largest contribution to net benefits is the plan which recognizes the value of the disposal material in the form of general fill. Unfortunately, there are no sites available which may accept the material at this time. *

Construction Schedule. The plan currently proposes a continuous construction schedule over a 16-month period. There are environmentally sensitive considerations in regard to the dredging and blasting operation in the river. The objective is to avoid impacts to migrating fish species and the resident lobster and fish population. Several approaches have been suggested to minimize impacts: (1) restrict dredging to the four-month period from November to March as suggested by the U.S. Fish and Wildlife Service; and/or, (2) design the dredging operations by restricting blasting during the most sensitive periods, use procedures such as small charges and warnings to scare away fish and lobster, and
* bury charges beneath the overburden. The plan combines the approaches. The 4-month work period was found to be overly restrictive resulting in significantly higher costs for dredging only during severe winter conditions, however work in Area 3 may be accomplished during this time frame. Additionally, an observation team will monitor the blasting. *

Operation and Maintenance Considerations. The maintenance dredging for the areas of the proposed improvement would be carried out at the same time as maintenance on the existing channel. It is estimated that additional dredging required would be minimal and any material would be disposed of at the same site used during construction. The material would be composed of sands and gravels and would be useable as fill. In general, heavy shoaling is not expected in the areas of improvement because of the absence of a nearby source of material and because of the tides and currents which prevent settling out of small grain material.

Summary of Impacts. Project improvements would address two major issues facing Portsmouth Harbor: namely the need to accommodate a greater number of the large size ships required to realize waterborne transportation savings; and the need to improve the safety of deep-draft navigation in the harbor.

The primary environmental impacts resulting from implementation of the project include increased turbidity during construction, destruction of benthics in dredged areas, and potential harmful effects from blasting on fish and benthos. With the increased safety, the potential for an oil spill will be substantially reduced. The impacts are presented in more

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detail in section on detailed evaluation of Plan A, in Table 9 and in the Environmental Assessment.

The study and the selected plan are generally in compliance with the environmental statutes as defined by the U.S. Water Resources Council as demonstrated in the Environmental Assessment.

IMPLEMENTATION

Federal Responsibility. After Congressional authorization and funding, the United States would design and prepare detailed plans for the proposed project. The United States would maintain necessary aids to navigation.

The Federal Government would construct and maintain the proposed
* improvements. The estimated first cost of the project is $21,280,000. Annual operation and maintenance costs would be minimal because of the small amount of expected shoaling. *

Non-Federal Responsibilities. Local interests will provide all lands, easements and rights of way for implementation and maintenance of the
* project. The Governor of New Hampshire has indicated the state's willingness to participate in the project and to fulfill the conditions of local cooperation. *

* Prior to construction, if there is a permitted disposal site, a survey will be conducted to determine the value of the dredged material. The value of the material will be determined by comparison with the cost of alternative material.

In cases where the value of the material accrues to the project sponsor or user(s), the sponsor is responsible for 100 percent of the cost allocated to this value; otherwise, the project sponsor may be responsible for a 50 percent portion of the cost allocated to this benefit category. Local interests are to provide a cash contribution based on 100 (or 50) percent of the final first cost allocated to special local benefits deriving from dredged material disposal. *

RECOMMENDATIONS

I have reviewed and evaluated in light of the overall public interest, the information contained in this report, the environmental assessment and other documents concerning deep-draft navigation in Portsmouth Harbor and the Piscataqua River. I have met with and considered the views of local officials, other agencies, organizations, harbor users, and other concerned members of the public. The possible consequences of constructing the selected plan as well as each of the alternatives were studied and evaluated for environmental effects, social effects, engineering considerations and economic factors. Special attention was given to attaining waterborne transportation savings and increasing the safety of deep-draft navigation in the harbor.

*Asterisks denote changes from previous report. Rev. 3/84

Accordingly, I recommend that the existing project for deep-draft navigation at Portsmouth Harbor and the Piscataqua River in Maine and New Hampshire, authorized originally by the River and Harbor Act of 1879 and modified most recently by the River and Harbor Act of 1962, be modified to provide for the implementation of a Federal project for navigation, in accordance with the plan selected herein, with simulation model studies to further refine design dimensions, with such further modifications thereto as in the discretion of the Chief of Engineers may be advisable; at a cost presently estimated at $21,280,000 and with operation and maintenance costs to the United States.

This recommendation is made provided that, except as otherwise provided in these recommendations, the exact amount of non-Federal contributions shall be determined by the Chief of Engineers prior to project implementation, in accordance with the following requirements to which non-Federal interests must agree prior to implementation:

a. Provide, without cost to the United States all lands, easements, and rights-of-way necessary for implementation and later maintenance of the project and for aids to navigation, upon the request of the Chief of Engineers including suitable areas determined by the Chief of Engineers to be required in general public interest for initial and later disposal of dredged material, and including necessary retaining dikes, bulkheads, and embankments therefor, or the costs of such retaining works.

b. Hold and save the United States free from damages due to implementation and maintenance of the project, not including damages due to fault or negligence of the United States or its contractors;

c. Provide and maintain without cost to the United States adequate terminal and transfer facilities open to all on equal terms;

d. Provide and maintain without cost to the United States adequate depths in berthing areas and local access channels serving the terminals;

e. Accomplish without cost to the United States all alterations and relocations of transportation facilities, storm drains, sewer outfalls, utilities, and other structures and improvements made necessary by the project;

f. Prohibit the erection of any structures within a distance to be determined by the Chief of Engineers from the bottom edge of the proposed channel and turning basin areas.

23 Apr '84
DATE

CARL B. SCIPLE
Colonel, Corps of Engineers
Division Engineer

*Asterisks denote changes from previous report. Rev. 3/84

ACKNOWLEDGEMENTS

The New England Division, U.S. Army Corps of Engineers prepared this report under the overall direction of Colonel Carl B. Sciple, Division Engineer and Joseph L. Ignazio, Chief of the Planning Division. The Coastal Development Branch of the Planning Division has overall responsibility for the conduct of the study with supervision from Mr. John T. Smith, Branch Chief.

The final report was prepared under the direction of James McLoughlin, Project Manager. Dennis Waskiewicz and John Markiewicz provided study leadership during intermediate study phases. Members of the study team included William Coleman - engineering studies, Warren Weiner - economic analyses, and Gilbert Chase - environmental analyses and coordination.

Thanks are extended to those who prepared this report for publication, specifically Pat Wysocki, Donna Russell, Janice Sporrong and Ursula Sarno of the Word Processing Center, Helen Mulligan of the Policy Unit, and the reproduction staff under the direction of Robert Bentham and Robert Key and their fine staff.

PORTSMOUTH HARBOR AND PISCATAQUA RIVER
NEW HAMPSHIRE AND MAINE

ENVIRONMENTAL ASSESSMENT
FOR
IMPROVEMENTS TO THE EXISTING
FEDERAL DEEP-DRAFT NAVIGATION PROJECT

Department of the Army
New England Division, Corps of Engineers
Waltham, Massachusetts 02254

April 1983
(REVISED MARCH 1984)

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ENVIRONMENTAL ASSESSMENT
PROPOSED NAVIGATION IMPROVEMENTS

Portsmouth Harbor and Piscataqua River
Maine-New Hampshire

INTRODUCTION.

Description of Existing Federal Project and Historic Summary of Authorization. The Federal navigation project at Portsmouth Harbor and the Piscataqua River, Maine and New Hampshire consists of a channel 400 feet wide with additional width at the bends and 35 feet deep below Mean Low Water (MLW) from naturally deep water in Portsmouth Harbor to a point about 1,700 feet upstream from the Sprague/Newington Dock; a 950-foot turning basin above Boiling Rock and an 850-foot turning basin at the upstream limits of the project; a channel 100 feet wide and 6 feet deep at MLW from Little Harbor through the Rye-New Castle Drawbridge northerly between the mainland and Leachs Island to deep water near Shapleigh Island; and a channel 75 feet wide and 6 feet deep at MLW up Sagamore Creek with an anchorage 6 feet deep and 3 acres in area in Sagamore Creek.

* The present improvement study was authorized by a U.S. Senate Resolution adopted on 23 April 1970, which requested a determination in the advisability of making improvements to the existing project. On 23 June 1976, the U.S. Senate provided funds for the first stage in the development of a feasibility study and environmental investigations to commence on 1 October 1976. *

*Asterisks denote changes from previous report. Rev. 3/84

I. PURPOSE AND NEED FOR ACTION.

1.00 At the time the present study was initiated the channel users indicated that there were three areas along the existing channel in need of immediate improvement to ensure the continued safety of the existing and projected vessel fleet. These areas, shown in Figure 4 of the Feasibility Report, are discussed below in the order in which they would be encountered by an inbound deepdraft vessel. Deep-draft vessels with drafts in excess of 27 feet only enter or leave the river at high tide.

1.01 When a vessel enters the harbor and channel the first navigation difficulty encountered is in the vicinity of Henderson Point, labeled as AREA-3 in Figure 4. In order to navigate the turn in the channel around Henderson point, a vessel must begin to turn at Sullivan Point. If the turn is started too late, the swift current in combination with the operating speed of the vessel could force the vessel into Pierce Island. This situation is aggravated further by a back eddy which runs off the west bank of Seavey Island at Henderson Point and travels across the channel towards Pierce Island. If the turn is begun before Sullivan Point, the stern of the vessel could be forced into the ledge located in Area 3.

1.02 In order to alleviate this problem, this study is evaluating the feasibility of removing the ledge forming the southerly channel limit directly across from Henderson Point to provide a width of 550 feet. If this is done it will allow inbound loaded vessels to begin rounding Henderson Point sooner, thereby assuring a safer route. It will also make the turn around Henderson Point by outbound vessels easier and safer.

1.03 The second problem area encountered by an inbound vessel is in the area between the Memorial Bridge and the Maine-New Hampshire Interstate Bridge, labeled as AREA 1 (Figure 4). Just prior to approaching this area with a large vessel, the pilot contacts the operators of both bridges via radio in order to get them to raise the bridges. This communication takes place when the vessel is near the Naval Shipyard, the last place it can be turned around before its transit under the bridges. It is considered necessary to lift both bridges simultaneously to guard against any last-minute malfunctions. The Interstate Bridge is required to remain in the up position for an average of 22 minutes to allow for the passage of a deep-draft vessel. Once the vessel is between the bridges, manuevering becomes very difficult.

1.04 Because of the swift cross currents, the inbound vessel must be kept close to the northerly channel limit near Badgers Island in order to be properly aligned for its approach to the Interstate Bridge. This side of the channel is bordered by ledge rock. The vessel is then headed toward the Interstate Bridge opening at a skew of approximately 30 degress in order to keep the vessel running parallel to the current. In the event the Interstate Bridge develops operational difficulties or if for some other reason a large vessel has to turn around between the bridges the

probability of the vessel being forced aground or ramming the Interstate Bridge would be high. In view of the strong currents and the change in tide level a vessel going aground in this area would strike ledge or becomed wedged between the channel limits and could split open. Cargo released in this area would be quickly dispersed with no chance of recovery or containment.

1.05 In order to minimize the risk of a vessel transiting Area 1 (Figure 4) this study evaluated the feasibility of widening the existing 600-foot channel to 1,000 feet. This would entail the removal of ordinary material and ledge rock from the northerly channel limit, directly across from the New Hampshire State Port Authority. This widening would also allow loaded inbound vessels using the New Hampshire State Port Authority and Granite State Minerals docks to be safely turned before berthing. In conjunction with the widening of this area the study is also evaluating widening the northerly portion of the channel by 100 feet adjacent to Badgers Island. This improvement would allow vessels to make the turn around Badgers Island without the risk of hitting ledge or being forced across the channel by cross currents during both inbound and outbound trips.

1.06 The third problem area encountered by an inbound vessel is at the head of the Federal channel, designated as AREA-2 (Figure 4). This area is normally used to turn vessels around before berthing at the Sprague/Newington Terminal. At the present time the width of the turning basin is restrictive making maneuvering in the area very difficult and hazardous. The potential for a grounding accident resulting in extensive physical and environmental damage is significant.

1.07 The dredging would be performed under a private contract with the Government. The following table gives a breakdown of the quantity of ordinary overburden material and ledge rock that would need to be removed from AREAS 1, 2, and 3 in order to provide the improvements described above.

QUANTITY ESTIMATES

AREA	ORDINARY MATERIAL CUBIC YARDS (predominantly glacial till)	LEDGE ROCK CUBIC YARDS	TOTAL CUBIC YARDS
1	194,000	278,000	472,000
*2	117,000	176,000	293,000
3	34,000	27,000	61,000

*These preliminary figures are based on an assumed breakdown of 60% ledge and 40% ordinary material.

* 1.08 Alternative disposal sites considered for dredged materials from Portsmouth Harbor may be categorized as within harbor, upland and *

*Asterisks denote changes from previous report. Rev. 3/84

* ocean disposal. Within harbor sites considered include the New Hampshire State Port Authority and Pepperell Cove sites; upland sites considered include New England Tank Industries, Pease Air Force Base and Iafolla Industries. Potential ocean disposal sites considered include the Isle of Shoals, Gunboat Shoals and Rye Ledge area, New Hampshire, Portland and Cape Arundel sites in Maine and Foul Area in Massachusetts.

1.09 The disposal site which is seen to have the greatest economic benefit is the New Hampshire State Port Authority (NHSPA). However, the site is currently a non-permitted disposal area with several environmental concerns. Consequently, the filling of these areas are subject to the public review process and are dependent upon receipt of Federal and State permits. A permit application with additional engineering and environmental information is being prepared by the NHSPA as part of the permit process. At this time a permit application has not been submitted. Therefore the recommended disposal area for the dredged material is at the Foul Area, an ocean disposal site. *

1.10 Dredging Schedule. A sixteen month continuous dredging period is necessary in order to maintain an efficient cost/benefit ratio. It is believed, that the splitting of the dredging operation to only a four month period from mid-November to mid-March would not significantly reduce impacts or effects to migrating fish species. The areas to be dredged are located out of the main channel proper. Therefore would not inhibit fish movement. It is estimated that a total of 533,000 cubic yards of rock, sand and gravel will require excavation and blasting to accomplish the intended navigation improvements.

*Asterisks denote changes from previous report. Rev. 3/84

II. ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.00 No Action. The no action alternative would keep the status quo condition of an unsafe channel for larger vessesls.

2.01 Adverse Aspects of No Action. The "no action" alternative would have several effects, both direct and indirect. This alternative would ensure continuation of present navigation conditions. Present operating costs for existing vessels would either remain at current levels or would increase. These costs do not compare favorably with operating expenses of newer larger vessels. Other better developed ports may have to be used to receive and distribute products transported by the newer larger vessels. Industries currently based in Portsmouth could choose to relocate to these better areas. The "no action" alternative could also fix a ceiling level on the potential volume of incoming raw materials and, as the existing vessel fleet becomes old and obsolete, safe navigation of the river would become a more exacting task.

* 2.02 Beneficial Aspects of No Action. There are no beneficial aspects of a no action alternative. *

2.03 Rejection Reasoning of No Action. The potential adverse impacts of the "no action" alternative (existing unsafe conditions) are greater than the beneficial aspects in terms of overall public interest.

* 2.04 Dredging Plan Descriptions. Alternative dredging plans considered include:

Plan A - Widening Areas 1 and 3.
Plan B - Widening Areas 1 and 3 plus the turning basin in Areas 2.

All of the dredging plans carry similar environmental impacts. Plan A, the selected plan, will involve the modification of approximately 11.5 acres of subtidal and intertidal aquatic bottom habitat. Area 1 will entail dredging and blasting to create an additional 9.6 acres of maneuvering area and Area 3 will be expanded by approximately 1.9 acres. Plan B would require excavation of the most amount of material. Impacts associated with dredged material disposal would be a temporary and local increase in suspended solids and low releases of certain constituents to the water column. Since the material exhibits low concentrations of chemical contaminant constituents, disposal at the NHSPA or an ocean site should not produce any adverse effects on any marine organisms. Federally listed endangered and threatened species which may use the general areas where the dredge and dump sites are located would avoid the operations. Disposal activities would not jeopardize continued existence of the endangered populations in the area of their food species.

2.05 Non Structural Alternatives. The nonstructural alternatives would eliminate the need for dredging and disposal and would, therefore create minimal or less environmental effects than would result should the proposed navigation improvements be carried out. *

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* Multiple Ports. Larger vessels bring full loads into Boston and Portland and Rhode Island, then transship partial loads to ports such as Portsmouth, Gloucester, Salem, etc. Multiple operations are already being utilized in Portsmouth to some degree. Additional use appears to be uneconomical would not alleviate the hazard conditions which this study seeks to resolve. *

2.06 Alternative Dredging Methods. Means of dredging considered were bucket and scow and hydraulic. The use of hydraulic pipeline dredging may be suitable for specific sections of the project where on-land disposal is accessible within a short distance and not an obstruction to navigation. Hydraulic dredging may be impaired because of the difficulty in safely anchoring long pipelines in the strong tidal currents of the project.

* 2.07 Dredged Material Disposal Options. Alternative disposal sites considered for dredged materials from Portsmouth Harbor may be categorized as within harbor, upland and ocean disposal. Each of the possible disposal alternatives would have some environmental impact, whether in the ocean, on land, or in diked disposal areas near the waterfront. The major concerns are potential for impacts on identified commercial marine resources and potential for addition to general low-level deterioration of the overall ocean resources.

2.08 Within Harbor Sites.

(a) The New Hampshire State Port Authority (NHSPA). The New 8ampshire State Port Authority (NHSPA) has expressed an interest in receiving the dredged material to fill certain intertidal and subtidal property for expansion of its existing facilities. The Port Authority Site(s) represents the plan which maximzes National Economic Development (NED). Approval for filling the site must be obtained from various State agencies and the Army Corps of Engineers under its regulatory authority. Additional engineering and environmental information would be required as part of this permit process. Therefore, use of this site is conditional pending the formal NHSPA application and the review process and approval by the regulatory agencies. Disposal at the NHSPA could result in the elimination of approximately 15 acres of intertidal and subtidal aquatic habitat. The Cutts Cove site could involve filling of 10 acres of mud flats including 0.6 acres of saltmarsh.

The applicant may be required to take appropriate practicable steps to minimize any potential adverse impacts of the discharge into the aquatic ecosystem. The filing of aquatic habitat is controversial and the Federal Resource Agencies have expressed opposition to the filling of the Cutts Cove site. The applicant is presently reviewing mitigation measures for the loss of inter and subtidal habitat.

The action would eliminate the existing limited recreational value the property provides. It would also change the aesthetic perception of the property and surrounding area from open space to industrial land use. *

*Asterisks denote changes from previous report. Rev. 3/84

* The economic value of the site would be improved for the State of New Hampshire through its Port Authority and for the city of Portsmouth.

(b) Pepperell Cove Site. Another in-harbor disposal area identified was at Pepperell Cove where the Kittery Port Authority in the past has stated an interest in developing a wave break between Fishing and Gooseberry Islands to provide additional protection to the mooring area. Placement of the rock material upon existing rocky shoals between the island would limit damage and disturbance to epifaunal community on the existing rocky shoal. Past studies have indicated the breakwater not to be economically justified. Additionally this area could only accept a small portion of rock from the project and a second site would be required for the large majority of the material.

2.09 Upland Sites

(a) New England Tank Industries. Only a small area is presently available for dredged material placement. Local residents in the town of Newington objected to placement of the material at this site. This site may be the least sensitive environmentally but has significant social impacts and is no longer a viable alternative.

(b) Pease Air Force Base. This option involves three small sites all of which would require filling of wetlands. The size of the sites, transportation and rehandling logistics render this alternative less economical and feasible than other sites. Ecological impacts identified are the filling of wetlands, possible adverse effects to groundwater supplies, and traffic and noise associated with hauling activities.

(c) Iafolla Industries. The firm is a sand and gravel and rock crushing operation located in Portsmouth, New Hampshire. As with all upland sites significant costs result with the rehandling and transporting of the material. Environmentally, this option would rank high considering that the dredged materials would be stockpiled in an existing sand and gravel pit resulting in little or no adverse effects. However, salt intrusion into surface and groundwater supplies could pose a problem as could the impacts associated with the movement of the material to the site.

2.10 Ocean Disposal Potential ocean disposal sites considered include the Isles of Shoals (Historical Disposal site), Gunboat Shoals and Rye Ledge areas in New Hampshire, Portland and Cape Arundel sites in Maine and Foul Area in Massachusetts.

Disposal at the identified ocean disposal areas would have some, though minimal, impacts on water quality and local habitat. The relatively clean nature of the sand, gravel, and rock would serve to minimize impacts. The Foul Area, Portland, and Cape Arundel sites could accept the clean sediments to be dredged from the Portsmouth project. The *

*Asterisks denote changes from previous report. Rev. 3/84

* Cape Arundel disposal site is within State waters and would require approval from State regulatory agencies. The Isle of Shoals dumping ground or other areas along the New Hampshire coast are not designated disposal areas. *

(a) Isles of Shoals The historical disposal area for Portsmouth harbor dredge spoils has been the Isles of Shoals dumping ground centered about three nautical miles east of the Isles of Shoals. This site was last used in June 1971 when 39,160 cubic yards of shoal material was removed from the channel in the vicinity of the Simplex Dock, using a Government hopper dredge. Sediment distribution for this area is found also in the Portsmouth Shipyard Dredging Study for the Navy in 1978 and the predominant bottom material is sand and gravel and ledge outcrops. Drifter studies were also performed on the currents near the Isles of Shoals and the net drifter patterns are westerly and southerly. These drift patterns are indicative of the circulatory tidal currents within the Gulf of Maine.

The Isles have traditionally supported an early winter herring fishery, as well as a shrimp fishery. The State of Maine has closed the shrimp fishery due to the declining shrimp populations. Lobsters, gray sole, and various bottom-dwelling fishes are also important to the local fisheries. Gill netting and some trawling takes place within the dump grounds.

The waters surrounding the Isles of Shoals are clear, deep and relatively pollution free. They support a rich abundance of aquatic life and form the basic trophic level in the food web upon which the commercially and recreationally important finfish and shellfish industries depend. Cornell University and the University of New Hampshire cooperatively operate the Shoal Marine Laboratory on Appledere Island. This nationally recognized educational program depends in part upon the maintenance of a high quality surrounding marine environment.

The Isles of Shoals are considered highly sensitive biological areas. A wide diversity of organisms have been observed and identified, including 256 invertebrate species, 139 algae species, 49 fish species, and 145 bird species, as well as mammal species, namely, whales and harbor seals. Adult and young harbor seals frequent the Isles in early spring; whales have been observed on the eastern side of the island during migration. The vicinity of the Isles of Shoals out to a distance of three miles from the archipelago was nominated for "marine sanctuary" status. Baseline environmental data on the disposal site is contained in the Disposal Area Monitoring System (DAMOS) Annual Data Monitoring Report - 1978 and Supplement C, May 1979. (11)

* (b) Habitat Enhancement There is some potential to develop additional fish and lobster habitat at selected New Hampshire coastal areas by placing rocky material on existing rocky bottom. Placemen on a sandy bottom would interfere with fishing operations and is not acceptable. *

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* Placement on existing rock bottom would have minimal beneficial effects in enhancing habitat.

(c) Cape Arundel This disposal site is located 3.1 miles south southeast of Cape Arundel, Kennebunkport, Maine. It is designated by EPA as interim disposal site. This site was used in the 1975 maintenance dredging operation of the Kennebunk River and again in 1977 for the dredged material of Cape Porpoise Harbor. The dredged material would be disposed of by point dumping at the center of a circular area measuring 500 yards in diameter. Point dumping will be employed to ensure that the bottom area affected by sedimentation will be kept to a minimum. However, the site is considered a dispersal area, therefore, some suspension and reworking of the finer grain sands and any organics may be expected.

The disposal site can be considered a high energy environment due to the absence of fine sediment. It may, however, offer some protection for containment of dredged material. A natural depression in the bottom appears to be partially enclosed by a horseshoe-shaped ledge rising six to eight feet above adjacent bottom areas. Without detailed sounding studies to obtain accurate bottom profiles combined with monitoring of current velocities and directions, it is not possible to estimate the behavior and movement of the dredged material after deposition. There have been no accurate estimates made of current patterns in the disposal area, although the counter clockwise current experienced in the Gulf of Maine would be expected to dominate. Bottom substrate at the site and surrounding seafloor is composed of ledge and coarse gravel.

The finfishery is concentrated several miles east of the area around Jeffrey's ledge. The major species of commercial importance in this area includes the Silver Hake (Merluccius bilinearis), Atlantic Cod (Pollachius virens), Haddock (Melanogrammus anglefinus), American Pollack (Pollachius vivens), White Hake (Urophycis tenuis), Red Hake(Urophycis chuss), and Cusk (Brosme brome). Other inhabitants of the area include the Atlantic Mackerel (Scomber sombrus), Redfish (Sebastes marinus), Atlantic Herring (Clupea harengisharengus), Northern Sand Lance (Ammodytes dybius), Fourbeard Rockling (Enchelyopus cimbrius), American Plaice (Hippoglossoides platessoides), and Cunner (Tautogolabrus adspersus). The spawning characteristics of the fish show that there may be spawning activity from one species or another year round with emphasis on early summer and autumn.

A shrimp fishery is centered around Jeffrey's Ledge with highest catches recorded in early winter. Although some inshore movement of shrimp in the winter has been noted, offcoast fishing activity occurs principally in the Casco Bay area, well north of the proposed ocean disposal site.

The lobster catch is largely taken from in and around the Kennebunk River during the summer months. Lobstering comprises the major portion of the commercial fishing industry in the Kennebunk and Kennebunkport region. *

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(d) Portland, Maine The site is 6 nautical miles east of Cape Elizabeth, at 43° 34'06"N, 70° 02'W. It is designated by EPA as an interim disposal site. The U.S. Environmental Protection agency has recently completed a Draft of Environmental Impact statement for the disposal site prior to making a determination in its designation as a regional dredged material disposal grounds. (21) This site is located approximately 56 nautical miles north, northeast of Portsmouth.

Sediment corings, side-scan sonar mapping, benthic sampling and current measurements have been completed at this site and monitoring continuing of the on-going maintenance and permit dredging actions.

* (e) The Foul Area in Massachusetts presently has an indefinite interim designation status pending the development of an EIS for final designation. The area has a history of being used for the disposal of industrial wastes and dredged material. The currently designated site is available only for the disposal of dredged material that is found to be in compliance with EPA's Ocean Dumping Criteria (Section 102, 40 CFR 227). The Foul Area is approximately two miles in diameter and is located 22 nautical miles east of Boston in Massachusetts Bay, and 44 miles south, southeast of Portsmouth, with its center at latitude 42° 25'7°N longitude 70° 34' W. The site was recently used for Federal and private maintenance dredging during 1982 and 1983 in the Boston Harbor area in which approximately 1 million cubic yards of material was dumped.

Physiographically, the site lies within the Stellwagen Basin, an elongate depression over 20 miles in length which trends northwest-southeast. The dump site is situated in a 300-foot depression which is separated from the Stellwagen Bank area on the east by a 200-foot high slope.

Surveys have identified the natural bottom of the Foul Area as being rather flat and featureless. Also, a variety of disposed objects have been disclosed by bethymetry, including sunken vesssels, munitions, concrete casings, metal drums and other debris along with dumped harbor sediments that are scattered throughout the area. A study by the New England Aquarium (24) of an actual dumping operation observed that a significant portion of the discharged material settled rapidly to the bottom.

Bottom currents in the basin and at the Foul Area have been investigated by the New England Aquarium and others. Current monitoring carried out by the New England Aquarium in 1974 recorded mean bottom currents between 0.13 and 0.16 feet per second (4-5 cm/sec), and maximum bottom currents averaging 0.5 feet per second (16 cm/sec). These values indicate that currents are low and insufficient for any significant spoil dispersal. The New England Aquarium study also concluded that the direction of bottom currents are variable depending on the season with average seaward trends as follows: *

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*

Winter - Towards southeast Summer - West

Spring - Towards South or West Fall - North

Biological data on the Foul Area has been collected in a major effort by the New England Aquarium in 1976 as part of a study of polluted materials in Massachusetts Bay. Organisms that typically inhabit sediments of clayey silt composition were detected in the sampling. Samples showed low abundances and high diversities of marine invertebrates. Since dredged material disposal has been a continuing activity in the area, the types and quantities of organisms found represent a disturbed but functioning benthic community. The most dominat organisms were the polychaete worms, Spio filicornis and Heteromastus filiformus. In addition to polychaetes, various mollusks, shrimp, flounder and starfish were found at the site. The types of organisms observed at the Foul Area are similar but less in number than other nearby areas in Massachusetts Bay. (24) Although the Foul Area has a high diversity of organisms, the low abundance leads one to believe the area does not add a large amount to the overall productivity of Massachusetts Bay.

2.11 Impacts to Open Water of Ocean Disposal Sites The open water and ocean disposal sites considered by this environmental assessment except for Gunboat Soals and Rye Ledge areas have been used for maintenance dredging operations both Federal and private permit actions. Dredged material will be disposed of by point dumping within the site, which is marked by a buoy. Point dumping is routinely employed to ensure that the bottom area affected by sedimentation will be kept to a minimum. A gradation of material should be anticipated, with the large fraction (sand) remaining close to the point of dumping and proportionally finer material settling at increasing distances from the disposal site.

Disposal of dredged material has associated with it a turbidity increase which may affect all levels of biota. Increases in suspended solids would affect fish populations to an extent largely dependent upon the life cycle stage, with eggs and larvae more susceptible than adults who may move from an area of increased turbidity. Of the benthic macro-invertebrates, bivalve mollusks may be most resistant to suspended solids increases as certain species can tolerate up to 600 ppm. Turbidity would have a short-term effect on the aquatic environment. Other short-term effects would include a decrease in light penetration and phytoplankton as well as, the smothering of pelagic and benthic organisms. The magnitude of any long-lasting impacts, such as benthic fauna reduction, would be insignificant in view of project benefits and the overall marine resources * of southern Maine, New Hampshire and Massachusetts.

2.12 Alternative Plans of Improvement. Other environmental aspects of the selected plan and alternative detailed plans are discussed in the main report under the sections entitled Development of Alternative Plans and Presentation and Evaluation of Detailed Plans.

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III. ENVIRONMENTAL CONSEQUENCES

3.00 Harbor Sediments. Surface grab samples were taken by the Corps of Engineers in early 1977 and 1979. Preliminary classifications of the harbor sediments, based on visual determinations, are found in Appendix 5. The sediments within the project area are mostly sands and gravels. Some clayed sandy gravel mix occurs at Area 1. All the samples consisting mainly of gravel also contained algae growth and exhibited a marine odor. The algae and odors may be due to the influence of the municipal and industrial discharges along the estuary that keep the nutrient levels sufficiently high enough to stimulate algae growth.

3.01 Gravel deposits in the channel are characteristic of a high energy or, in the case of Portsmouth Harbor, high current velocity. Pockets of silt, fine sands and mud have been observed along the sides of the navigation channel just offshore of the Newington Generating Station. (21) The predominant feature of this estuary is the rocky foundation of the channel which does provide natural catch pockets for the finer sediments. Massive bedrock outcroppings are typical of the estuary. (34)

3.02 A grain size analysis was performed on the Portsmouth Harbor sediments in March 1971 and the gradation curves show that most of these grabs were of medium sand to gravel in content.

3.03 Dredging. It is expected that a clamshell bucket dredge would be used in the Piscataqua River estuary. The dredged material will be loaded on scows for disposal.

3.04 Potential impacts of dredging operations with a clamshell bucket on the water quality of the Piscataqua River estuary are short-term only and include increased turbidity; the temporary disturbance and release to the water column of nutrients, heavy metals, oil and grease, and other potentially polluting materials in the sediment; and the minor release of hydrogen sulfide odors.

3.05 The increased turbidity would be short-term and minimal due to the coarse nature of the sediments and the dispersive nature of the strong currents in the estuary. Because the currents in the Piscataqua River are strong, a plume of turbidity will probably be carried beyond the immediate vicinity of the dredging action.

3.06 Temporary dissolved oxygen reduction could occur in the surrounding waters during dredging due to the suspension of organic detritus, fecal pellets, and other natural organic compounds. This reduction would be minimal and short-term due to the high current flow and good mixing in the project area.

3.07 Since the sediment to be dredged is relatively clean with presumably low levels of nutrients, heavy metals, oil and grease, and

other potentially polluting materials, relatively small amounts of these materials would be introduced into the water column during dredging. Such a release would have minimal impact.

3.08 Finfish and the larger macro-invertebrates such as crabs can avoid unfavorable turbidity. But, larvae and juveniles may be less able to flee the area and be more susceptible to turbidity effects and smothering. A study of dredging and dredge disposal in Chesapeake Bay revealed no difference in the abundance and distribution of adult fish and fish larvae in areas contiguous to dredge and disposal areas. Also, fish placed in cages at the dredging site had the same mortality as control fish. (14) Ingle (20) demonstrated that a suspension of dredged solid materials caused mortality to fish in a laboratory test, but could not ascertain any mortality during an actual dredging situation. Because of the intermittent nature of normal dredging operations and disposal, and the high dilution available in almost any open water operation, it is generally improper to apply water quality criteria based on chronic continuous exposure to normal dredge and disposal operations.

3.09 Sherk (35) suggested that the lack of correlation between suspended solid studies and biological changes may result from the fact that the biological response is due to the shape, size, density or number of particles rather than the concentration of suspended solids. In addition, surface coatings and sorptive properties may also be more important than concentrations. It was concluded that concentration standards may be insignificant from the standpoint of assessing biological effects of suspended solids.

3.10 Dredging could also release nutrients in the sediments to the water column. These nutrients could result in a phytoplankton bloom, but decreased light transmittance due to turbidity and the smothering of benthic algae would act to decrease photosynthesis. The effects of nutrients and turbidity on phytoplankton are usually temporary and localized. The areas affected by dredging and spoil disposal are a small part of widely distributed populations.

3.11 It is possible that heavy metals in sediments could be released to the water column during dredging. But, the physical, chemical and biological processes involved are complex and poorly understood. Some evidence has been presented that heavy metals would not be released when anaerobic sediments are suspended, but rather metals in the water column are stripped by absorption to sediment particles. (16) It has been shown that the amount of transfer of chemical constituents from sediments to the water column is not dependent on the concentrations in the sediments as determined by bulk analysis, in any simple discernible manner. (29) Many marine organisms have been shown to concentrate heavy metals, especially filter feeders and organisms near the top of food chains. Oysters, hard clams, and soft shell clams can accumulate heavy metals against a concentration gradient. (30) Studies have shown a correlation between cadmium concentrations in tissues of fish species and the proportions of crusta-

ceans in their diet. (30) Heavy metals are generally more toxic and damaging to the early life stages of aquatic organisms. Oyster larvae are known to be killed at low concentrations of mercury, copper, and zinc. Arsenic and chromium were found to be considerably less toxic. (17) The concentration of metals in polychaetes collected from two different areas did not reflect the differences in the metal content in the sediments. (8) Trace metals in the sediments may not be chemically available to organisms in many situations, and especially in cases where coarse sediments are involved such as with the proposed dredging action. The
* proposed action should remove material that contains minimum amounts of pollutants. Therefore impacts on the water column would be insignificant.

3.12 Blasting Impacts. Removal of ledge rock and boulders (Area 1 & 3) would require drilling and blasting with dynamite. The lethality of an explosive is directly related to its detonation velocity, charge weight and density of material to be blasted. Most explosive in a rock or clay * substrate produces low-level over pressures with, subsequent reduced lateral or vertical pressure charger. The confined nature and timing of the detonation would aid in minimizing the overall impacts. Some precautionary measures that could be used include the use of warning charges (dynamite or pulsed sonic or electrical currents) outside the perimeter of the proposed work area to scare away any large fish schools or mobile invertebrate animals; scheduling of blasting to avoid peak
* periods of fish migration and spawning. The location of the proposed dredging areas (off to the side of the main channel) will also lessen the impacts to fishery resources and especially spawning runs. It should be emphasized also that the type of blasting that will be conducted is of the "fracture type" as opposed to the "removal" or open water blasting operations. The technique employed for excavation of submerged ledge areas is very similar to that used in routine highway construction and consist of drilling bore holes down through the rock the explosives are then placed within these borings. This type of blasting technique has very minimal horizontal amplification. In fact the overlying waters act as a buffer or blanket which prohibits or reduces any horizontal impacts resulting in a vertical crumpling or collapse of the rock formation seen with building demolition operations.

3.13 In general, it has been reported that the effects to fish from open water explosions is not proportionately related to the size of the charge (Coker and Hollis, 1950). It is apparent and conceivable that the effects of many small blasts would be similar to the effects of a few large detonations. The factors that were found to be important in the damage to fish were the rate of speed of the pressure pulse generated by the explosion and the peak pressure. For dynamite types of explosives, abrupt shock waves attain nearly instantaneous maximum intensities and would have lethal threshold peak pressures of 40 to 70 pounds per square inch (Hubbs and Rechnitzer, 1952; U.S. Corps of Engineers - N.Y. District). *

*Asterisks denote changes from previous report. Rev. 3/84

* 3.14 The propagation of the primary shock wave, negative pressure waves and secondary, or reflective, waves is a complicated phenomena that is highly dependent of the bottom characteristics and topography. Hubbs and Rechnitzer found that the peak pressure dissipated expontentially with distance away from the blast. In addition, the detonation of a small charge of dynamite does not necessarily result in lower fish kills in proportion to the weight of the charge. The peak pressure does not follow a linear relationship to the weight of the charge, but varies to the one-third power of the charge size. This information supports the findings that fish kills outside the immediate blast area are normally restricted to a few hundred feet (Alpin, 1947; Chesapeake Biological Laboratory, 1948; Gowanlick and McDougall, 1945; Coker and Hollis, 1950). Coker and Hollis reported fish kills for large explosions to be generally within 300 feet, but, recorded some mortality up to 600 feet from the blast.

3.15 The only applicable and significant finding on the blasting of large quantities of rock has been reported on by Thompson (1958). In a single detonation (many times larger than proposed for this project) nearly three million pounds of explosive was employed to clear rock. It was concluded that the fish kill was generally confined to within one half mile of the blast. It should be noted that the number of fish killed during an explosion and reported on by trained observers, generally ranged in the ten's to hundred's of fish. Rarely was there fish mortality above a thousand and never was the kill considered massive or significant to the survival of the population.

3.16 Damage to individual fish caused by explosions are mainly internal. Fish with swim or air bladders are the most vulnerable to injury. Often the strong and rapid compression and negative pressure forces cause the air bladders to rupture. Blood clots, gill damage, and injury to the abdominal cavity and organs are also common damages. (Coker and Hollis, 1950; Fitch and Young, 1949; Alpin, 1947; Chesapeake Biological Laboratory, 1948.) Susceptibility of fish with air bladders also varies according to the physiological structure of the fish (Fitch and Young, 1948). *

3.17 It is anticipated that the amount of blasting to be performed would not result in any significant loss of fish and lobster and would not significantly affect the food web or natural productivity of the immediate area. Further, no significant loss of biologically productive habitat area would occur as a result of the proposed blasting activity.

* 3.18 Disposal of Dredged Material at the NHSPA Site. A principal impact of disposal is the loss of aquatic habitat. The three disposal sites considered include: the 10 acre Cutts Cove site, one or two acres of rocky intertidal, and subtidal habitat at the proposed new pier site, and approximately 3 acres of rocky, sand, and gravel intertidal and subtidal habitat characterizing the northern extension area located to the river side of the railroad spur between the National Gypsum and the NHSPA.

The Cutts Cove area serves as a resting and feeding ground for various species of waterfowl and shorebirds. Approximately 0.6 acres of salt marshes fringe the area to the west and northwest with *Spartina alterniflora* and *Spartina patens* dominating. Another patch of salt marsh *

*Asterisks denote changes from previous report. Rev. 3/84

* exists along the southern shore. The soft-clam (Mya arenaria) was collected in areas adjacent to all three Spartina areas. Mytilus equlis (blue mussel) form bars across the opening into the basin in the southeastern reaches (28). A more detailed discussion regarding the ecology of the tidal basin is presented by Normandeau Associates (24) in their 1976 environmental statement prepared in association with processes dredging operated by the Navy. Conclusions given in that report indicated that site preparation and disposal activities at the Port Authority site would result in the resuspension of silts and clay particles, thus causing a temporary localized reduction in water quality. This material, in the absence of a cofferdam, would be transported into the Piscataqua River and North Mill Pond. The loss of the site would reduce the amount of biologically productive tidal flats along the shores of the river. The land creation project described here will decrease the contribution of salt marshes and mudflats to the aquatic ecosystem in the Piscataqua River estuary by decreasing the acreage of aquatic intertidal and subtidal habitat.

The applicant (State of New Hampshire) will contact Federal and State permit agencies when preliminary engineering plans are complete During the permitting review process an evaluation of environmental impacts will be undertaken. State and Federal wildlife agencies have expressed opposition to the filling of the Cutts Cove area. The State is presently reviewing mitigation measures to reduce the loss of inter and subtidal habitat.

3.19 Ocean Disposal of Dredged Material The sediments of the Isles of Shoals, Portland, and Cape Arundel dumping ground are composed mainly of rock outcrops and sands and gravels. They are compatible with the dredge materials from Portsmouth Harbor which are mainly composed of relatively clean sands, gravels, and cobble. The sandy surface would become less attractive to deposit feeders unless amphipod colonization takes place. Any cobbles on the surface of the spoil would be available for colonization by barnacles and other epifauna. The Boston Foul Area disposal site is characterized by soft muds and therefore the rock material and coarse grain sands are not as compatible. Because of the depths involved and soft sediments the rock would not support as productive an epifaunal growth as the other three sites. *

The EPA 103 Ocean Disposal and 404 Guidelines (Jan. 1977 and Sept. 1979 Fed. Register) require that consideration be given to preventing or minimizing degradation of existing water uses at proposed disposal sites. The specific objectives are to avoid disposal actions which:

1. Significantly disrupt chemical, physical and biological aspects of an aquatic ecosystem.

2. Significantly disrupt the food chain including alterations or decreases in diversity of plant and animal species.

*Asterisks denote changes from previous report. Rev. 3/84

3. Inhibit movement of fauna into, within, and out of feeding, spawning, breeding and nursery areas.

4. Degrade water quality.

Disposal should be minimized wherein this activity results in:

1. Degradation of esthetic, recreational or economic values.

2. Adverse turbidity.

3.20 The Ecological Evaluation of Proposed Discharge of Dredged Material into Ocean Waters, issued jointly by EPA/COE outlines the bioassay test procedures that must be followed, except in specific cases. The Corps of Engineers' grab samples show that the sediments in the project area are composed mainly of sand and gravel, typical of the high energy areas within the project. Such sediments are excluded at the discretion of the District Engineer from the bioassay test requirements dictated by Section 103, PL 92-532.

3.21 Beneficial Effects. The Piscataqua River and Portsmouth Harbor navigation channel is of great importance to the local economy. Maintaining commerce movement is critical to the health of the regional economy. Channel improvements reduce the possibility of an oil spill.

* 3.22 Related Effects. Using the spoil for fill at the New Hampshire State Port Authority would allow for the expansion of the area's cargo handling capability. This is consistent with the NHSPA goals of providing added shipping capacity to meet expected regional needs. Other sites may also make productive use of the material.

3.23 Project Features Which Mitigate Impacts

(1) Blasting would be scheduled whenever possible to avoid peak periods of fish and lobster migration and spawning. A joint or multiagency observation team will be established to quanitify and report any significant impacts to fishery resources.

(2) Intake locations of adjacent lobster pounds in the Piscataqua River would be identified and marked prior to conducting of blasting operations and arrangements made, if necessary, to provide a continuous supply of cool, clean salt-water to pounds.

(3) Every effort will be made to schedule construction in Area 3 during the months of December through March. This will reduce the impact blasting and dredging might have on fish population and recreational and small commercial boating activity. *

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IV. AFFECTED ENVIRONMENT

4.00 Trends in the Utilization of Portsmouth Harbor. Portsmouth Harbor has shown a gradual rise in waterborne commerce handled from 1969 to 1981. The port is the main distribution point for heating fuels and gasoline for most of New Hampshire. Commodity traffic in crushed stone, scrap steel, salt, and wire cable should continue to increase slowly. There have been problems in bulk shipment handling at the New Hampshire State Port Authority Facility due to limited space.

4.01 Recreational boating facilities along the Maine shore are operating near or at capacity. The Southern Maine-New Hampshire coast has been experiencing continued demand for the area recreational resources.

4.02 The Navy recently dredged an area behind Seavey Island to accommodate larger submarines. Naval ship traffic should remain basically at existing levels.

4.03 Marine Facilities. Portsmouth Harbor serves three basic functions. It is a major commercial port, an important recreational boating facility, and the base for a major U.S. Navy facility.

4.04 The harbor is at the mouth of the Piscataqua River and is the approach to the cities of Portsmouth and Dover, and the towns of New Castle, Kittery, Newmarket, Durham, Newington, and Exeter. Several U.S. Naval activities, including the Portsmouth Naval Shipyard and a regional medical clinic are located on Seavey Island at Kittery. The main channel from the mouth to Newington has a controlling depth of 35 feet. All major waterfront facilities except the naval shipyard are located on the south bank along the lower 4.5 miles of the river.

* 4.05 The 1981 freight traffic through the port was 3,072,000 short tons. Major commodities handled include petroleum products, gypsum rock, steel cable, scrap metal, lobsters, and salt. *

4.06 The port has 20 piers, wharves, and docks. Fifteen are located within the city limits of Portsmouth. The major port facilities and commodities handled are noted in Table 1.

4.07 As noted earlier, the port has considerable traffic in both fish and shellfish. The following is a list of fish and lobster docks in Portsmouth:

Geno's Lobster Pound Dock
LaCava Dock
Marconi's Wharf
City Landing
Portsmouth Fish & Lobster Co.
Shipyard Lobster Wharf

*Asterisks denote changes from previous report. Rev. 3/84

* The port handled 98 short tons in fish in 1981. Shellfish landings are considerable, when one considers that Kittery, in addition to Portsmouth, also has large lobstering operations. Portsmouth Harbor has two excursion boat facilities located at the Viking Wharf and Barker Dock. *

4.08 There are four oil handling facilities in the port. Table 2 gives the names of the facilities and their storage capacity.

4.09 General cargo at the port is usually handled to and from vessels by ships' tackle. Two diesel crawler cranes, capable of 20 ton lifts, when working in tandem are available at the Granite State Dock. There are no facilities in the port for extensive large ship repair. The Barton Machine Shop on Badgers Island makes repairs in fishing and recreational vessels. The Portsmouth Navigation Corporation serves the port with three tugboats with capacities of up to 1600 horsespower.

TABLE 1

MAJOR FACILITIES AND COMMODITIES HANDLED IN PORTSMOUTH HARBOR,

MAINE - NEW HAMPSHIRE

Portsmouth Naval Shipyard -	Build and repair naval craft
Granite State Minerals	Salt
New Hampshire Port Authority -	General and bulk materials
National Gypsum	Crushed rock
Northeast Petroleum -	#2 fuel oil and kerosene
Mobil Oil -	Fuel oil and gasoline
Sprague/Portsmouth	Heavy industrial oils, #6 & 4
Simplex Wire & Cable -	Underwater cable - manufacture & repair
N.E. Tank Imdustries -	JP-4, Aviation gas
Gulf Oil -	#2 kerosene
Union Oil -	#2 kerosene
Sea 3 -	Liquid propane
Sprague/Newington	Import crude oil, #2, kerosene export #4, naptha, #6 - refining

*Asterisks denote changes from previous report. Rev. 3/84

TABLE 2

OIL HANDLING FACILITIES

PORTSMOUTH HARBOR, MAINE-NEW HAMPSHIRE (4)

	Storage Tanks (#)	Capacity (barrels)
Northeast Petroleum Corp.	5	197,600
Mobil Oil	14	550,000
Sprague/Portsmouth	6	277,000
Sprague/Newington	12	358,000
TOTAL	37	1,382,600

4.10 Recreational Boating. As noted earlier, the harbor handles a considerable amount of recreational boating. The vast majority of this boating is accommodated at New Castle and Kittery.

4.11 It is apparent that Portsmouth Harbor plays a critical role in the commercial and recreational elements of the region. The port provides an important source of jobs and taxes and attracts industries to the area who rely on waterborne commerce.

4.12 Hydrology. The Piscataqua River is formed by the confluence of the Cocheco and Salmon Falls Rivers and flows southeasterly for 13 miles until it enters the ocean at Portsmouth Harbor. The entire 13 miles of river is tidal. Approximstely 9 miles from its mouth the Piscataqua receives the flow from Great Bay, a tidal basin of approximately 6,200 acres, and 6 associated tributaries. (2) The Salmon Falls and Piscataqua Rivers form a natural boundary line for the States of New Hmmpshire and Maine.

4.13 The Piscataqua River and the lower Portsmouth Harbor, through which the extensive tidal basin of Great Bay are funneled, is one of the fastest flowing tidal waterways of any commercial port in the northeastern United States. (3) Due to abrupt channel changes and the strengths of flood and ebb currents, hazardous cross-currents and eddies are found in the main channel passing north and east of Pierces and New Castle Islands. The currents are so strong in this area that it would be difficult for any large draft vessel to make the swing without the assistance of a tug. (9) The currents in the back channels are relatively weaker than the currents in the main harbor. The average current velocity at full strength in the main harbor varies from about 2.6 to 4.0 knots, whereas in the back channels the velocity varies from less than 1 to 2 knots. (10) In addition, winds from the southerly quadrants will cause a severe tidal rip at the main harbor entrance, between New Castle Island and Wood Island, at the strength of the ebb tide.

4.14 Ecological studies on the Piscataqua estuary performed in 1970 have determined that the water column is well-mixed throughout the estuary with generally less than a 2°C temperature variation occurring between the surface and water 30 feet deep. (25) Salinity data also indicate that the estuary is fairly well-mixed once spring runoff has subsided. Specifically, salinities in the upper estuary were low during the spring runoff, but as the runoff decreased salinities went up. In June salinities rose to greater than 21 parts per thousand (%) and in July to greater than 28 percent. The well-mixed feature of this estuary is a result of the combination of strong tidal currents and relatively narrow harbor channel which disrupt the thermal or saline stratification.

4.15 The tide at Portsmouth is semidiurnal. The average tidal range for Portsmouth Harbor is 8.4 feet. The average mean spring range is 9.7 feet and the average mean tide level is 4.2 feet. Where the Piscataqua meets the Cocheco and Salmon Falls Rivers the mean tidal range decreases to 6.6 feet.

4.16 Turbidity data is limited for Portsmouth Harbor but depth of visibility studies were performed in 1971. They found the depth of visibility was highest in the harbor and progressed to a lower visibility range in the upper estuary. Readings were generally higher on flood tide. The lowest visibility occurred during spring and increased during summer and fall as the spring runoff subsided.

4.17 Since the Piscataqua is considered the tidal portion of the Cocheco and Salmon Falls Rivers and receives freshwater inflow from the six major tributaries leading into the Great Bay. USGS water resources data for New Hampshire and Maine list yearly discharges for the major tributaries entering the tidal Piscataqua. Freshwater discharges from the Cocheco River are not included in the summary.

4.18 Water Quality. New Hampshire and Maine have an agreement to maintain acceptable water quality in the Piscataqua River by regulating their effluent discharges of the river. The river is designated by the State of New Hampshire as a Class B stream segment and by the State of Maine as Class SB-1. (28), (21), (2)

4.19 New Hampshire Class B waters are acceptable for bathing, other recreational purposes, fish habitat and public water supply after adequate treatment. Maine Class SB-1 waters are suitable for all clean water usages including water contact recreation, fishing, shellfish harvesting and propagation, and fish and wildlife habitat.

4.20 There are a number of municipal and industrial discharges to the Piscataqua River from both New Hampshire and Maine. The three generating stations of Public Service Co. of New Hampshire, (Schiller, Newington, and Daniel Street) account for 99.9 percent of the total flow for industrial sources entering the river from the New Hampshire side. (6)

4.21 The most recent water quality data was collected by the State of New Hampshire Water Supply and Pollution Control Commission in 1976. (10) Dissolved oxygen values ranged from 6.7 - 10.1 mg/l throughout the tidewaters of the Piscataqua River, exceeding the Maine Class SB-1 standards of 6.0 mg/l and within the New Hampshire Class B standards (near saturation at all times). The pH values ranged from 7.5-8.1 throughout the sampling period. Maine Class SB-1 standsrds (6.5-8.0) were exceeded only once during the sampling program. Combined nitrate and nitrite concentrations ranged from 0.04 to 0.50 mg/l, which were well below the EPA standard of 10 mg/l nitrate nitrogen for domestic water supply. (13) Ammonia (NH3) concentrations in the range of <0.10 to 0.22 mg/l consistently exceeded the EPA standard of 0.02 mg/l (as un-ionized ammonia (NH_3)) for freshwater aquatic life. (36) Total phosphorus values exceeded only once the EPA desired goal of 0.10 mg/l in streams or other flowing waters not discharging directly to lakes or impoundments.

4.22 In addition, the New Hampshire Water Supply and Pollution Control Commission (6) reported that coliform counts vary from location to location throughout the Piscataqua River estuary and Portsmouth Harbor. In general, the estuary as well as Sagamore Creek showed coliform counts in the range of 0 to 70 MPN. The State of Maine has set limits of 70 and 240 colonies per 100 milliliters for shellfish and non-shellfish growing areas respectively in Class SB-1 waters. The State of New Hampshire states that Class B waters shall contain not more than 240 coliform bacteria per 100 milliliters.

4.23 In summary, the Piscataqua estuary near the project area of Portsmouth Harbor has a good water quality except for two localized areas in which the coliform counts exceeded New Hampshire standards. Even though there is much industrialization centered around the project area and there is considerable industrial discharge to the Piscataqua, the water quality remains good primarily because of the great tidal exchanges between the estuary and the Atlantic Ocean. This strong semidiurnal exchange has the effect of diluting the pollutant loadings to the point where the water quality is within New Hampshire and Maine standards.

4.24 Salt Marshes. The extent of salt marshes in New Hmpshire is approximately 7500 acres, primarily in Seabrook, Hampton, Hampton Falls, and Rye. Other areas of tidal marsh habitats are spread throughout Great Bay and its associated waters. There are bands of salt marshes along the Piscataqua River in Little Harbor, and Sagamore Creek. (Smith, G. per. com.)

4.25 While a formal survey of the marsh areas was not conducted, plant zones can be described as they are determined by the amount of tidal flooding. Beyond the upland edge of the marsh, on shores with a gradual slope a shrub border develops. This border is absent on steep slopes where the upland forest may overhang the marsh. Bordering the upland edge of the marsh, generally about 0.5m above the marsh on a peaty substratum is the *Panicum virgatum* (panic grass) community, a tussock grassland.

Along the seaward edge of the marsh and bordering the ditches and streams where tidal flooding occurs with every high tide, a band of Spartina alterniflora (saltwater cord grass) is found and is readily recognized by the greater height of the grass than the neighboring communities. Between these two communities is a band of dense grassland consisting of Juncus gerardi (black grass) on the higher elevations and Spartina patens (saltmeadow grass) on the lower elevations. Within these zones are found many depressions or varied sizes and depths. The depressions are shallow and irregularly flooded by tides, the water slowly evaporates resulting in a marked increase in soil salinity. Such areas are termed salt pannes and are either bare or colonized by Salicornia europaea (glasswort) and S. virginica (woody glasswort). In circular bands around the pannes, proceeding outward, are found bands of stunted S. alterniflora, then forbs, then the normal community for the area. When the depression is deep and contains water permanently, Ruppia maritima (pondweed) often colonizes it.

4.26 Finfish. The Piscataqua River and Great Bay estuary provide habitats for a variety of organisms. The rich variety of foods (including isopods, amphipods, and polychaetes) and extensive salt marshes in the coastal areas, provide favorable conditions for survival. Figure 2 of the main report identifies important fishery areas. Thirty-four species were found to inhabit the Piscataqua River and Great Bay during a study for the Newington Generating Station.

4.27 Abundant resident fishes include silverside (Menidia menidia), winter flounder (P. americanus) smooth flounder (L. putnami), tomcod (Microgadus tomcod), and grubby (Myoxocephalus aenaeus), Silversides and killfishes have varying periods of inshore abundance. Lowest numbers of silversides occur during spring and early summer; peak abundance is during late summer and fall. Killfishes exhibit similar seasonal patterns in spring and summer. However, in the fall a general decline in abundance has been noted which is probably associated with movement to deeper estuarine water during cooler seasons. Both adult and juvenile flounder inhabit the eelgrass beds from spring through midsummer. Grubby are generally found in the lower estuary, while tomcod and sticklebacks are more widely distributed.

4.28 Anadromous fishes such as shad (Alosa), smelt (Osmerus mordax), blueback herring (Alosa aestivalis), alewives (Alosa pseudoharengus) and coho salmon (Oncorhynchus kisutch) and Atlantic salmon (Salmo salar) utilize the estuary and spawn in its tributaries. Smelt, followed by alewives and blueback herring, were the most common anadromous fishes captured during the Newington Generating Station Study. Smelt enter Great Bay estuary in late fall and winter and move up and down river channels with the tides. In spring, once ice-out conditions exist, spawning occurs in the tributaries. Adults then return to more saline waters and eventually leave the estuary. Schools of smelt, consisting primarily of young of the year, were abundant throughout the estuary in 1975. Highest numbers (appproximately 1500 per seine haul) were captured during

summer. Alewives and blueback herring enter the estuary to spawn in spring. Alewives ascend tributaries to fresh water, whereas bluebacks may spawn at or just above tide water. Once spawning has been completed, adults of both species return to the estuary and move out to sea. Menhaden spawn in coastal waters and the young develop in adjacent estuaries. The Piscataqua River estuary once provided an important recreational and commercial fishery. There still are important sport fishery resources for striped bass, smelt and bait fish. Mackerel, cod and pollack are abundant in the open coastal areas. The shortnose sturgeon (Acipenser brevirostrum) is a rare and endangered species which has not been observed but may occur in the area.

4.29 Benthic Invertebrates. The occurrence of different populations of benthic organisms is generally related to bottom type. Populations can be defined in terms of the substrates they occupy. Mud-silt bottoms are predominantly inhabited by organisms that burrow or inhabitat various kinds of tubes (infauna). On hard bottom or rocky areas organisms generally live on the exposed substrate, attached or under rocks and shells (epifauna). Another way of describing the benthic fauna is in terms of the community. Certain groups of species occur together more or less consistently.

4.30 A long-term study for the Newington Generating Station has provided extensive information on the benthic invertebrate composition of the Piscataqua River. The organisms collected reflect a variety of substrate types, ranging from fine silt to sand and cobble. Dominant species found in the Piscataqua River and Great Bay are listed in Table 3. Overlapping of species does occur between bottom types. (15) Ampeliscan communities are common in sandy-silt bottoms. Nephtys-Nucula communities also occur on silty bottoms. The amphipods, Ampelisca abdita and A. vadorum and the cirripede Balamus crenatus have been found to be the most abundant benthic organisms in the Piscataqua sediments. They do, however, exhibit seasonal and annual fluctuations in relative abundance. Other abundant organisms are the amphipods, Phoxocephalu holbolli, Microdeutopus gryllotalpa, Unciola irrorata, Trichophoxus epistomus, and Corophium acherusicuminsidiosum; the polychaetes Nephtys caeca and Lumbrineris tenuis; the bivalves, Tellina agilis, Ensis d rectus, Mya arenaria, Cerastoderma pinnulatum, Lyonsia hyalina and Mytilus edulis, and the gastropods Nassarius trivittatus and Lunatia triseriata.

4.31 Wildlife-Mammals, Reptiles, Amphibians, Birds. Portsmouth Harbor is surrounded by a combination of industrial, commercial, and recreational land uses. Some wetlands do exist and provide habitats for reptiles, amphibians and mammals. Harbor seals (Phoca vitulina) are found in the Harbor, Great Bay and at the Isles of Shoals in early spring. Whales have been observed at the Isles of Shoals during migration.

4.32 The islands serve as stopovers for the fall and spring coastal migrations of many species of birds. The checklist for Appledore Island now includes over 125 species of birds. The island contains the second most important heron rockery in Maine and the State has designated the Island a protected natural area. Here in season are found the Black

TABLE 3

SUBSTRATE TYPE AND ASSOCIATED BENTHIC SPECIES IN THE PISCATAQUA RIVER[27]

	Sandy-Silt	Sand	Sandy Gravel	Gravel
Ampelisca abdita	✓	✓	✓	
Ampelisca vadorum	✓	✓	✓	
Tellina agilis	✓	✓	✓	✓
Clymenella torquata	✓	✓	✓	✓
Nephtys ciliata	✓		✓	✓
Lumbrineris tenuis	✓	✓	✓	✓
Oxyurostylis smithi	✓	✓		
Nephtys caeca	✓		✓	✓
Nucula tenuis	✓	✓	✓	
Unciola irrorata	✓	✓	✓	✓
Scolecolepides ciridis	✓	✓		✓
Phyllodoce sp.	✓	✓	✓	✓
Leptocheirus pinguis	✓			
Balanus sp.	✓	✓	✓	✓
Nassarius trivittatus	✓	✓	✓	✓
Mya arenaria	✓		✓	✓
Modiolus modiolus	✓		✓	✓
Hiatella sp.	✓		✓	✓
Euclymene collaris	✓	✓	✓	✓
Phoxocephalus holbolli	✓	✓	✓	✓
Corophium sp.	✓	✓	✓	✓
Cerastoderma pinnulatum	✓	✓	✓	✓
Lyonsia hyalina	✓	✓	✓	✓
Cancer irroratus	✓		✓	✓
Lacuna vincta	✓	✓	✓	✓
Littorina littorea	✓	✓	✓	✓
Lunatia sp.	✓	✓	✓	✓
Spirorbis spirillum		✓	✓	
Tharyx sp.		✓	✓	
Ensis directus				
Acmaea testudinalis		✓	✓	✓
Onchidoris aspera			✓	
Gemma gemma		✓		
Streblospio benedicti		✓		
Trichophoxus ipistomus		✓		
Astarte undata		✓	✓	
Aricidea jeffreysii		✓		

TABLE 3 (Continued)

	Sandy-Silt	Sand	Sandy Gravel	Gravel
Microdentopus gryllotalpa			✓	
1 doka phosphorea			✓	
Pectinaria granulata			✓	✓
Harmothoe imbricata			✓	✓
Gammarus oceanicus			✓	
Anomia sp.			✓	✓
Pholoe minuta			✓	✓
Molgula sp.			✓	
Macoma balthica				✓
Nereis succinea				✓
Crepidula fornicata				✓
Posugus caeca				✓
Diastylis sculpta				✓
Lepidonotus squamatus				✓
Mytilidae	✓	✓	✓	✓

Crowned Night Heron, Glossy Ibis, Snowy Egret, and pairs of Black Backed and Herring Gulls nests on the Islands each summer.

4.33 Shellfish. The shellfish inhabting Portsmouth Harbor, Great Bay and the associated salt marshes include coastal and salt marsh species. The distribution of shellfish in the Piscataqua is shown in Figure 2.

4.34 Bivalves, especially clams, compose an important shellfishery in the Piscataqua estuary. The tidal flats in the Great Bay yield the softshell clam (Mya arenaria), quahog clam (Mercenaria mercenaria). In addition to the clams, extensive blue mussell (Mytilus edulis) populations occur but this resource is only considered a limited sport fishery. A joint New Hampshire-Maine study is underway to develop the mussel resource, (42) The American oyster (Crassostrea virginica) was once plentiful in the Great Bay, but only a small sport fishery currently exists. There has been limited commercial dragging for the deep sea scallop (Placopecten magellanicus) in the mouth of Portsmouth Harbor and around the Isles of Shoals. (42) The areas of Portsmouth Harbor and the Piscataqua River that will be dredged do not contain shellfish beds. (12)

4.35 The most important crustscean resources of the Portsmouth Harbor/Piscataqua River system are the lobster (Homarus americanus) and the rock crab (Cancer irroratus). Studies for the Newington Generating Station have found that both species are abundant in the Piscataqua. Lobster distributions are shown in Figure 2 of the main report. (43)

* 4.36 Archaeological and Historical Resources As noted in comment letters from the Maine Historic Preservation Commission (9/9/81; 6/25/82) the portions of the project designated as Areas 1 & 3 have potential to contain historic period shipwrecks. An underwater remote sensing survey is being undertaken to locate potential historic wrecks. Results of this study revealed seven magentic anomalies which may reflect the presence of sunken historic period vessels or parts of vessels. A ground truthing survey of these anomalies will be undertaken in the spring of 1984 to determine which, if any, of these targets reflect potentially significant underwater historic resources.

4.37 Threatened and Endangered Species The National Marine Fisheries Service indicates (letters 3/17/81; 9/9/83) that the dredge project area may be inhabited by the endangered shortnose sturgeon (Acipenser brevirostrum). There exists only one record of this species in the Piscataqua River and it is not certain whether a viable population of this species exists or not. The project areas under consideration for improvement are located in the lower section of the estuary where sturgeon are not frequently found. In review of the life history of this species the preferred habitat extends from the upper limits of the salt wedge on into Great Bay although the project channel area would be utilized as a migratory corridor. Dadswell (1979) reports foraging grounds in the upper Saint John esturary were the shallow (1-5m) highly eutrophic, inshore *

*Asterisks denote changes from previous report. Rev. 3/84

* regions. Males of the species were reported to overwinter in the lower reaches of the estuary. Potential feeding areas in the Piscataqua River environs then, would include the backbay area near Newcastle Island and Great Bay area beyond the Sprague/Newington Terminal and upper project limits. Overwinter sites in the Piscataqua River, if in fact such a sturgeon population exists, is thought to be mainly restricted to that portion of the channel from Sullivan Point seaward.

Continued consultation under Section 7 of the Endangered Species Act of 1975 with the National Marine Fisheries Service on shortnose sturgeon showed (based on existing information) that if in fact a viable population existed within the estuary, its preferred habitat would be located above and below the project areas. The proposed project area would be used if at all during their transit between prospective concentration areas upstream and downstream of the project sites. Based on existing life history data, opinions of NMFS staff, and nature of the proposed activities a determination of no adverse effect and no need of further Section 7 consultation was agreed to.

4.38 The disposal grounds at Portland, Isles of Shoals and the Foul Area are all in a region inhabited by three endangered whale species, the finback whale Balaenoptera physalus, the humpback whale Megaplera novaeangliae, and the right whale Balaena glacialis. The National Marine Fisheries Service has stated (letter March 17, 1981) that the proposed project would not have any effect on the endangered whales provided "the disposal site for the dredge spoil is either onshore or in an inshore area where food/prey organisms of the species are not found" and/or "disposal will take place between December 1 and May 1" prior to summer migration into the New England coastal region.

4.39 The humpback and finback whales are present along Jeffery's Ledge and in the Stellwagen Basin area during the late spring, summer and early fall month. Based on the macimum June and July densities of these species recorded for the outer Massachusetts Bay area (1979 data from URI, 1981 and 1981 data from Mason Weirich), the expected density of individuals within a 2 nautical mile radium (12.5 nm^2 or 43 km^2) of the Foul Area discharge buoy would be 0.73-1.25 individuals for each species in June and July. This assumes an equal distribution of animals throughout the bay area which is not actually the case. No actual sitings were made within a 2 nautical mile radius of the discharge buoy in the above data collection efforts. Nevertheless, we can assume as the worst case that one or two individuals may be present within the 12.5 nm^2 Foul Area dump grounds during the summer.

4.40 The project work may take about 16 month to complete. It is estimated that there would be a maximum of one to two scow trips per day to an ocean dumpsite, if that alternative was selected, during this period. Consequently, there should be very limited disposal activity at any open water or ocean disposal sites mentioned during the greatest whale activity in the vicinity. At most, it is estimated that any disposal *

*Asterisks denote changes from previous report. Rev. 3/84

* activity concurrent with the period of whale activity would be on the order of about 5-10 minutes/day. This would result in a low probability of encounter with minimal impact to feeding individuals in the area.

4.41 Barge traffic in the vicinity of an ocean disposal site would account for probably only one or two trips per day and would therefore not increase the change of collision with "logging" whales at the surface. Several of the preferred areas - Jeffrey's Ledge, Stellwagen Bank, the Provincetown Slope, and Great South Channel in particular - lie directly in the main shipping lanes to Boston, Massachusetts and other Gulf of Maine seaports. The fact that the animals continue to concentrate on these feeding banks, and utilize these migration routes in spite of the present high level of vessel traffic, supports the theory that feeding and migrating whales do not exhibit significant avoidance behavior to general ship traffic. Therefore, any slight increase in such traffic due to disposal is unlikely to significantly affect the species using these areas, especially since the scows would not be transiting through the bank area but only to a point to the west and then turning and returning to port.

4.42 If by chance a whale is dumped on during disposal activities, the efects on that individual would be unknown. No studies have been concerned with the effects of dredged material disposal on whales. However, the acute sonic capabilities of the whale should prevent such an event from occurring. The University of Guelph, Ontario, is preparing to conduct experiments on the effects of petroleum and drill cuttings on the integument of dolphins for the Bureau of Land Management. The studies have not yet begun and would have little applicability to the effects of dredged material (David St. Aubin, personal communication).

4.43 There is some concern about the possibility of impacts on the food species of the endangered species. Humpbacks, and to a certain extent finback whales, feed on the sand lance (*Ammodytes americanus*) which has markedly increased in numbers in the bank area since 1975 (Meyer, *et al*, 1979. Impacts to the sand lance may be broken down to the three aspects of their life activities: (1) daily activities in terms of schooling and burrowing, (2) their food source, and (3) reproductive habitat.

4.44 Most of the daily activities of the sand lance involve either swimming in schoods or burrowing in suitable substrata. Impacts to their natural schooling movements are likely to be short-term and localized. As mentioned above, the short time that disposal would actually take place (5-10 minutes per day) and small affected area involved (0.05 nm^2 or approximately 0.0005% of Massachusetts Bay) would reduce the chances of encounter with a passing school. It is likely that the school would avoid the disposal induced disturbance and not be affected because of their high mobility. *

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4.45 The sand lance also spends a portion of its time burrowing in
* the sand. It has a marked preference for clean sand and fine gravel substrate (NMFS, personal communication). The entire Foul Area dump site is in a basin made up of primarily silty clay (anthropogenic and natrually occurring) with associated currents which average 4-5 cm/sec. This area of sediment accumulation is not considered to be potential habitat for burrowing sand lance. The best habitat for such activity is on the Stellwagen Bank, east of the disposal site. Generally, the migrating fish schools such as the sand lance follow these topographical high areas and would not be expected to even transcent the dump grounds. Because of the low magnitude of the currents at the disposal site, the high magnitude of the current on the Stellwagen Bank, and the 200-foot ridge east of the dump site that isolates the site from the bank area, resuspension, movement and deposition of dredged material on the preferred burrowing habitat on the bank would be unlikely.

4.46 It is not expected that the sand lance would significantly accumulate sediment contaminants. Approximately 99% of the sediment is expected to settle to the bottom almost immediately. Studies also have shown that release of any contaminants during disposal is a short-term phenomenon and that background levels would return soon after disposal (Wright, 1978; Burks & Engler, 1978). Due to the high mobility of schooling sand lance which might be in the vicinity of the area during or shortly after disposal and the low level of release expected, it is doubtful that any individuals would be sufficiently exposed to the affected area long enough for any significant accumulation to occur. Since it is unlikely that the sand lance would burrow in the deposited sediment, accumulation from the sediments would not be of concern.

4.47 Few studies on the reproductive habitat of sand lance have been done. However, NMFS has indicated that the usual spawning substrate is clean sand or fine gravel in about 20 feet of water or less (personal communication). The Foul Area or other mentioned disposal sites offers no potential for such habitat and therefore little or no short-term impacts and no long-term impacts are expected on the sand lance population due to the proposed disposal activities.

4.48 Based on the above discussion, it is expected that any ocean disposal operations would have minor or no impact on the humpback or finback whales which may use the area. The dredged material disposal would be closely controlled and monitored to insure accurate deposition. This historical disposal site is situated in a deep basin where relatively low bottom currents have made the area a long-term fine-sediment accretion zone. Once the material is deposted, the currents are not of sufficient magnitude to significantly disrupt the bottom. No impacts are expected on the preferred habitat of these species, located 3-4 nautical miles to the east of the disposal site.

4.49 The size of the affected discharge area would be about 250 meter radius around the discharge buoy (0.05 square nm area). This is *

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* approximately 0.0005% of the total area of Massachusetts Bay available to the whales for feeding habitat. The density of whales (worst case) in the 12.5 nm^2 area in which the discharge site is located is about one individual per species. This represents about 0.16% of the total population of humpback and finback whales whcih use Massachusetts Bay. Thus, given (1) that the preferred Jeffery's Ledge, Stellwagen Bank habitats for the whales and sand lance would not be affected, (2) the small size of the affected area, and (3) the small number of potentially affected individuals, minor or no impacts to the population of the whales or prey species are expected. *

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V. COORDINATION AND PUBLIC PARTICIPATION

5.01 Coordination for this project has been maintained through the Portsmouth Harbor - Piscataqua River Harbor Improvement Safety Committee and New Hampshire and Kittery, Maine Port Authorities.

5.02 A series of meetings were held with the Improvement Safety Committee throughout the study to inform members of the project's status and to receive appropriate input on which to base economic and environmental evaluations. Two additional meetings were held 7 July 1980 and 28 May 1981 with commercial fishery interests and State and Federal resource agencies to discuss ocean disposal of dredged materials and site selection and creation of fish and lobster habtat. The New Hampshire Fish and Game Department assisted the Corps in notifying fishery interest of the 28 May meeting. A total of 338 finfishermen, draggers and gill
* netters and commercial lobstermen were notified. A meeting was also held with commercial fishing interest from the York and Kittery, Maine area on January 12, 1983 at the Kittery Town Hall to receive input regarding their concerns. At a 7 October 1982 meeting at the Newington Town Hall, the New England Division, Army Corps of Engineers was informed that although the town planning board approved of the project they disapproved of the use of the tentatively and selected land fill site in Newington. *

5.03 Each stage of the study has also been presented for comment or concurrence by other Federal, State, regional, local, and civil agencies having an interest in the planning of navigation improvements to the Piscataqua River and related land and water resource. A determination
* that the project is consistent with the Coastal Zone Programs of New Hampshire and Maine was concurred in by the respective States. *

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Relationship of Federal Environmental Statutes
To Portsmouth-Piscataqua River Project

1. Archeological and Historic Preservation Act, as amended, 16 U.S.C. 469 et seq.

* Compliance completed with State Historic Preservation Officer.

2. Clean Air Act, as amended, 42 U.S.C. 7401 et seq.

Not applicable.

3. Clean Water Act (Federal Water Pollution Control Act), as amended, 33 U.S.C. 1251 et seq.

* Draft 404 Evaluation Report prepared to cover possible disposal of rock material at NHSPA site

4. Coastal Zone Management Act of 1972, as amended, 16 U.S.C. 1451 et seq.

* In compliance.

5. Endangered Species Act of 1973, as amended, 16 U.S.C. 1531 et seq.

* Coordination complete.

6. Estuary Protection Act, 16 U.S.C. 1221 et seq.

In process of compliance.

7. Federal Water Project Recreation Act, as amended, 16 U.S.C. 4601-12 et seq.

* In process of compliance.

8. Fish and Wildlife Coordination Act, as amended, 16 U.S.C. 661 et seq.

* In compliance.

9. Land and Water Conservation Fund Act of 1965, as amended, 16 U.S.C. 4601-4 et seq.

* In compliance.

10. Marine Protection, Research, and Sanctuaries Act of 1972, as amended, 33 U.S.C. 1401 et seq.

* In compliance.

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11. National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470 *et seq.*

Compliance completed with State Preservation Officer.

* 12. National Environmental Policy Act of 1969, as amended, 42 U.S.C. 432 *et seq.*

In compliance.

13. Rivers and Harbors Appropriation Act of 1899, as amended, 33 U.S.C. 401 *et seq.*

Not applicable.

14. Watershed Protection and Flood Prevention Act, as amended, 16 U.S.C. 1001 *et seq.*

Not applicable.

15. Wild and Scenic Rivers Act, as amended, 16 U.S.C. 1271 *et seq.*

Not applicable.

16. Executive Order 11988, Floodplain Management

* In compliance.

17. Executive Order 11990, Protection of Wetlands

* In compliance.

*Asterisks denote changes from previous report. Rev. 3/84

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FINDING OF NO SIGNIFICANT IMPACT
TO BE ADDED TO REPORT

Portsmouth Harbor is formed by the mouth of the Piscataqua River along the New Hampshire-Maine boundary. It is located about 45 miles northeast of Boston. Water commerce has increased steadily during the past decade from about 1.8 million tons in 1969 to 3.1 million tons in 1981. Harbor users and local officials expect Portsmouth Harbor to continue to play a significant role in the economy of the region by handling an increasing amount of commerce. The harbor also serves as the home of the Portsmouth Naval Shipyard and the avenue of fuel deliveries to Pease Air Force Base. Simplex Wire and Cable Company is a major supplier of underwater cable to the Department of Defense and large cable ships routinely make use of the harbor and channel up to the Piscataqua River.

The existing 35-foot deep, 400-foot wide Federal Channel is characterized by sharp bends, swift currents, narrow lift bridges, inadequate turning basins and a natural channel which severely limit safe navigation by deep draft vessels. Large vessels up to 700 feet long now use the channel. These 700-foot vessels are longer and carry up to 10,000 dead-weight tons more than those vessels used for design of the existing project.

The New England Division of the Corps of Engineers has prepared a feasibility report, in response to a resolution adopted by the U.S. Senate Committee on Public Works, to determine the advisability of modifications to the existing Federal navigation Project at Portsmouth Harbor. We have completed our investigations and a report was submitted to the Board of Engineers for Rivers and Harbors in April of 1983. Our study considered a wide array of management measures to address the navigation problems of the harbor including the use of favorable tides, additional tugs, navigation aids, multiport operations, lightering, the use of other ports, transfer facility, bridge alteration, bridge replacement and channel improvements. These measures were formulated into alternative plans which were evaluated in terms of efficiency, effectiveness, acceptability and completeness to accomplish the project objectives and for their associated environmental impacts.

THE PROPOSED CHANNEL IMPROVEMENT ACTION:

The channel improvement plan, as recommended in the July 1982 draft report, remains unchanged, except that a new disposal site has been identified based on the National Economic Development (NED) plan comparative analysis. The recommended plan of improvement includes widening the channel between the vertical lift bridges near the western end of Badgers Island, from its current 600-foot width to 1,000 feet, also widening by 100 feet the northern limit of the channel adjacent to Badgers Island, and widening the southern limit of the channel at Goat Island from 400 feet to 550 feet. The proposed improvements consist of blasting and

dredging of 533,000 cubic yards of rock and sand and gravels from two locations within the channel to eliminate hazardous conditions and afford additional maneuvering area for the commercial vessels utilizing the port. The two areas considered for improvement as discussed earlier are widening of the channel bend between Goat Island and Henderson Point and widening of the channel downstream of the Maine-New Hampshire Interstate Bridge.

The sediments within the project area are mostly sands and gravels. Potential impacts of dredging operations with a clamshell bucket would be minor. Increased turbidity would be short-term and minimal due to the coarse nature of the sediments and the dispersive nature of the strong currents in the Piscataqua River estuary. Temporary dissolved oxygen reduction could occur in the surrounding waters during dredging due to the suspension of organic detritus and other natural organic compounds. Since the sediment to be dredged is relatively clean with low levels of nutrients, heavy metals, oil and grease, and other materials, relatively small amounts of these elements would be introduced into the water column during dredging. There would also be a minor release of hydrogen sulfide odors.

Environmental concerns which have been identified in relation to the proposed action include:

- protection of anadromous fish and lobster populations during their spawning migrations.

- potential effects on shortnose sturgeon, an endangered species.

- potential impact to underwater archaeological resources.

- potential impacts to recreational and small commercial boating activity.

The two areas targeted for improvement are located to the extreme periphery of the channel thus obstruction or interference to migratory fish and lobster populations will be minimal. With respect to the impacts of the proposed blasting, it is anticipated that the amount of blasting to be performed would not result in any significant loss of fish and lobster and would not significantly affect the food web or natural productivity of the immediate area. No significant loss of habitat would occur as a result of the proposed blasting activity. Measures will be utilized which would reduce casualties to the aquatic fauna. The blasting operation is described as the "fraction type" which consists of drilling holes and placing the charges in the holes much the same as in highway construction. This type of blasting will have minimal horizontal amplification as opposed to"removal blasting" which creates craters in the bottom. A joint agency inspection team will also be established to

observe field operations and to document any significant impacts to anadromous fishes.

Continued consultation under Section 7 of the Endangered Species Act of 1975 with the National Marine Fisheries Service (NMFS) on short nose sturgeon showed (based on existing information) that if in fact a viable population existed within the estuary, its preferred habitat would be located above and below the project areas. The proposed project area would be used, if at all, during their transit between prospective concentration areas upstream and downstream of the project sites. Based on existing life history data, opinions of NMFS staff, and the nature of the proposed activities, a determination of no adverse effect and no need of further Section 7 consultation was agreed to.

An underwater remote sensing survey conducted in October 1983 of the areas to be dredged revealed seven magnetic anomalies which may reflect the presence of sunken historic period vessels or parts of vessels. A ground truthing survey of these anomalies will be undertaken in the spring of 1984 to determine which, if any, of these targets reflect potentially significant underwater historic resources.

Every effort will be made to schedule construction in Area 3 (depicted on Figure 5 of the Main Report) during the months of December through March. This will reduce the impact blasting and dredging might have on fish population and recreational and small commercial boating activity.

ALTERNATIVE DISPOSAL SITES

The proposed alternative disposal areas considered for dredged materials from Portsmouth Harbor may be categorized as within harbor, upland and ocean disposal sites. Coordination has been undertaken with various local, State and Federal agencies to discuss disposal sites and their feasibility.

WITHIN HARBOR SITES

New Hampshire State Port Authority

The disposal site which is seen to have the greatest economic benefit is the New Hampshire State Port Authority (NHSPA). The Port Authority has expressed an interest in receiving the dredged material to fill a proposed intertidal and subtidal property for expansion of its existing facilities. The amount of fill needed could accommodate all of the sediments to be excavated from the proposed harbor channel improvement project. The selection of the Port Authority Site(s) represents the greatest net economic benefit under the NED plan evaluation. However, the site is currently a non-permitted disposal site, with several environmental

concerns. Consequently, the filling of these areas cannot be accomplished until completion of the public review process and is dependent upon the Port Authority's demonstration through receipt of a Federal Section 10/404 permit and State permits that the site(s) is environmentally acceptable. A permit application with additional engineering and environmental information is being prepared by the NHSPA as part of the permit process. Disposal at the NHSPA depending on the plan of development could result in the elimination of approximately 15 acres of intertidal and subtital aquatic habitat at three locations. The Cutts Cove site could involve filling up to 10 acres of mud flats including 0.6 acres of saltmarsh. This action would also modify or eliminate the existing limited recreational value the property provides and would change the aesthetic perception of the property and surrounding area from open space to industrial land use. Another 3 acre inter and sub-tidal area located between the National Gypsum Company and the railroad spur and a 2 acre inter and sub-tidal area adjacent to the existing facility could also be filled.

All responses received from the Federal resource agencies and city of Portsmouth have opposed filling at one or all of these locations. The resource agencies urge consideration of a less environmentally damaging alternative. The site would provide for needed harbor expansion and improve port economy.

Pepperell Cove

Another in-harbor disposal area identified was at Pepperell Cove where the Kittery Port Authority has stated an interest in developing a wave break between Fishing and Gooseberry Islands to provide additional protection to the mooring area. Placement of the rock material upon existing rocky shoals between the islands would limit damage and disturbance to the epifaunal community on the existing rocky shoal. Past studies have indicated the breakwater is not economically justified. Additionally this area could only accept a small portion of the rock from the project and a second site would be required for the large majority of the material.

UPLAND SITES

New England Tank Industries

Only a small area is presently available for dredged material placement and local residents in the town of Newington objected to placement of the material at this site. This site may be the least environmentally sensitive to disposal activities, but has significant social impacts and is no longer a viable alternative.

Pease Air Force Base

This location actually involves three small sites all of which would require filling of wetlands. The size of the sites, transportation and rehandling logistics render this alternative less economical and feasible than other alternatives. Ecological impacts identified are the filling of wetlands, possible adverse effects to groundwater supplies, and traffic and noise associated with hauling activities.

Iafolla Industries

This company runs a sand and gravel and rock crushing operation located in Portsmouth, New Hampshire. As with all upland sites increased costs result from rehandling and transporting the material which impact heavily on the economic efficiency of this alternative. Environmentally, this option ranks high considering that the dredged materials would be stockpiled in an existing sand and gravel pit resulting in little or no adverse effects on biological resources. However, salt intrusion into surface and groundwater supplies could pose a problem as could the impacts associated with the movement of the material to the site.

OCEAN SITES

Potential ocean disposal sites considered include the Isles of Shoals (Historic Disposal Area) Gunboat Shoals and Rye Ledge areas in New Hampshire, Portland and Cape Arundel sites in Maine and the Foul Area off Massachusetts.

Disposal at the indentified ocean disposal areas would have some, though minimal, impacts on water quality and local habitat. The relatively clean nature of the sand, gravel, and rock would serve to reduce significant impacts. The Foul Area, Portland, and Cape Arundel sites are all formally designated EPA "interim approved" sites that could accept the clean sediments to be dredged from the Portsmouth project. The Cape Arundel disposal site lies within State waters and would require approval from State regulatory agencies. At this time, neither the Isle of Shoals historic dumping ground or other areas along the New Hampshire coast are designated disposal areas.

In summary, numerous disposal options were considered during the planning process and several are discussed herein. An analysis of both costs and benefits, for each alternative, identified disposal at the New Hampshire State Port Authority as the plan which maximzes net benefits and makes productive use of the dredged material. Use of this site(s) as part of our Federal navigation improvement plan is contingent upon the State's project schedule and receipt of required permits.

In my evaluation, this assessment has been prepared in accordance with the National Environmental Policy Act of 1969. The determination that an Environmental Impact Statement is not required is based on the forementioned evaluation and information contained in the Environmental Assessment. This revised FONSI determination is being issued for the proposed Federal actions of dredging and disposal where the impacts have been assessed. The NHSPA site will undergo its own environmental review as part of the Corps' regulatory public interest process. At this time a permit application has not been submitted for the Port Authority improvement plan. Therefore, I recommend disposal of the dredged material at an ocean disposal site, namely the Foul Area. For these reasons, I have determined that the navigation improvement project as proposed is not a major action having significant impact to the quality of the human environment and therefore does not require preparation of an environmental impact statement.

23 Apr '84
DATE

CARL B. SCIPLE
Colonel, Corps of Engineers
Division Engineer

☆U. S. GOVERNMENT PRINTING OFFICE: 1984--700-014--61

APPENDIX 1

EXISTING CONDITIONS

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EXISTING CONDITIONS

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OTHER STUDIES

Prior Studies

To date, several Congressionally authorized navigation improvement studies have been conducted for the area by the Corps. A summary of the prior navigation reports that have been prepared by the Corps is presented in Table 1.

In addition to this Congressionally authorized navigation improvement study for Portsmouth Harbor and the Piscataqua River, the Corps completed a reconnaissance report in June 1979 that evaluated the feasibility of constructing a small boat navigation project in the area of Kittery, Maine. The study evaluated the feasiblity of providing an access channel of adequate depth to accommodate commercial fishing vessels up to 90 feet in length extending from the Piscataqua River channel to a town-owned site at the foot of Rice Avenue, along with a turning basin at the head of the channel of equal depth to facilitate the movement of vessels in and out of the area. The preliminary study findings indicated that a small navigation project in the area was feasible, and it was recommended that a detailed study of the area be conducted. After being advised of the study findings, the local interests have requested that the study be held in abeyance to give them time to determine whether any other land sites exist in the area to accommodate their proposed land-based facility.

THE STUDY AREA

The Piscataqua River forms a portion of the boundary line between the States of Maine and New Hampshire. Portsmouth Harbor, located at the mouth of the river, is about 45 miles sailing distance northeast of Boston Harbor, Massachusetts, and 37 miles sailing distance southwest of Portland, Maine.

The river is about 13 miles long and has a tortuous channel that winds around sharp bends and over submerged ledges, making navigation hazardous. The river begins at the confluence of the Salmon Falls and Cocheco Rivers. These latter rivers are navigable for small boats and have controlling depths of 7 feet for distances of about 1 mile and 2-1/2 miles, respectively. Below the confluence, the Piscataqua River flows in a southerly direction for about 4 miles to a point where it receives the discharge of a 12 square-mile tidal basin consisting of Great Bay and its tributary rivers. Within this 4-mile reach the Piscataqua River has a natural channel about 400 feet wide in which depths vary from 9 to 28 feet, with 9 feet being the controlling depth in the upper half of the channel and 20 feet in the lower half. Below the junction with the Great Bay outlet, the Piscataqua River swings southeastly for a distance of about 3,000 feet in which the depth of the natural channel is in excess of 40 feet. The head of the existing Federal channel, at the upstream end of this deep channel, is approximately 1,700 feet above the Sprague dock in Newington, New Hampshire. From this point the Piscataqua River extends downstream for

PRIOR REPORTS PREPARED BY THE CORPS OF ENGINEERS

Table 1

Document Published in	Report Date	Work Evaluation and Recommendations
H. Ex. Doc. No. 84, 43d Cong., 1st Session	Preliminary Examination 1873	Breakwater between Gerrish and Wood Islands. Estimated cost $150,000. Favorable.
Sen. Ex. Doc. No. 39, 45th Cong., 3d Session	Survey 1878	Closing channel between New Castle Island and Goat Island to eliminate strong currents. Remove portion of Gangway Rock to 20 feet below mean low water and remove part of Badgers Island to 10 feet at mean low water. Favorable.
Sen. Ex. Doc., No. 30, 47th Cong., 1st Session	Preliminary Examination and Survey. 1882	Extension and completion of breakwater between Goat Island and New Castle Island. Unfavorable.
Sen. Ex. Doc. No. 44, 48th Cong., 1st Session	Preliminary Examination and Survey. 1883	Construction of dam near mouth of Great Bay to maintain high water level navigation above and eliminate strong currents below. Unfavorable.
H. Ex. Doc. No. 71, 48th Cong., 2nd Session	Preliminary Examination 1884	Improvement of Portsmouth Harbor. Unfavorable
H. Doc. No. 39, 56th Cong., 1st Session	Preliminary Examination 1899	Removal of "Pull-and-Be-Damned Point." Unfavorable
H. Doc. No. 263, 56th Cong., 2nd Session	Preliminary Examination and Survey 1900	Remove portion of Henderson Point to improve navigation into Navy Yard at Kittery. Favorable - Completed by Navy
H. Doc. No. 1086, 61st Cong., 3d Session	Preliminary Examination (Review of Reports) 1909	Construction of lock and dam in Piscataqua River. Unfavorable

H. Doc. No. 1010, 64th Cong., 1st Session	Preliminary Examination 1915	Removal of South Beacon Shoal, part of shoal off Badgers Island, part of Gangway Rock, Goat Island and Seaward Rock, all to a depth of 30 feet below mean water. Unfavorable.
H. Doc. No. 566 82d Cong., 2d Session	Survey (Review of Reports) 1952	Removal of ledge rock in the vicinity of Gangway Rock, the southwest point of Badgers Island and Boiling Rock to 35 feet below mean low water. Favorable
H. Doc. No. 482 87th Cong., 2d Session	Survey (Review of Reports) 1962	Widening the 35-foot Federal channel at five locations and extending the channel upstream from Boiling Rock to a point about 1,700 feet above the Atlantic Terminal Sales dock in Newington, generally 400 feet wide and 35 feet deep below mean low water with maneuvering basins above Boiling Rock, and at the head of the project. Favorable.
	Small Nav. Project Detailed Project Report 1965	A channel 100 feet wide and 6 feet deep from Little Harbor through the Rye-New Castle drawbridge, and then in a northerly direction between the mainland and Leachs Island to natural deepwater area south of the bridge between Shapleigh and Goat Islands. A channel 75 feet wide and 6 feet deep up Sagamore Creek to the Sagamore Avenue Bridge with anchorage in strips 75 feet wide 6 feet deep, totaling 3 acres adjacent to the upper reach of the channel. Favorable.

about 4-1/2 miles to Portsmouth Harbor, and has a controlling depth of 35 feet generally with a width of 400 feet or greater, including two turning basins. In the lower section of Portsmouth Harbor, channel depths generally are in excess of 50 feet and widths are in excess of 500 feet.

The city of Portsmouth and the towns of New Castle and Newington, New Hampshire in Rockingham County, and the towns of Eliot and Kittery, Maine in York County comprise the land areas included in the study area. The city of Portsmouth which has the greatest influence on the port was settled in 1623 and incorporated in 1849. Its primary development has been as a port city, with facilities for both commercial and military vessels located in the harbor. More recently as highways have been built, particularly Route I-95, southern New Hampshire's ties with Massachusetts have been tightened. Portsmouth's many historical sites, its proximity to the ocean, and its growing cultural resources have attracted many visitors. The region has also been successful in attracting light industrial development and service industries, creating a well-balanced economic base. For these reasons, the region has become important as a residential and vacation area.

Climatology

The climate of the study area is characterized by four distinct seasons with variable weather. Relatively mild summers and winters are the rule in Portsmouth, due to the moderating influence of the Altantic Ocean. The mean annual temperature in the area is about 45.5°F. The mean low monthly temperature for Portsmouth is 22°F and occurs in January, while the highest monthly temperatures occur in July, averaging 68.4°F.

The study area lies in the path of the "prevailing westerlies" and the cyclonic disturbances that cross the country from west to southwest towards the east to northeast. The area is also subject to occasional violent coastal storms, some of tropical origin, that travel up the Atlantic seaboard. These tropical storms, sometimes known as "Northeasters," are heavily laden with moisture from the ocean, but a great deal of their energy is dissipated before reaching northern New England.

The mean annual precipitation recorded by the U.S. Weather Bureau Station at Portsmouth is 43.51 inches with average monthly precipitation ranging from 2.6 inches to 5.0 inches. The maximum monthly rainfall recorded during 19 years is 13.75 inches and the minimum is 0.30 inches.

Temperature and precipitation readings were recorded by the U.S. Weather Bureau Station at Portsmouth from June 1954 through May 1973. Monthly temperature and precipitation averages are presented in Tables 2 and 3 for this time period.

Table 2
Monthly Temperatures
Portsmouth, New Hampshire
(1954-1973)
(Degrees Fahrenheit)

Month	Mean	Maximum	Minimum
January	22.0	58	-23
February	23.9	64	-15
March	32.5	76	-8
April	42.9	92	10
May	53.6	94	22
June	63.0	96	32
July	68.4	99	35
August	66.5	98	33
September	59.5	93	26
October	49.4	88	14
November	38.7	76	8
December	26.1	60	12
Annual	45.5	99	-23

Table 3
Monthly Precipitation
Portsmouth, New Hampshire
(1954-1973)
(Inches)

Month	Mean	Maximum	Minimum
January	3.6	13.75	.58
February	3.9	6.64	.30
March	3.5	6.21	1.74
April	3.9	12.97	1.41
May	2.9	6.39	1.03
June	3.2	8.59	.81
July	3.1	5.44	1.26
August	2.6	6.71	1.20
September	3.6	9.09	1.41
October	3.8	10.77	.94
November	5.0	9.72	2.43
December	4.4	9.46	.96
Annual	43.51		

Fisheries Resources

The Piscataqua River estuary is well established as a preferred location for recreational and sport fishing. Excellent game fish such as striped bass, mackerel, flounder, and coho salmon can be found within the estuary. Rainbow smelt seasonally migrate through the area to spawn in the bays of the upper estuary. These fish are important to both winter sport and commercial fishermen.

The Public Service Company of New Hampshire has conducted environmental monitoring programs in the Piscataqua River estuary each year since 1970. A three-part monitoring program encompassing netting, sonic tracking, and creel censusing has been used since 1971 to identify and determine both relative abundance and behavior of fish species in the area. Table 4 lists common names of species taken from their most recently published report.

While lobster (Homarus americanus) and crab (Carcenedes, Uca and Callinectes spp) appear to be more numerous in the harbor entrance and lower portions of the river, greater numbers of soft-shelled clams (Mya arenaria) and oyster (Crassostrea and Modiolus app) can be found in the Great Bay area. A State of New Hampshire license is required to harvest lobsters, clams and oysters for both commercial and private interests.

Table 4
Finfish Collection 1975
Piscataqua River Estuary

Blueback herring	Altantic silverside
Alewife	Silver hake
American sand lance	Atlantic tomcod
American eel	Planehead filefish
Fourspine stickleback	White perch
Atlantic Menhaden	Striped bass
Cusk	Grubby
Atlantic herring	Longhorn sculpin
Wrymouth	Shorthorn sculpin
Lumpfish	Coho salmon
Fourbeard rockling	Rainbow smelt
Mummichog	Butterfish
Striped killifish	Rock gunnel
Atlantic Cod	Pollack
Treespine stickleback	Bluefish
Blackspotted stickleback	Winter flounder
Witch flounder	Ninespine stickleback
Sea raven	Little skate
American plaice	Brown trout
Smooth flounder	Brook trout
Sea snail	Atlantic mackerel
Goosefish	Windowpane flounder
Cunner	Northern puffer
Raidated shanny	Northern pipefish
Red hake	Tautog
White hake	

III. ECONOMIC, CULTURAL, AND SOCIOLOGICAL CONDITIONS

To a large degree the resources of a region determine the status of its economic well-being and growth potential. A general understanding of these resources and developmental trends in the area is helpful in identifying regional problems and needs, and developing appropriate solutions. The following paragraphs discuss the resources of the study region - Southeastern New Hampshire and Southern Maine - as well as their development and economy. Much information within these paragraphs has been taken from several volumes of a series published by the Southeastern New Hampshire Regional Planning Commission entitled, "Population Report and Projections," "Economic Report and Projections," "Existing Land Use," and "Future Land Use."

It should be noted at this point that the city of Portsmouth has the greatest influence on decisions about channel improvements to the Piscataqua River, and would be the most affected by such improvements. Furthermore, information is more readily available on this city than on other surrounding communities. For these reasons, discussions in the following paragraphs in many cases center primariy on the Portsmouth area.

Population

According to preliminary 1980 census figures, the population of Portsmouth, New Hampshire is 26,214. As shown in Table 5, Portsmouth has experienced population growth throughout the 20th Century, with the greatest increase in population occuring in the 1940's and 1950's. Although population decreased during the 1960's, this can be attributed to a decline in the Pease Air Force Base population. The non-Pease population grew by 13.9 percent during the 1960's.

The population of the area surrounding Portsmouth has also been steadily increasing. The growth rate for Rockingham County, of which Portsmouth is a part, has been even greater than Portsmouth's during the past two decades. Due partially to improved highway system, relatively low taxes, and increasing industrialization, the entire State of New Hampshire has been experiencing a population boom. As shown in Table 6, in both Portsmouth and Rockingham County the growth trend is expected to continue.

Housing

According to preliminary 1980 census figures, Portsmouth's population is housed in approximately 9,861 housing units. The majority of these units were built prior to 1940. Multi-family dwellings predominate by a slight margin over single family units. Table 7 shows that as population has increased, the supply of housing has also increased.

TABLE 5

Population 1900 - 1980

	Portsmouth	% Change	Rockingham County	% Change	New Hampshire	% Change
1900	10,637		51,118		411,588	
1910	11,269	+5.9	52,188	+2.1	430,572	+4.6
1920	13,569	+20.4	52,498	+0.6	433,082	+2.9
1930	14,495	+6.8	53,750	+2.4	465,293	+5.0
1940	14,921	+2.2	58,142	+8.2	491,524	+5.6
1950	18,830	+27.0	70,059	+20.5	533,242	+8.5
1960	25,833	+36.5	99,029	+13.0	606,921	+7.5
1970	25,717	-0.4	138,950	+28.7	737,681	+17.7
1980	26,214	+1.9	190,047	+36.8	919,114	+24.6

SOURCE: U.S. Census

TABLE 6
Population Projections

Year	Portsmouth Population	Rockingham County Population
1985	25,781	202,068
1990	26,562	218,038
2000	28,144	252,390
2010	29,527	284,221
2020	30,851	316,537
2030	32,101	348,503

SOURCE: ABT Associates, Cambridge, Mass.

TABLE 7

Housing in Portsmouth, New Hampshire

Time Period	Number of Units Built	Percent of Total
before 1940	4,241	43
1940-1950	1,310	13
1950-1960	1,914	19
1960-1970	841	9
1970-1980	1,555	16
TOTAL	9,861	100

SOURCE: U.S. Census

Economy and Land Use

The port of Portsmouth is one of several small deep-draft harbors under the influence of Boston and Portland Harbors and is affected by their industrial, commerical, residential, and recreational developments. Within the port and river area are the Portsmouth Naval Shipyard, Pease Air Force Base, several petroleum receiving, shipping and handling facilities, and several bulk and general terminals. Important basic industries in the region include manufacturing, tourism, and port-related activity.

Portsmouth has a land area of about 8,109 acres, over half of which is developed. This developed land includes an urban commercial district near the harbor, other outlying commerical areas, residential areas consisting primarily of single family homes, and several industrial areas. Other major land uses in Portsmouth include transportation facilities and rights-of-way, including Pease Air Force Base, major highways, a railway, and facilities for ocean shipping. Open land uses include power easements, parks, preserves, wet lands, and cemetaries.

Portsmouth has a varied and healthy economic base which is growing at a rate the city is well able to absorb. The most visible industry is tourism. During the summer months in particular, the Portsmouth region consistently generates the highest level of visitor activity of any region in New Hampshire. Efforts have been made to preserve the atmosphere of a bustling New England seaport. Most of the downtown area and several of the older residential districts are official historical areas and are protected by municipal legislation. In 1977 the city established a historic district which includes most of the downtown area as well as older residential areas. The city planners fully recognize the value of preserving the areas in an effort to attract visitors.

The impact of these visitors has been to stimulate the city's cultural development and support many small shops and restaurants. Sixteen new restaurants were established in the city between 1970 and 1976, some of which have succeeded in establishing considerable reputation in Boston and elsewhere.

Tourism, though important, is not the only significant industry in Portsmouth. In this, Portsmouth differs from most of New England's old seaport towns, such as Provincetown and Nantucket. Though these towns were once the source of much of the regions's wealth, many of them now depend almost solely on tourism. Postsmouth Harbor, on the other hand, is still an active port, accommodating a variety of craft from oil tankers and submarines to lobster and pleasure boats.

The harbor encourages the manufacture of large and cumbersome objects by providing a relatively safe and easy method of transportation for products which would be extremely difficult and costly to transport over land. The mainstay of Portsmouth's manufacturing is, however, the type of production exemplified by the computer industry.

There are two industrial concentrations of significance in the immediate area; one along the Piscataqua River centering on the Portsmouth-Newington boundary, the other off Route 1 in Portsmouth. Smaller industrial areas are scattered throughout the region. Projected industrial developments show the Portsmouth area as having the greatest growth potential in the region, primarily because it possesses natural and manmade attributes lacking elsewhere in the region. These include: a deep-water ocean port, direct rail and highway access, a pool of skilled labor, and, for the immediate future, ample municipal water supply, sewage and treatment facilities, natural gas, and large quantities of electricity.

Portsmouth has grown into a major retail center serving the entire New Hampshire seacoast region. Portsmouth exceeds other larger New England cities in terms of per capita sales in most major retail categories.

Employment

The generally healthy state of Portsmouth economy is reflected by its excellent employment situation. As of February 1981, the unemployment rate was just 5.3% compared to the national average of 8%. Between 1969 and 1979, 15 new firms located or expanded in Portsmouth creating employment for over 3,000 people. As of February 1981, the civilian labor force in the Portsmouth Labor Market Area numbered 46,500.

The area's largest employer is the Portsmouth Shipyard of the U.S. Navy, located in Kittery, Maine. The shipyard reached a peak employment figure of around 8,400 in 1964 and then began a phasing out period during which employment declined to 5,400 in 1970. Current shipyard employment numbers approximately 8,000.

As shown in Table 8, the Portsmouth labor force is employed in diversified sectors. Approximately 20% are employed in manufacturing. Large percentages are also employed in trade and services.

Transportation

The region utilizes every mode of transportation in wide use in this country except passenger traffic on rails. Almost all passenger trips are made by private automobile; the remainder are by taxi, interstate bus, or airport limousine. A very few trips are by private aircraft or boat. Freight is transportated primarily by truck, although significant amounts enter by freighter through the Piscataqua River port facilities in Portsmouth and in Newington, New Hampshire, and a significant amount of rail passes through the region enroute.

There are civilian airports at Hampton and Rochester, N.H., and one military airport, Pease AFB. Ground transportation includes two-through railroads, and one regional railroad owned by Boston and Maine Railroad; and a well established network of roadways including I-95 and U.S. Routes 1 and 4 located in the region. There are three bridges which cross the Piscataqua River. From downstream to upstream these bridges are known as the Memorial Bridge and Maine-New Hampshire Interstate Bridge, which are both vertical lift bridges, while the Route I-95 Highway Bridge is a fixed span.

TABLE 8

Number of Units, Employment, and Total Wages of Workers Covered by Unemployment Compensation in Private Industry in the City of Portsmouth, New Hampshire Second Quarter 1978

Industry	Number of Units	June 1978 Employment	2nd Qtr. 1978 Total Wages
Total Non-agriculture	723	10,968	$23,888,020
Manufacturing	27	2,161	4,529,092
Non-Manfacturing	696	8,807	18,265,928
Construction	52	703	2,193,024
Trans., Comm., Util.	35	512	1,400,454
Trade	281	4,061	7,441,612
Fin., Ins., Real Estate	60	1,061	2,531,753
Service Industry, Other	268	2,470	4,729,085

SOURCE: New Hampshire Department of Employment Secuity

Riverside Development

Twenty private piers, wharves, and docks are located along the lower 4-1/2 miles of the Piscataqua River. Nineteen are along the south bank of the river, including 15 within the city limits of Portsmouth, and 4 in the town of Newington; the remaining facility is on Badgers Island, Maine, opposite downtown Portsmouth. Seven of these terminals handle deep-draft vessels. These deep-draft terminals are shown on the Project Map, Plate 1, at the end of this report. Table 9 gives a listing of the functional uses of the various piers, wharves, and docks on the Piscataqua River.

In regard to new facilities, the New Hampshire State Port Authority completed the first phase of construction of its facility in 1965, including a wharf, an office building, and storage shed with 11,000 square feet of storage space. Plans for the future call for the expansion of this facility by the addition of two more wharves, a gantry crane, and refueling capacity and, at one end of the facility, a separate set of berths for commerical fishing craft.

Waterborne Commerce

Table 10 gives a comparative statement of waterborne commerce for the years 1971 through 1981. As can be seen the total tonnage has been increasing steadily over the years.

Principal waterborne commodities handled at the port in recent years have consisted of residual and distillate fuel oils, gasoline, salt, limestone (gypsum), liquified gases, jet fuel, other petroleum products and scrap metal. A breakdown of waterbourne commerce for the year 1981 appears in Table 3 of the Economics Appendix.

Vessel Traffic

Fully-loaded 40,000 dead weight ton (DWT) vessels having lengths of 680 feet and drafts of 37 feet are the largest vessels which have entered the Piscataqua River up to this time. These vessels are always tug assisted and require a 41-foot water depth for safe transit. Therefore, they must enter the harbor on the flood tide and dock at high slack tide.

The majority of the deep-draft vessels brought in, however, are in the range of 30-35,000 DWT. A breakdown of trips and drafts of vessels entering and leaving Portsmouth Harbor during 1978 is shown in Table 6 in the Economics Appendix.

The trend in deep-draft vessels usage is to increase the carrying capacity in order to take advantage of the reduced transportation costs. Consequently, the future outlook is for increased use of the 40,000 DWT range of vesssels. Without channel improvements, the 30-35,000 DWT range will continue to dominate; however, as these vessels are continually phased out of operation, the larger vessels will be used more often, or if the risk of operating these vessels in the harbor becomes to great, users may be forced to relocate.

Table 9
Functional Uses of Piers, Wharfs, and Docks

Function	Number of Facilities
Cargo Handling:	
General cargo	1
Containers	1
Dry bulk commodities	1
Gypsum rock	1
Heavy lift items	1
Lobster, fish, and other seafoods	5
Petroleum products	6
Salt	1
Scrap metal	2
Wire and submarine cable	1
Bunkering	2
Fueling vessels	1
Marine repair	1
Mooring:	
Excursion boats	2
Fishing boats	6
Miscellaneous	4

Table 10
Comparative Statement of Commerce

Year	Tons	Percent Increase
1971	2,174,425	0.6
1972	2,188,071	5.8
1973	2,314,900	2.1
1974	2,364,290	24.5
1975	2,943,343	6.8
1976	3,143,313	10.2
1977	3,499,854	11.3
1978	3,305,303	-5.6
1979	3,519,926	6.5
1980	2,783,781	-20.1
1981	3,072,214	10.4

Navigation Hazard

The Memorial and Interstate vertical lift bridges are considered to be potential hazards to deep-draft vessel traffic on the Piscataqua. In the case of the Memorial Bridge, the main concern is with mechanical failure which would prevent the bridge from being raised. The horizontal clearance of 260 feet is sufficient to allow a 40,000 DWT tanker or larger to pass through with a tug on each side up forward, as well as one at the stern. Under present operating procedures, visual and radio contact is made with the bridge far enough in advance to be able to turn the vessel, and bring it back out, in case the bridge becomes inoperable. The bridge itself appears to be in good physical condition, and is well maintained. Barring any unforseen difficulties, it should continue to function effectively for several years. It appears that modification of, or to, this bridge is not necessary in order to ensure the continued safe and efficient transit of the river by deep-draft vessels. Continued diligence by pilots in using existing procedures for bringing in deep-draft vessels will be necessary to guard against a collision with the bridge.

The Interstate Bridge is considered to be the more critical of the two bridges because of its physical location on the river, close proximity to the Memorial Bridge, its effect upon the current in the river, the relatively narrow horizontal clearance of 200 feet between abutments, and the potential for mechanical failure are all items of concern to deep-draft vessel traffic on the river. As is the case with the Memorial Bridge, the major item of concern at the Maine-New Hampshire bridge is the potential for mechanical failure causing it to be stuck in the down position. If this should occur when a deep-draft vessel is approaching, or passing through the Memorial Bridge, it could be catastrophic. Under existing conditions, there is not sufficient room to turn a large tanker in the maneuvering area between the two bridges. The vessel would end up wedged across the channel or colliding with the Interstate Bridge.

Due to the angle at which the Interstate Bridge crosses the Piscataqua, the current passes through it askew. This, in turn, requires that the larger vessels passing through the bridge do so at an angle, in order to keep aligned with the current and keep from being pushed to one side or the other. What this does, in effect, is reduce the horizontal clearance between the abutments to about 140 feet. The tankers in the 35,000 to 40,000 DWT range have beams of about 90 to 100 feet. When these vessels pass through the bridge, they do so with a minimal amount of horizontal clearance which may be equated to the act of threading a needle. The two tugs that are normally positioned up forward on each side of the vessel have to disengage themselves while the vessel passes through the bridge. Due to the way that the large tankers are cut away at the stern, the tug located in the stern can keep its position while the vessel passes through the bridge. Just prior to, and while the vessel is passing through the bridge, the vessel is basically operating under its own power and steerage. The physical condition and maneuverability of the vessels being brought in have to be given due consideration as a result of this situation. Even though they are smaller, the 20,000 and 30,000 DWT vessels are

getting older, and they are often not as maneuverable as the larger and newer vessels in the 30,000 to 40,000 DWT range. From the point of view of maneuverability and physical condition, the larger and newer vessels are better suited for navigation on the river. The problem with these larger vessels involves the lack of adequate turning basins in which to maneuver, and the difficulties encountered in going around the sharp bends in the channel.

Because of the physical conditions and above mentioned problem areas, the Piscataqua River is one of the most difficult to navigate on the entire Atlantic Coast. The absence of serious accidents on the river, to date, is largely due to pilot expertise and adequate tugboat assistance. However, it is the feeling of the pilots, tugboat operators, and other channel users, that the risks involved are becoming greater each year. Portsmouth Harbor is receiving more and more tonnage each year, and the trend is to larger, more economical ships. In the case of Portsmouth, this does not mean that there will be any significant increase in the size of the vessels over that of the largest ones now being brought in. What it means is that there will be more of these larger vessels brought in over those being brought in now. The 15,000 to 25,000 DWT tankers are steadily being replaced by 30,000 to 40,000 DWT tankers. Most of the terminals on the Piscataqua can accommodate the size of the vessel entering the harbor. The Granite State Mineral Company Pier and the New Hampshire State Pier, both of which are located between the two vertical lift bridges have to restrict the size of the vessels they bring in to those that can be safely turned in the adjacent turning basin.

Improvements to the three problem areas would reduce the risk of bringing in the larger deep-draft vessels (40,000 DWT). The ability to use these larger more economical vessels would result in transportation costs savings which would be transfered to local consumers. If improvements are not made, transportation costs will increase because the smaller less efficient 20,000-35,000 DWT vessels will continue to be the primary users of the channel.

APPENDIX 2

ENGINEERING INVESTIGATIONS

APPENDIX 2 - ENGINEERING INVESTIGATIONS
DESIGN AND COST ESTIMATES

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APPENDIX 2 - ENGINEERING INVESTIGATIONS

DESIGN AND COST ESTIMATES

Introduction. This report appendix presents engineering data to support selection of a recommended plan of improvement. For clarity the analysis is divided into two parts: Engineering Design and Structural Alternative Cost Estimates.

SECTION A - ENGINEERING DESIGN

General. Modifications of general navigation facilities, considered here, are designed in accordance with criteria contained in U.S. Army Corps of Engineers, Committee on Tidal Hydraulics, Report Number 3, Evaluation of Present State of Knowledge of Factors Affecting Tidal Hydraulics and Related Phenomena (May 1965).

VESSEL ANALYSIS

Introduction. Tankers have, for many years, played a critical role in the worldwide distribution of energy. The events in recent years have focused attention on the tankers and their importance in maintaining the lifestyle of people all over the world. In the case of New Hampshire, Portsmouth Harbor is the only deep draft harbor in the State capable of handling these large vessels. Defense installations, utility companies and industrial complexes depend upon the ability of the harbor to provide for the safe transport of petroleum products. The following analysis is intended to provide a forecast of the range of ship sizes, especially tankers, expected to serve Portsmouth Harbor over the economic life (1985-2035) of proposed navigation improvements.

Forecast World Fleet Serving U.S. Trade [1/]

The number of vessels in the world fleet required to serve the U.S. foreign trade, which includes U.S. flag vessels, is projected to grow by only 379 vessels or about 10 percent between 1975 and 2000 (see Table 1). In this period, trade is projected to increase over 130 percent. The trend to larger and more efficient vessels is reflected by the growth in deadweight of nearly 90 percent.

New construction activity over the forecast period will be a function of two key factors: world trade growth and replacement requirements resulting from scrapped vessels. These factors combine during the forecast period in such a way that shipbuilding activity required to support U.S.-foreign trade is projected to decline substantially in the 1980s. This is consistent with the current shipbuilding outlook.

[1/] U.S. Department of Commerce, Maritime Administration, Office of Commercial Development, Summary Report, dated May 1978.

Table 1

MERCHANT FLEET FORECAST SUMMARY
TOTAL SHIPS REQUIRED TO SERVE THE U.S.-FOREIGN TRADE
(vessels and thousands of deadweight tons)

	1975	1980	1985	1990	1995	2000
			VESSELS			
General Cargo Ships	2,043	1,867	1,647	1,346	1,044	795
Partial Containerships[1]	132	247	373	555	754	1,043
Full Containerships[1]	181	259	303	365	429	511
Barge Carriers	27	23	29	33	37	40
Neobulk Carriers	80	101	126	153	176	205
Dry Bulk Carriers	860	905	960	991	1,038	1,080
Combination Carriers	82	98	106	110	113	124
LNG Carriers	1	11	42	58	72	82
Tankers	643	805	772	748	710	548
Total	4,049	4,317	4,357	4,359	4,374	4,428
			1,000s OF DEADWEIGHT TONS			
General Cargo Ships	18,241	18,288	16,634	14,496	11,754	9,387
Partial Containerships	1,387	3,011	4,950	7,860	11,468	16,365
Full Containerships[1]	2,766	4,198	5,086	6,307	8,058	10,180
Barge Carriers	1,015	896	1,160	1,336	1,520	1,721
Neobulk Carriers	1,730	2,193	2,779	3,487	4,298	5,428
Dry Bulk Carriers	26,278	28,340	31,692	34,691	39,482	46,550
Combination Carriers	5,837	7,275	8,463	9,631	11,128	13,090
LNG Carriers	32	608	2,394	3,316	5,000	6,185
Tankers	27,976	45,118	50,528	53,787	56,247	50,887
Total	85,262	109,928	123,685	134,909	148,956	159,793

[1] Includes Ro-Ro vessels.

Note: Totals may not add due to rounding

However, in the 1990s the combination of trade growth and vessel retirements is expected to result in a significant rise in construction activities.

Specific findings regarding the world fleet include:

In every ship type, increasingly Larger vessels will be built. The largest increases will occur in LNG carriers and tankers which are expected to increase in average size by 133 percent and 113 percent, respectively. The smallest increase, 14 percent will occur in barge carriers. The average increase in deadweight tonnage per vessel for the whole fleet is 71 percent.

There will be an increasing reliance on more sophisticated liner type vessels in the future. During the next 25 years the number of partial containerships will increase nearly eightfold, while the number of full containerships will nearly triple. The number of general cargo ships is projected to decrease over the same period by 60 percent.

Forecast - U.S. Flag Fleet.

The development of the U.S.-flag merchant fleet will depend on many factors such as management skills of U.S. flag vessel operators, capacity of U.S. shipyards, policies of the Maritime Administration, and Federal legislation. In the long run, a strong influence on the size of the U.S. flag merchant fleet may be caused by an additional factor, the worldwide trends towards national flag preference. The Merchant Marine Act of 1970 provides for a subsidy program. While it cannot be determined with certainty what type of subsidy program will be enacted for the period 1985-2035 (economic life expectancy of this report's improvement proposal), it appears reasonable to assume that the Federal Government will continue to provide the necessary support to the U.S. Merchant Marine.

Accordingly, if the forecasted U.S. flag share levels for a medium growth scenario are achieved, the number of vessels in the fleet would increase by nearly 200. This equates to a 75 percent increase in the number of vessels in the fleet and a 108 percent increase in deadweight tonnage. A medium scenario forecast of U.S. flag vessels is shown in Table 2.

Findings regarding the U.S. flag fleet include:

The U.S. flag fleet reflects a substantially different profile than the world fleet. The differences are most apparent when viewed in the context of liner type vessels (general cargo, partial and full container, and barge carrying ships) and non-liner type vessels (neobulk and dry bulk carriers, combination carriers, LNG carriers, and tankers). The number of these non-liner type vessels is projected to more than triple and on a deadweight basis to increase sixfold by the year 2000.

Table 2

MERCHANT FLEET FORECAST SUMMARY
U.S.-FLAG VESSELS ENGAGED IN U.S.-FOREIGN TRADE

Medium Scenario
(vessels and thousands of deadweight tons)

	1975	1980	1985	1990	1995	2000
			VESSELS			
General Cargo Ships	106	81	77	37	18	19
Partial Containerships	20	20	28	41	55	71
Full Containerships[1]	58	69	77	97	126	156
Barge Carriers	23	19	22	24	26	27
Neobulk Carriers	0	0	2	4	6	9
Dry Bulk Carriers	3	7	18	30	42	56
Combination Carriers	2	2	3	3	4	4
LNG Carriers	0	6	23	31	39	44
Tankers	38	48	48	53	56	56
Total	251	252	298	320	372	442
			DEADWEIGHT			
General Cargo Ships	1,402	1,057	1,021	513	249	269
Partial Containerships	265	269	389	569	769	999
Full Containerships[1]	1,112	1,353	1,568	1,966	2,600	3,228
Barge Carriers	839	720	866	954	1,051	1,149
Neobulk Carriers	6	6	34	76	134	224
Dry Bulk Carriers	91	255	623	1,041	1,575	2,330
Combination Carriers	172	171	223	283	318	350
LNG Carriers	0	346	1,325	1,786	2,673	3,265
Tankers	1,762	4,211	4,646	5,531	6,201	6,606
Total	5,650	8,380	10,695	12,719	15,570	18,420

[1]Includes Ro-Ro vessels.

Note: totals may not add due to rounding

U.S. flag vessel new constructions are projected to increase over the forecast period. In the 1976-1980 time period, construction was expected to average about 11 vessels per year. This figure will exceed 25 per year by 2000 if the projected U.S. flag share is achieved.

Summary Table 3 (U.S. Liquid Bulk Carriers - Atlantic Coast) presented below shows that by the year 2000, 37 percent of the vessels utilized in the liquid bulk trade for the Atlantic Coast are expected to be in the 30,000 to 50,000 DWT size range. The average loaded draft of this range of tankers is 37 feet.

The above tabulation seems to be borne out somewhat by recent reports of the Sun Shipbuilding and Drydock Company. Excerpted data from the 1975 and 1976 reports show the average deadweight tonnage of the U.S. flag fleet to have increased from 22,100 DWT in 1966 to 36,200 DWT in 1975 to 39,900 DWT in 1976. The average DWT of U.S. flag vessels under construction or on order in 1976 was 119,432.

C. Characteristics.

In recent years, the need for and use of proper vessel design characteristics in project formulation studies has become increasingly important. In the future, petroleum products and tankers will continue to form an integral part of any proposed deep draft harbor improvement.

Past investigations have relied principally on typical vessel characteristics. Although considered representative of the average characteristics for various types of deep draft vessels comprising the world fleet, these data lacked statistical verification. With this in mind, the Corps' Mobile District Office (MDO) conducted an independent investigation of bulk carriers and tankers in the 1976 world fleet to ascertain whether more reliable data could be developed regarding physical characteristics and dimensions for deep draft vessels. Results of their investigation have been documented in a report entitled, "Statistical Analysis of Vessel Characteristics for Dry Bulk Carriers and Tankers in the 1975 World Fleet" dated 2 January 1977. Data contained in the report are considered statistically reliable estimates of selected ship characteristics, including draft, tons per inch of immersion, deadweight tonnage, speed, length, breadth, and gross registered tonnage.

In the case of Portsmouth Harbor, proposed project dimensions have been based, in large measure, on the expected use of 30,000 to 45,000 DWT vessels, representing the average range of vessel sizes. The characteristics of the range of tankers have been excerpted from the Mobile District Office analysis and are shown on Table 4 below. Additional information on vessels is presented in the Economics Appendix.

Table 3

U.S. LIQUID BULK CARRIERS - ATLANTIC COAST

DWT (000)	PERCENT OF TOTAL FLEET* 1975	1980	1985	1990	1995	2000
1-10	2	2	2	2	2	1
10-20	2	2	4	3	5	5
20-30	37	36	28	29	29	25
30-50	42	41	37	36	38	37
50-70	9	9	19	15	14	15
70-125	7	9	9	8	5	5
125-175	0	0	1	7	7	12
175-225	0	0	1	3	5	7
225-300	0	0	0	2	2	1
300+	0	0	0	0	0	3
30-50 & Up Totals	58	59	65	59	57	57

*Excerpted Data from "A Study of the Future Requirments for Ships That Will Be Engaged in the U.S. World Trade for Both the Short and Long Term" - 1976 - By Temple, Barker, and Sloane, Inc.

Table 4

SIZE RANGE AND CHARACTERISTICS OF VESSELS
EXPECTED TO UTILIZE PORTSMOUTH HARBOR

Vessel Size DWT-Range	Av. DWT	Loaded Draft	Length	Beam
27,500-32,500	30,000	34	607	83
37,500-42,500	40,000	37	653	1
42,500-47,500	45,000	38	673	4
47,500-52,500	50,000	40	702	97

GENERAL NAVIGATION FACILITIES

Channel Depths. The design channel depth for the existing waterway and turning basin is based on the static loaded drafts of the range of vessels expected to transit the waterway and consideration of the following factors required for safe vessel operation:

a. Clearance. A vessel must have sufficient water under the keel to allow for safe and efficient maneuvering when operated under its own propulsion. Two feet of clearance under keel are required for channels

constructed in soft material. Where rock is present in the channel, an additional 2-foot clearance is provided for safety.

b. Squat and trim. A vessel in motion will squat or sink in the water, depending on: (1) the vessel speed, (2) distance between keel and channel bottom, (3) trim of the vessel, (4) cross-sectional area of the vessel, (5) whether the vessel is passing another large vessel, (6) location of the vessel relative to the channel centerline, and (7) general characteristics of the vessel. The trim of a vessel refers to the angle of the bottom of the vessel with respect to the water surface. Vessels are trimmed during loading so that a level keel can be established at a later period during the voyage as fuel and water are used. Because of the slow or dead slow speed of the vessels, no allowance was made for squat and trim.

c. Tidal phenomena. Vessels using Portsmouth Harbor are able to take advantage of a 8.4 foot mean range of tide throughout the year. By allowing for smaller than average tides and a 2-hour period prior to high tide, computations were made using a 6-foot tidal advantage under design conditions.

d. Loss in buoyancy. The lower density of freshwater relative to saltwater results in a loss of buoyancy as a vessel moves from the ocean into the harbor. The brackish transition zone from fresh to saltwater is located well above the head of the authorized 35-foot project. Therefore, no allowance is needed for vessels transiting the existing waterway.

e. Wave action. Waves or swells are often present in the Sound and harbor. Wave forces result in the vertical vessel motions of heave, pitch, and roll, and must be considered in determining the necessary channel depth. The motion of heave raises and lowers the entire vessel with relation to the stillwater level. The motion of pitch alternately thrusts the bow and stern of the vessel above and below the stillwater level. The motion of roll alternately raises and lowers one side of the vessel with relation to the keel or bottom centerline of the vessel. While vessels navigating the channel do encounter waves. They have almost no effect on large ocean-going vessels. Hence, allowance for vessel pitch, roll and heave due to wave forces are considered unnecesary.

f. Summary. Exhibit 1 illustrates the criteria used in determining available channel depth and design vessel draft for Portsmouth Harbor. The design draft was determined as follows:

Channel Depth at MLW	35 feet
Tidal Effect	6 feet
Available Depth	41 feet
Clearance Requirements	4 feet
Operating Draft	37 feet

Based on an operating draft of 37 feet and the vessel characteristics in Table 4, the selected design vessel is a 40,000 DWT vessel with a loaded draft of 37 feet, length of 653 feet and a beam of 91 feet.

Channel Widths. The design width of the Portsmouth Harbor channels is based on the traffic density, beam and steering characteristics of vessels expected to transit the waterway, and consideration of currents, wave conditions, winds, bends, and general alignment. Channel widths are measured at the design channel depth (bottom width).

a. The selected channel width must be sufficient to allow adequate control of vessels using the waterway under expected conditions of ship speed, currents, channel alignment and traffic.

Table 5

PROPOSED CHANNEL WIDTH

LOCATION	MANEUVER LANE (feet)	BANK CLEARANCE LANE (feet)	TOTAL CHANNEL WIDTH (feet)
Area 1 bend	455	135 x 2	725
Area 3 bend	80	135 x 2	550

b. For one-way traffic, the considered design condition for Portsmouth Harbor, the channel width is divided into three parts: a vessel maneuvering lane, and bank-clearance lanes, one on either side of the vessel, between the outer edges of the maneuvering lane and adjacent channel bank. The criteria and elements used in determining channel width needed to accommodate existing and expected vessels transiting the waterway are presented in Exhibit 2. The criteria include consideration of the following factors:

1. Size and speed of design vessels
2. Density of vessel traffic
3. Depth of channel
4. Current, velocity and direction
5. Vessel controllability on and off channel centerline
6. Pilot experience and capability
7. Channel uniformity
8. Tugboat assistance

The existing channel, with the exception of the bends, is 400 feet wide. The pilots and users of the harbor have verified the adequacy of the width.

Area 3 Channel. One area of special concern is the bend in the vicinity of Goat Island. Previous work in the channel has widened the

CHANNEL DEPTH DESIGN

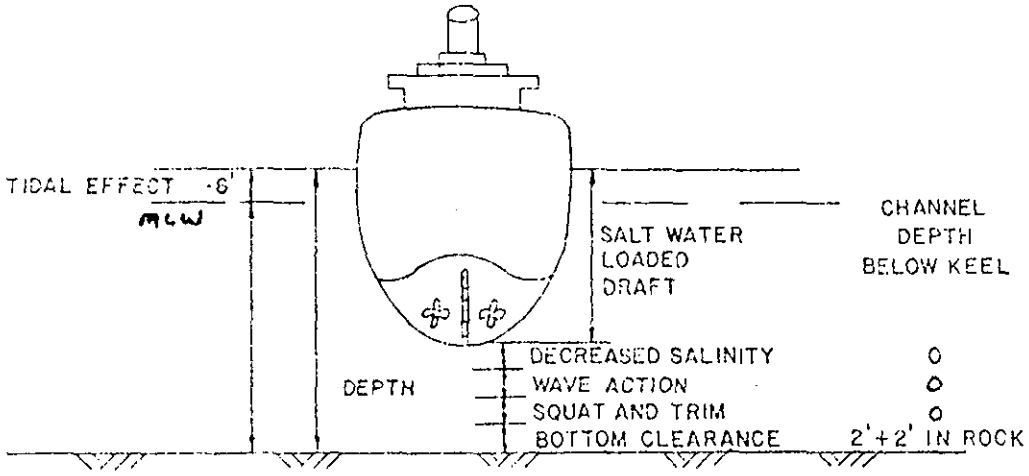
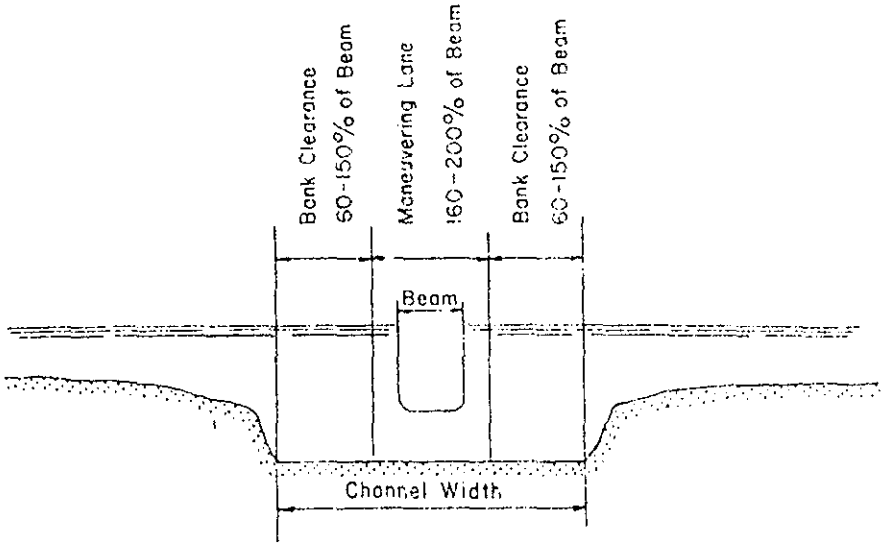


Exhibit 1

DESIGN CRITERIA AND
ELEMENTS OF CHANNEL WIDTH



ONE-WAY TRAFFIC

Exhibit 2

bend to a maximum of 800 feet, which appears adequate. However, vessels coming into port must begin their turns in the channel about 1,000 feet prior to any point of widening. Therefore, the channel should properly be widened to accommodate the beginning of the turning maneuver. A width of 550 feet would be adequate based on a manuevering lane of 300 percent of the beam and clearance lanes of 150 percent of the beam. The pilots and users have indicated that the width of 550 feet for an additional length of 1,000 feet would help in making their turns.

* Area 1 Turning Basin and Channel. Area 1, which is located between the two lift bridges poses two difficulties to navigation. The first is the inadequate width of the 600' channel. The present width is inadequate because there is not enough room to turn a large vessel between the two bridges. The bends, bridges and current in this area require emergency turning capability in the event of mechanical malfunction or emergency. The proposed emergency maneuvering area is approximately 150 percent of the design vessel length.

The second is the bend at Badgers Island which is currently limited to a 600-foot width. At this location where ships must pass through the lift bridges and navigate around the rocky bend, 500 percent of the beam (455 feet) is considered necessary for the maneuvering lane and 150 percent for bank clearance on either side or 135 feet. This provides a total width of 725 feet.

Area 2 Turning Basin. The present 850-foot turning basin is considered inadequate to turn the 700-foot long vessels now using the port. The proposed turning basin width has been set at 1,000 feet similar to that at Area 1, which is about 150 percent of the design vessel length.

Existing Maine-New Hampshire Interstate Bridge. The Interstate Bridge is a combined railway-highway crossing of the Piscataqua River. The lower deck provides a single railroad track that is used by the Boston and Maine Corporation servicing the Portsmouth Naval Shipyard. The upper deck accommodates one lane of highway traffic in each direction. The roadway width is 30 feet from curb to curb and a 3 foot wide sidewalk is provided on each side of the bridge. The overall length of the bridge is 2,800 feet. Responsibility for operation of the bridge and approaches is vested in the Maine-New Hampshire Interstate Bridge Authority. The Authority constructed the bridge as part of a 4.3 mile toll project. The total construction cost, including approach highways and other grade separation structures, was $2,968,000. The main lift span is 224 feet long, center to center of bearings, and provides for a navigation channel width of approximately 200 feet measured along the center line of the bridge. The facility was opened to traffic in 1940 and tolls were removed in 1972.

In 1968, one of the 85 foot lower deck railroad girder approach spans was modified to provide a separate opening for small river craft. This span can be raised and retracted between the trusses on an adjacent fixed *

* Changes from previous report. Rev. 3/84

* span. This permits passage of small craft without the necessity of opening the main lift span and minimizes the disruption of highway traffic. Usage of the bridge for railway movements is infrequent. Therefore, the retractable span is left open for navigation most of the time.

An electro-mechanical drive system for operating the lift span is located at the top of each tower. Electric power for operating both the lift span and the retractable span is obtained from a commercial power company. The operator's station and the controls for the lift span are housed in the building adjacent to the south lift span tower at highway deck level. The need for raising the span is determined both visually and by radio communication with navigation interests. The operating controls for the retractable span are independent of those for the lift span and are located at railway track level, adjacent to the retractable span.

Alteration Design Criteria. The study is based on modifications to increase the clear channel width for navigation. The present bridge alignment is to remain the same and as much of the existing structure as possible is to be incorporated in the modified structure. Additional specific criteria are as follows:

(1) Specifications for preliminary designs were prepared in accordance with current State Highway requirements, the current Standard Specifications for Highway Bridges adopted by the American Association of State Highway and Transportation Officials, and the American Railway Engineering Association Manual for Railway Engineering.

(2) Preliminary Design Criteria

(a) The new vertical lift span shall provide a clear horizontal channel width for navigation of approximately 300 feet measured parallel to the center line of the bridge. A vertical clearance of 135 feet across the entire width of the channel, measured from Mean High Water, shall be provided. (Same as existing).

(b) Construction methodology shall be such that disruption to highway, railway and waterway traffic can be minimized. The maximum continuous length of time for disruption to the various modes of traffic shall be as follows:

Railway Traffic	4 Months
Highway Traffic	Indefinite
Waterway Traffic	1 Month

(3) Selection of Proposed Alternative

Consideration was given to various alternatives in the studies leading to the development of the proposed scheme for alteration. An entirely new bridge on a different alignment was eliminated from *

* Changes from previous report

* consideraton. The cost of such a project was considered prohibitive. While no design studies nor detailed cost estimates were actually prepared for this alternative, general information that is available would indicate an amount in the order of $50,000,000 could be expected for bridge construction cost alone.

The location and alignment of the present navigation channel is such that for acceptable accommodation, the new lift span should be located as close as practical to the present lift span. The possibility of providing a new lift span elsewhere in the bridge, and converting the present lift span to a fixed span was thus eliminated from further consideration.

Consideration and preliminary design study was given to retaining one of the present lift span towers and tower pier in an alteration scheme. The profile of the river bed and the available depth of channel would indicate that it would be preferable to retain the north, (Maine) tower and pier, and lengthen the navigation span toward the south, (New Hampshire). A new tower and tower pier would be provided at the south end of the new lift span. The fixed approach truss span would be shortened to allow for the longer lift span. This scheme would incorporate the maximum amount of existing structure in the final altered layout. The preliminary design studies indicated the following major difficulties would be encountered with this scheme:

(a) The retained lift span tower would be inadequate in size to support the heavier load from the longer lift span. The weight of the new span would be approximately 75 percent more, and since the dead load of the span is balanced with a counterweight, the total actual load on the tower would be increased by twice this amount.

(b) For the same reasons as noted in (a) above, the tower pier would be inadequate in size and would need to be enlarged.

(c) The construction difficulties that would be encountered in enlarging the pier, and constructing a new tower in the same location as the present tower would be most severe. No significant cost savings are indicated when compared to a new tower on a new and separate pier. Also it is probable that the suspension of both railway and navigation traffic would be longer when compared to the construction of a new tower on a new and separate pier.

(d) This scheme would be detrimental to the appearance of the final altered bridge. The symmetry of span arrangement would be disrupted and the shortened fixed truss span would appear ill-proportioned.

In view of the difficulties indicated by this scheme, and the indication that no cost saving would be realized by retaining these elements in the altered structure, it was considered impractical, and the preliminary design was not developed further. *

* Changes from previous report

* Sequence of Bridge Alteration Construction. The proposed scheme for alteration consists of constructing two new tower piers, landward from the present tower piers, and spaced to accommodate the desired channel width of approximately 300 feet. The fixed truss spans adjacent to the present lift span would be modified and eventually shortened as required. New lift span towers would be constructed on these piers and would be erected outside the present spans in order to avoid disruption of navigation or traffic on the structure. The new lift span would be preassembled in its entirety on land or on falsework away from the site. All portions of the existing structure between the new piers would then be removed and the new preassembled lift span would be floated into position on barges and set on the new piers. Mechanical equipment and counterweight rope connections would be completed and the new span would be made operable. Removal of the old piers, down to the depth needed for safe navigation would, be necessary to clear the channel.

A drawing depicting the general staging of this proposed scheme is shown on Exhibit 3, Sequence of Construction. The stages at which the various modes of transportation are suspended are noted on the exhibit. Approximately 22 to 24 months would be allotted for construction. More detailed descriptions of the proposed scheme follow in the next section, Features of Alteration.

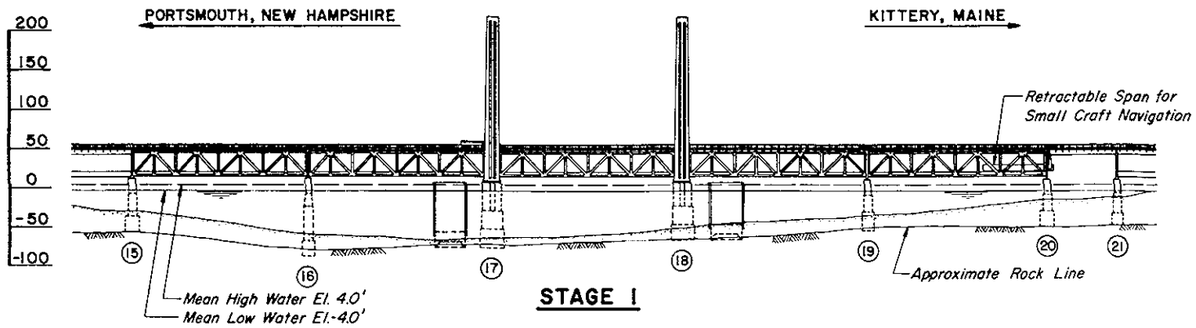
Features of Alteration. In order to determine the features of the proposed alteration scheme, and develop an estimate of cost, it was necessary to approximate the size and proportions of principal elements in the structure. This was done through the preparation of preliminary designs, reference to the original plans and design calculations that were prepared for the existing bridge, and from past experience gained on similar alteration projects. Comparative studies were also conducted on some of these major elements to provide assurance that the scope of alteration was defined as closely as practical for this type of study.

To describe these features of alteration, they have been categorized as substructure features, superstructure features, and operational features. A description of the studies for each category together with comments and observations follows:

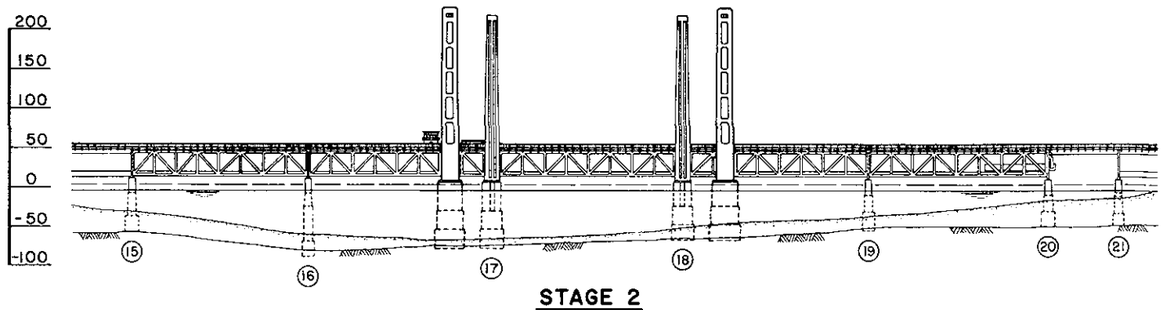
(1) Substructure Features Available subsurface information indicates bedrock at the crossing is covered by relatively thin and variable layers of sands and gravels. Water depth varies from approximately 45 to 60 feet at the navigation channel, measured from Mean Low Water. The mean height of the tide is 8.4 feet above MLW.

The tower piers for the existing bridge are of reinforced concrete construction with granite facing on the upper 12 feet of surface. They are supported by pneumatic caissons founded on bedrock. Construction records indicate the caissons were floated to the site, stayed by anchors, and sunk simultaneously with cofferdams. Diaries prepared by the resident engineer do not indicate that any major difficulties were encountered *

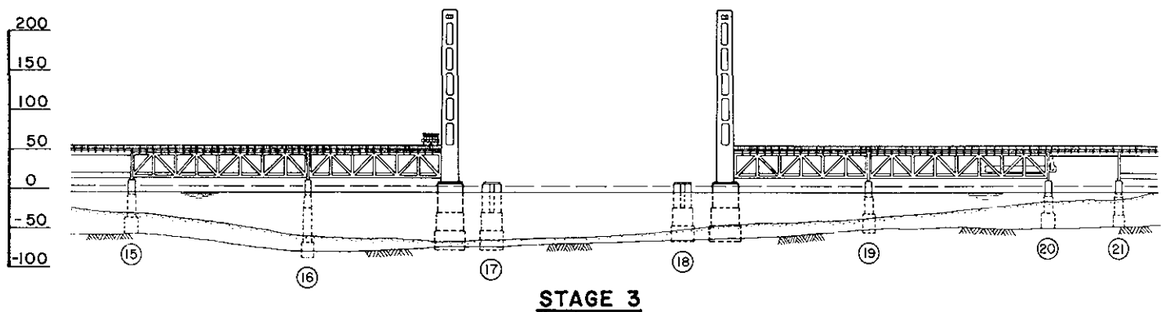
* Changes from previous report



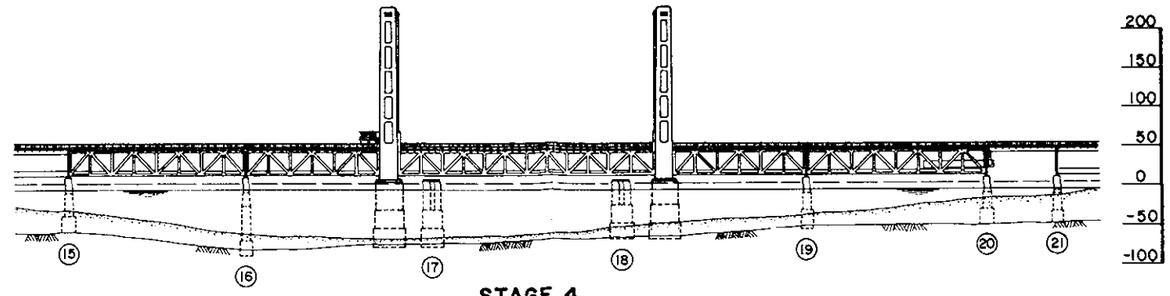
STAGE 1



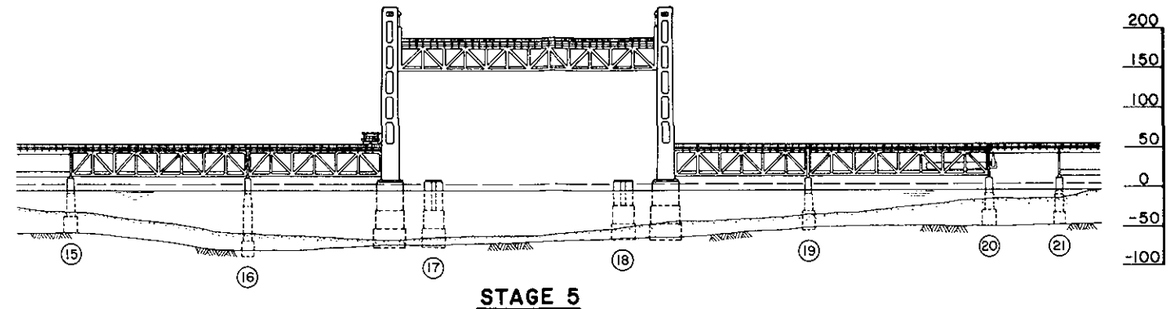
STAGE 2



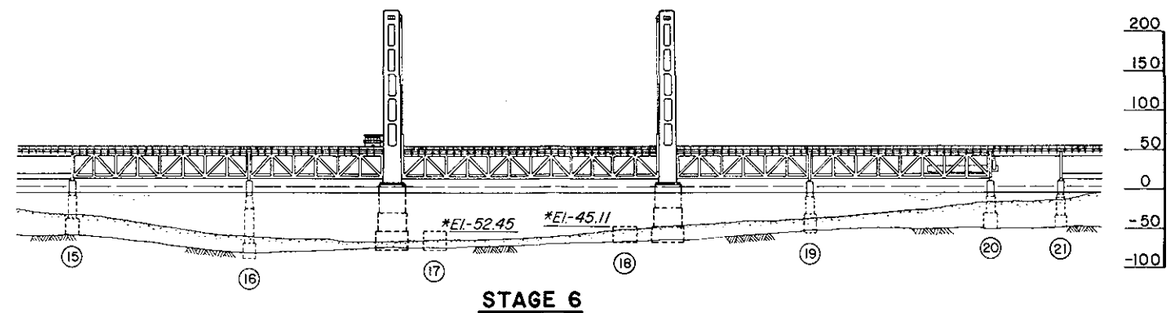
STAGE 3



STAGE 4



STAGE 5



STAGE 6

SEQUENCE OF CONSTRUCTION	APPROXIMATE TIME IN MONTHS																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
STAGE 1																								
Sink pneumatic caissons and follower cofferdams																								
Found caissons and fill working chambers with concrete																								
STAGE 2																								
Complete pier construction and remove cofferdams																								
Erect new towers outside existing truss spans																								
Install operating machinery at tops of towers																								
Modify trusses for shortened spans																								
Reconstruct/Relocate operators house and equipment																								
Install/Relocate electrical control equipment																								
STAGE 3																								
Remove existing lift span, towers and portions of fixed trusses																								
Finish modifications to shortened spans																								
Install counterweights suspended at tops of towers																								
STAGE 4																								
Float in new preassembled lift span and seat on new piers																								
Attach span guides, counterweight ropes, and raise lift span																								
STAGE 5																								
Complete installation of mechanical and electrical equipment																								
Balance and complete test operating the lift span																								
Begin removal of existing piers																								
STAGE 6																								
Complete pier removals to required level for navigation																								
Resume highway traffic over bridge																								

Suspend Rail Traffic — *1-Mo.* — *3.5-Mo.* — *1-Mo.* — *8-Mo.* — *Suspend Highway Traffic*
Suspend Navigation

* *Remove to top of existing pier caissons, or as required for minimum navigable channel depth requirements.*

Note:
Elevations are referenced to Mean Sea Level (MSL).

0 50 100 200
SCALE IN FEET

PORTSMOUTH HARBOR
PISCATAQUA RIVER
NAVIGATION IMPROVEMENT PROJECT

ALTERATION OF INTERSTATE BRIDGE
PORTSMOUTH, NEW HAMPSHIRE-KITTERY, MAINE

SEQUENCE OF CONSTRUCTION

CLEVERDON, VARNEY & PIKE, INC.
Consulting Engineers

HARRINGTON & CORTELYOU, INC.
Consulting Engineers

US Army Corps of Engineers
New England Division

EXHIBIT 3

* during founding of the caissons. Construction of the pier shafts was accomplished within the pumped out cofferdams.

Similar piers and construction methodology has been assumed for the proposed alteration scheme. Pneumatic caissons would be towed to the site and sunk with a follower cofferdam. Since this operation would be occurring under the existing bridge spans, it would be necessary to fabricate the cofferdam in approximately 5 to 10 foot deep sections which would be added as the caissons are sunk. The caissons and cofferdams could be stayed by anchors and by lines to existing bridge piers.

Founding caissons by pneumatic methods is a very costly process. Labor costs are high and permissible working times are strictly limited. Additional pier type studies are warranted in future design stages. After additional subsurface and hydraulic investigations have been conducted, it would be appropriate to consider an alternate pier design utilizing large diameter concrete shaft foundations. The shafts would derive their bearing capacity from being socketed into bedrock. A massive concrete cap engaging the tops of the shafts would provide support for the lift span towers and truss spans.

The proposed alternative for the piers is based on proven results and methodology that is commonly used for these conditions. An added advantage is gained by constructing a solid concrete pier full depth, as compared to a multi-shaft type pier. The shafts would be more vulnerable to damage from collision. Also the pneumatic founding process and construction within the cofferdam would cause the least disturbance in the river and should be preferable for environmental concerns.

(2) Superstructure Features. The railway live loading assumed for this study is Cooper E 72. It is recognized that the current AREA Manual recommends E 80, however the existing bridge was designed for E 72 and it would appear inconsistent to change for this portion of the overall bridge. Likewise, the highway live loading has been assumed as H20, which is the same as the original design, rather than HS20 in accordance with current AASHTO recommendations.

The new lift span truss would be composed of fabricated steel members, and would have a span length of 324 feet. This would provide a clear channel width of approximately 314 feet between pier fenders measured parallel to the center line of the bridge. The adjacent fixed truss spans would be modified and shortened to accommodate the longer lift span.

The upper deck of the bridge would consist of a 30 foot wide lightweight concrete roadway with sidewalks to match the configuration of the remainder of the bridge. The lower deck would accommodate the single track railway, with features provided in accordance with current accepted practice and specific standards of the Railway Company. *

* Changes from previous report

* Current AREA and AASHTO specifications contain recommendations for limiting truss span deflection under service live load plus impact. These recommendations for maximum deflection are:

AREA : 1/640 of the span length.
AASHTO : 1/800 of the span length for bridges without pedestrian traffic, and preferably 1/1000 of the span length for bridges with pedestrian traffic.

This structure is unusual in that it can simultaneously support highway, pedestrian and railway traffic. Strict adherence to these specified maximum deflections is therefore considered impractical. This is particularly true in view of the highly infrequent railroad usage of the bridge and the highly improbable occurrence of maximum highway and railway loading plus full theoretical impacts simultaneously.

The deflection of a truss span is primarily influenced by the depth of the truss. The lift span and all other truss spans in the existing bridge have a common depth of 30 feet and live load deflections are sufficiently controlled. However, a depth of 30 feet is relatively shallow for the longer lift span in the altered bridge, and consideration was given to providing a deeper truss. Preliminary member section properties were calculated for depths of 30, 32 and 34 feet. The trusses were then analyzed, and deflections calculated by the STRUDL frame analysis program. The approximate ratios of live load deflection to the length of new lift span are as follows:

	Truss Span Length		
Live Load Combination	30 feet	32 feet	34 feet
H20LL+I	1/3300	1/3600	1/3900
E72LL+I	1/ 820	1/ 890	1/ 960
(H20LL+I) + (E72LL+I)	1/ 660	1/ 710	1/ 760

The deflections are in conformance with AREA requirements but exceed somewhat the maximums as recommended by AASHTO.

Future studies and designs for alteration should include further consideration of this item. Because of the unusual circumstances, this bridge should be considered as a special case, and strict conformance with these generalized criteria should not be necessary. It should be possible to develop a deflection criteria that is acceptable to highway, railway and pedestrian interests, without being excessively inefficient in design of the members. Also, it should be possible to design the concrete deck slab to act compositely with the trusses. This would further reduce deflection. This possibility was not analyzed since it is a refinement beyond the scope of this feasibility study, and does not significantly affect the amount of materials needed nor the estimated construction cost.

For this study, a 30 foot truss depth has been assumed for the new lift span. This depth is consistent with the adjacent spans, and would *

* Changes from previous report

* result in a preferable appearance of the final altered structure. Also, it may be in the best interests of navigation, and safer, not to install a deeper span and reduce the underclearance. Operators of small craft that are accustomed to passing under the present span while it is closed, would abruptly need to alter or curtail this practice due to the reduced clearance caused by the deeper span.

The new towers would be composed of fabricated steel members and bracing. Their height would be increased by approximately 10 feet to conform to current AREA and AASHTO criteria. Their width, center to center of columns, would be increased by approximately 5 feet because of increased loading and to permit erection outside the present structure.

The fixed truss spans adjacent to the new lift span would each be shortened by two 28-foot panels. Support for bearing would be provided by the new piers. This is a relatively simple procedure and most modification work would be accomplished prior to the actual removal of the panels.

(3) Operational Features

The lift span and counterweights will be suspended by wire ropes passing over large diameter sheaves mounted at the top of the towers. Two sheaves per tower will be adequate. The raising and lowering of the span will be accomplished by operating machinery engaged to rotate the sheaves. Power to operate the span will be provided by electric motors coupled to the operating machinery. Electricity will be obtained from the local commercial power company. Power requirements will be comparable to existing needs because of the use of anti-friction bearings for the rotating sheaves.

The operator's station and the controls for the lift span, would be housed in a new building, supported from an adjacent fixed span at highway deck level. Maximum reuse of existing equipment and furnishings would be included.

Current state-of-the-art electro-mechanical equipment would be specified at the time of final design. For this study, the estimated cost is based on providing a 3-phase, 60-cycle, ac input, dc drive motor, with fully-automatic SCR controlled, pushbutton system.

Likewise the traffic barriers, warning lights etc., would be provided in accordance with state-of-the-art practice, with maximum relocation and reuse of existing equipment.

A General Plan and Elevation Drawing of the Alterned Structure is shown on Exhibit 4. *

* Changes from previous report

B. COST ESTIMATES

PLAN A

Plan A centers around improvements to the navigation channel at Areas 1 and 3 as shown on Figure 4 of the main report. The proposed project features are described below.

1. Widen the existing channel which is located between the vertical lift bridges from its current 600-foot width to 1,000-foot width.

2. Widen, by 100 feet, the northern limit of the channel at the bend adjacent to Badgers Island.

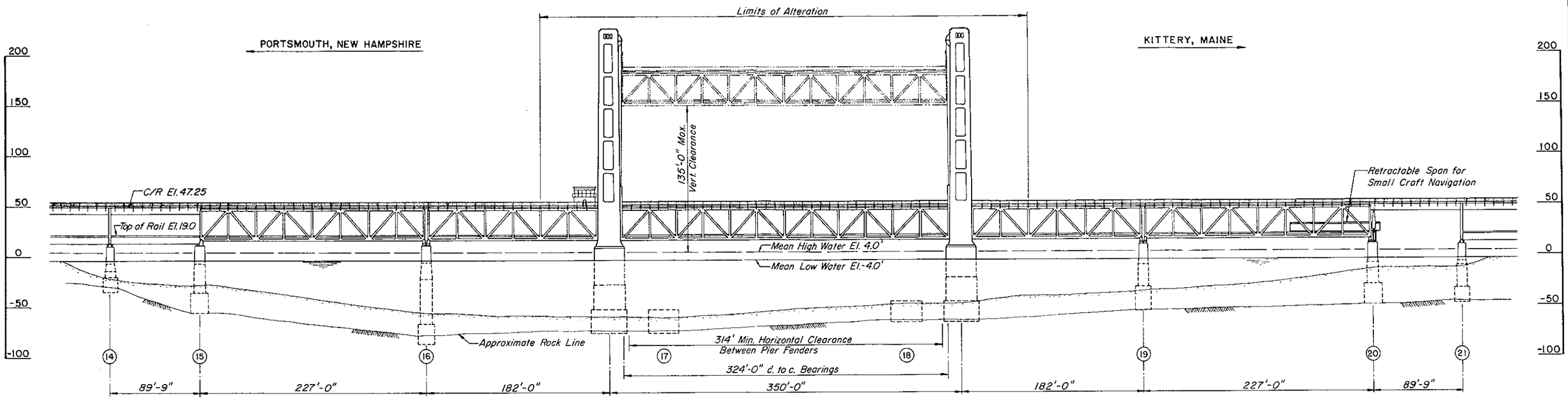
3. Widen, by 150 feet, the southern portion of the channel at the bend in the vicinity of Goat Island from its current width of 400 feet to 550 feet.

Plan A would require the removal and disposal of 228,000 cubic yards of ordinary overburden material and 305,000 cubic yards of rock. The overburden material is primarily composed of clean sands and gravel. A bucket or clamshell dredge would be used to remove this material. The removal of ledge rock and boulders would require drilling and blasting with dynamite. It is contemplated that the material would be transported to the Foul Area for disposal.

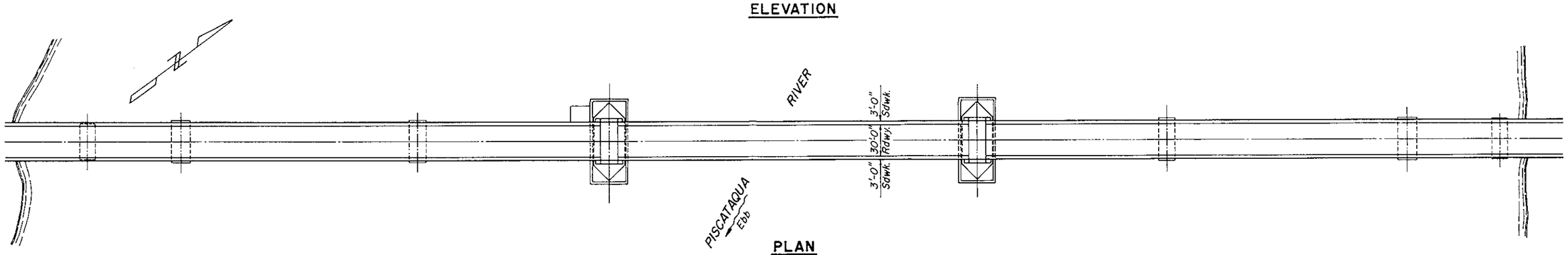
PLAN B

Plan B includes the navigation improvements of Plan A at Areas 1 and 3, along with widening the existing turning basin at the head of the channel at Area 2. The turning basin would be widened from 850 feet to 1,000 feet. The work at Area 1 and 3 is described under Plan A.

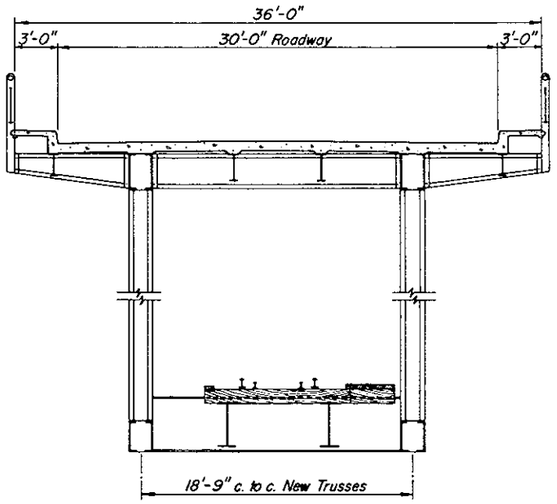
The work would involve the removal and disposal of 345,000 cubic yards of ordinary overburden material and 481,000 cubic yards of ledge rock. The dredging procedures and disposal site would be the same as for Plan A.



ELEVATION



PLAN



TYPICAL SECTION

Note:
Elevations are referenced to Mean Sea Level (MSL).

0 25 50 100
SCALE IN FEET

PORTSMOUTH HARBOR
PISCATAQUA RIVER
NAVIGATION IMPROVEMENT PROJECT

ALTERATION OF INTERSTATE BRIDGE
PORTSMOUTH, NEW HAMPSHIRE-KITTERY, MAINE

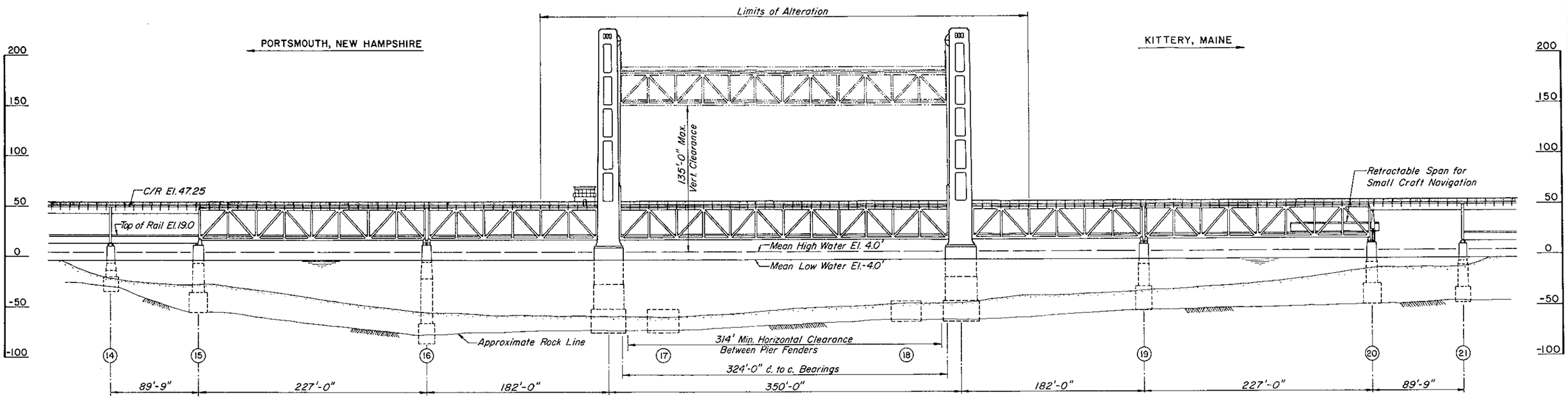
GENERAL PLAN AND ELEVATION

CLEVERDON, VARNEY & PIKE, INC.
Consulting Engineers

HARRINGTON & CORTELYOU, INC.
Consulting Engineers

US Army Corps of Engineers
New England Division

EXHIBIT 4



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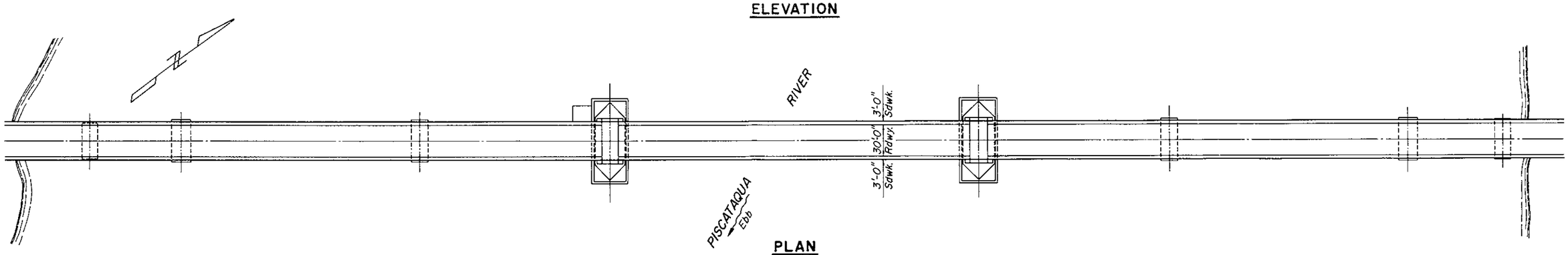
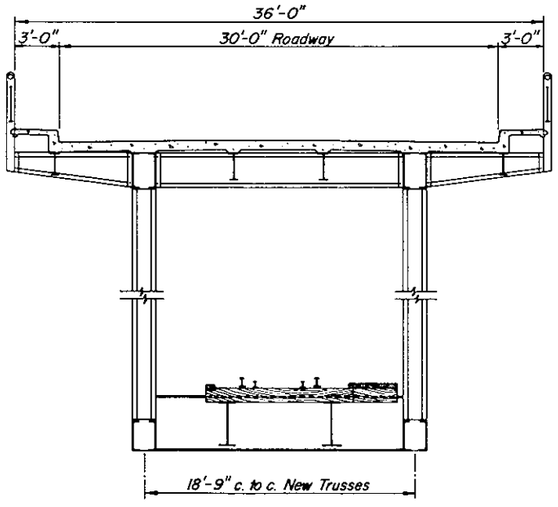


PLAN



TYPICAL SECTION

Note:
Elevations are referenced to Mean Sea Level (MSL).

0 25 50 100
SCALE IN FEET

CLEVERDON, VARNEY & PIKE, INC.
Consulting Engineers

HARRINGTON & CORTELYOU, INC.
Consulting Engineers

PORTSMOUTH HARBOR
PISCATAQUA RIVER
NAVIGATION IMPROVEMENT PROJECT

ALTERATION OF INTERSTATE BRIDGE
PORTSMOUTH, NEW HAMPSHIRE-KITTERY, MAINE

GENERAL PLAN AND ELEVATION

US Army Corps of Engineers
New England Division

EXHIBIT 4

* ESTIMATED PROJECT INVESTMENT

PLAN A
October 1983 Price Level

Cost Estimate With Disposal at the Foul Area

Dredging overburden and glacial till			
228,000 cy @ $13.50/cy		=	$ 3,078,000
Removal Ledge Rock			
305,000 cy @ $42.75/cy		=	13,038,750
	Subtotal	=	$16,116,750
Contingencies 20%		=	3,223,250
	Subtotal	=	$19,340,000
Engineering and Design 4%		=	773,600
Supervision and Administration 6%		=	1,166,400
	Total First Cost		$21,280,000
	Interest During Construction		880,000
	Investment Cost		$22,160,000

Annual Charges		
Interest and Amortization (8-1/8%, 50 years)	$ 1,837,000	
Annual Maintenance	Minor	
TOTAL ANNUAL COST	$ 1,837,000	*

* Changes from previous report

Rev. 3/84

* ESTIMATED PROJECT INVESTMENT

PLAN B
October 1983 Price Level

Cost Estimate With Disposal at the Foul Area

Dredging overburden and glacial till			
345,000[1/] cy @ $12.75/cy		=	$ 4,398,750
Removal Ledge Rock			
481,000 cy[1/] @ $42.75/cy		=	20,562,750
	Subtotal	=	$24,961,500
Contingencies 20%		=	4,992,300
	Subtotal	=	$29,853,800
Engineering and Design 4%		=	1,253,600
Supervision and Administration 4%		=	1,253,600
	Total First Cost		$32,360,000
	Interest During Construction		1,338,000
	Investment Cost		$33,698,000

Annual Charges	
Interest and Amortization (8-1/8%, 50 years)	$ 2,794,000
Annual Maintenance	Minor
TOTAL ANNUAL COST	$ 2,794,000

[1/] Includes quanitity estimates for Area 2 where seismic survey data was not available. *

* Changes from previous report

Rev. 3/84

* PLAN D

Plan D includes improvements of Plan A plus alteration of the Maine-New Hampshire Interstate Bridge.

The alteration features replacing the existing vertical lift span with a new and longer span, providing new towers, modification of the two adjacent fixed truss spans, construction of two new tower piers, electro-mechanical equipment and other miscellaneous work as described above.

The approximate quantities for principal items of construction, as shown in the estimate were obtained from preliminary designs prepared in this study, and from previous design calculations, construction records and as-built plans for the existing bridge where appropriate. The unit prices as shown are representative of similar types of work and were obtained primarily from cost data publications. They have been adjusted as nearly as practical to reflect the available records for construction prices in the project area. *

* Changes from previous report

*

ESTIMATED PROJECT INVESTMENT
PLAN D
October 1983 Price Level

Bridge Alteration

Item	Units	Quantity	Unit Price	Estimated Cost
Caissons In Place	Lump Sum		$3,500,000	$ 3,500,000
Substructure Concrete	C. Y.	5,690	200	1,138,000
Superstructure Concrete	C. Y.	340	350	119,000
Counterweight Concrete	C. Y.	735	200	147,000
Reinforcing Steel	Lbs.	245,000	0.50	122,500
Structural Metalwork	Lbs.	4,515,000	1.25	5,643,750
Bridge Railing	L. F.	770	50	38,500
Modification of Fixed Spans	Lump Sum		80,000	80,000
Operating Machinery	Lump Sum		210,000	210,000
Sheaves, Shafts and Bearings	Lump Sum		894,000	894,000
Wire Ropes and Sockets	Lump Sum		305,000	305,000
Electrical Work	Lump Sum		295,000	295,000
Stand-by Engine Generator Set	Lump Sum		48,000	48,000
Submarine Cable	Lump Sum		51,000	51,000
Operators House	Lump Sum		22,000	22,000
Railway Deck and Track	Lump Sum		55,000	55,000
Railway Signaling and Communications	Lump Sum		10,000	10,000
Navigation Lights	Lump Sum		7,000	7,000
Relocate Traffic Controls	Lump Sum		10,000	10,000
Pier Fenders	Lump Sum		26,000	26,000
Removal - Superstructures	Lump Sum		365,000	365,000
Removal - Substructure	Lump Sum		185,000	185,000
			Subtotal =	$ 13,271,750
	Variations and Contingencies 20% =			2,658,250
			Subtotal =	$15,930,000

Engineering and Design 7%	1,115,200
Supervision and Administration 8%	1,274,800
Total First Cost	$18,320,000
Interest During Construction	758,000
Investment Cost of Alteration	$19,078,000
Investment Cost of Dredging (Plan A)	22,160,000
Total Investment Cost	$41,238,000
Annual Charges	
Interest and Amortization (8-1/8%, 50 years)	$3,419,000
Annual Maintenance	Minor
TOTAL ANNUAL COST	$3,419,000

*

* Changes from previous report

Rev. 3/84

APPENDIX 3

ECONOMICS

PORTSMOUTH HARBOR

Appendix 3
Economics Appendix
(Revised March 1984)

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PORTSMOUTH HARBOR
APPENDIX 3
ECONOMICS

Methodology

The economic justification of the proposed improvement was determined by comparing benefits accruing to the project over its economic lifespan to project costs. The comparison is made possible by placing benefits and costs on an annual basis using the interest and amortization rate of 8 1/8 percent currently applicable to Federal projects. The economic life of the project is considered to be 50 years. A project is economically justified if the ratio of benefits to costs equals or exceeds one.

Costs

* The NED Plan first cost, interest during construction, total investment cost and annual cost are shown in Table 1.

Table 1

NED Plan (Improvements to Area 1 and Area 3) First Cost	$21,280,000
Interest During Construction	880,000
Investment Cost	$22,160,000
Annual Charges*	$ 1,837,000

Benefits

Project improvements would result in benefits derived from: (1) projected savings in the cost of transporting commodities on the improved waterway, (2) reduction of risk to shipping, (3) operational savings, and (4) the intangible value provided for national defense and emergencies. Monetary values are assigned to the transportation cost savings, the reduction of risk resulting from the channel modifications, and the operational savings. *

In determining project benefits discussions were held with representatives of the Piscataqua River Safety and Water Improvement Committee, the Portsmouth Pilots, and various terminal operators and shipping interests. These discussions led to the following findings:

1. All harbor users would benefit from improved safety.

* 2. Some users indicated the project would allow greater use of large ships and that they would definitely use the larger vessels to obtain efficiencies of scale and reduced transportation costs. Confidential letters from and records of interviews with all major companies involved *

* Interest and Amortization 8 1/8%, 50 year project life
Capital Recovery Factor .08291

*Asterisks denote changes from previous report. Rev. 3/84

* in Waterborne Commerce at Portsmouth Harbor concerning their anticipated operations with and without the proposed plan of improvement are on file at New England Division Headquarters. The records show that some shippers will operate the same size ships whether or not the proposed project is implemented, whereas other shippers will use more of the larger 40,000 DWT vessels instead of smaller 30,000 and 20,000 DWT vessels. Results of the interviews are given on Tables 10 and 11 on pages 17, 18, and 19 of this Appendix. The increase in use of larger vessels shown on these tables is considered reasonable based on results of the interviews.

The shippers explained that if one of the newer more highly maneuverable 40,000 DWT ships, having more powerful engines and better rudder and screw configurations is available when their need arises they will risk bringing in the larger vessel, but if one is not available they schedule a smaller ship. Other shippers simply stated they would be more inclined to schedule the larger ships if the level of risk is reduced. Confidence in the level of safety will induce them to bring in additional larger vessels. *

3. Petroleum products would comprise the largest group of commodities that could be transported at a reduced cost if the project is implemented.

4. There would be a reduction in the transportation costs of salt shipments if the project is completed.

* 5. Some users would gain incidental operational savings achieved when vessels are turned. *

6. Gypsum, lumber, metals, machinery, and small quantities of other commodities are shipped through Portsmouth. It was determined that these shipping interests would maintain use of their present vessels or vessels of the same dimensions and would, therefore, not obtain transportation savings.

* 7. Areas 1 and 3 together are the key for transportation savings and risk reduction. A substantial increase in the use of large vessels will occur only with channel modifications in both areas. Improvements to one area alone would effectively worsen the safety hazard.

Assigning a dollar value to the benefit resulting from the removal of hazards to shipping and thus reducing risk would normally require the development of a probability schedule of potential damages. Risk would be viewed as the probability of damages multiplied by the dollar amount of damages. Since few navigation-related accidents and damages have actually occurred in the past, it is not possible to develop the damage-frequency information required for analysis in this manner. An approximation of the benefit of risk reduction, however, is developed using unit transportation costs. *

*Asterisks denote changes from previous report. Rev. 3/84

* The value provided to national defense and emergencies is related to the fact that the daily movement of commodities on U.S. waterways is vital for security. Since this benefit is considered intangible, it is not quantifiable but becomes especially significant when one considers that Pease Air Force Base and the Portsmouth U.S. Naval Shipyard are located in the vicinity of the project area. *

Economic Study Area and Transportation Network

The specific economic study area is comprised of Portsmouth, New Hampshire; New Castle, New Hampshire; Newington, New Hampshire; Eliot, Maine; and Kittery, Maine. The chief impacts of the proposed project would be on the city of Portsmouth. Portsmouth is part of a trade area that extends throughout northern New England. Portsmouth's strategic geographic location on New Hampshire's seacoast, midway between Portland, Maine and Boston, Massachusetts, has enabled it to become a significant trade distribution center. The city is situated along Interstate 95 and is also served north-south by the Spaulding Turnpike and U.S. Route 1, and westerly by routes U.S. 4, N.H. 16 and N.H. 101. The Boston and Maine Railroad provides daily freight service to and from Portsmouth. Overnight truck delivery from Portsmouth is capable of reaching 36 percent of the population of the United States and also parts of eastern Canada. Charter plane flights are available from Skyhaven in Rochester, New Hampshire, which is 20 miles from Portsmouth. The airport in Manchester, New Hampshire is an hour from Portsmouth and is an official Landing Rights airport for customs. Air service to New York City is also available from Manchester, Keene, Concord, and Laconia, New Hampshire.

Types and Volumes of Commodity Flows

The chief commodities that move on the existing waterway are petroleum products. These products comprise approximately 80 percent of the marine commerce shipped through the harbor. Significant quantities of limestone (gypsum) and salt are also received. The chief shipments out of Portsmouth are petroleum products and iron and steel scrap. Table 2 provides a historical summary of commerce at Portsmouth Harbor. The table shows that total tonnage has increased in a relatively steady manner
* throughout the past decade. A detailed picture of the freight traffic for the latest availabe year, 1981 is presented in Table 3. *

Commodity trends for the most significant products shipped through Portsmouth are displayed in Table 4. Limestone (gypsum) is imported from Canada. Salt comes from Mexico. Petroleum products are received chiefly from Venezuela, the U.S. gulf area, Boston, New York-New Jersey, and Pennsylvania. Ports of origin and destination for petroleum products shipped through Portsmouth are illustrated in Figure 1.

*Asterisks denote changes from previous report. Rev. 3/84

Table 2

Historical Summary of Commerce at Portsmouth Harbor

(Short Tons)

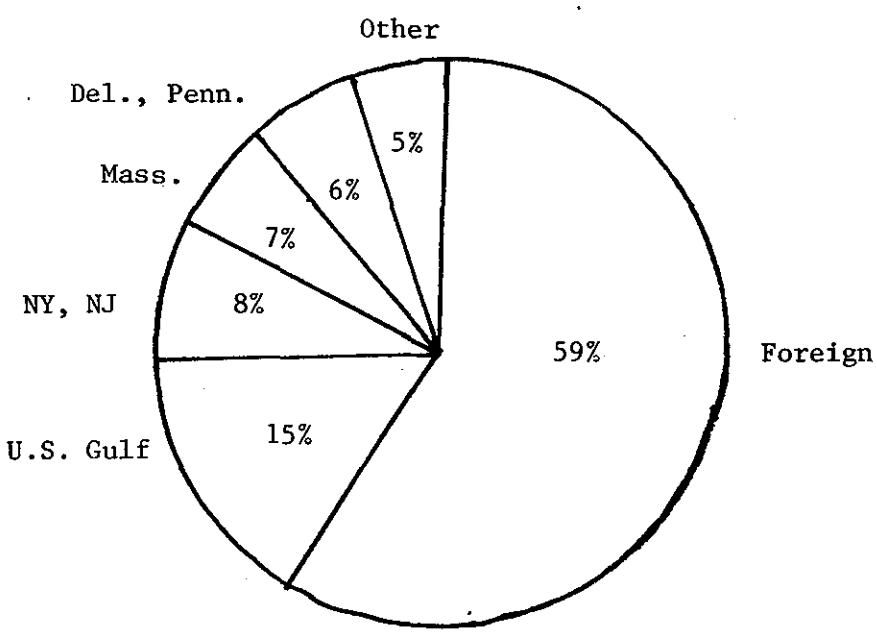
		Foreign		Domestic coastwise			
Year	Total	Imports	Exports	Receipts	Shipments	Local	Internal
* 1981	3,072,214	1,707,674	182,959	880,250	251,165	50,110	56
* 1980	2,783,781	1,169,332	182,024	1,258,425	141,367	32,633	-
* 1979	3,519,926	1,718,795	127,338	1,373,633	278,369	21,791	-
1978	3,305,303	1,879,913	84,932	1,053,817	274,614	12,027	-
1977	3,499,854	1,977,235		1,021,729	469,647	31,243	-
1976	3,143,313	1,471,028	32,763	1,146,580	433,938	59,000	4
1975	2,943,343	1,370,991	13,297	1,049,254	445,235	64,566	
1974	2,364,290	1,056,345	7	1,004,608	249,720	53,609	1
1973	2,314,900	1,294,195	13,453	944,262	62,984	-	6
1972	2,188,071	1,178,455		976,998	32,605	-	13
1971	2,174,425	1,271,111	10	856,980	46,321	-	3
1970	2,187,303	1,092,276	1,957	1,036,435	53,585	3,042	8
1969	1,795,915	953,842	-	835,874	6,197	-	2

Source: Waterborne Commerce of the United States

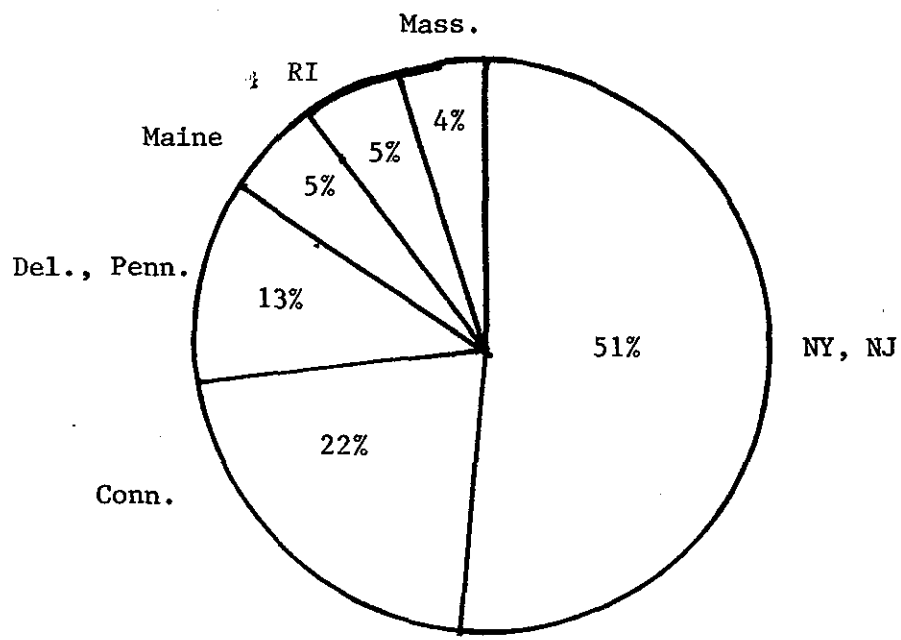
*Asterisks denote changes from previous report.

FIGURE 1 ORIGINS AND DESTINATIONS OF PETROLEUM PRODUCTS
(1978)

Petroleum Products Arriving at Portsmouth by Origin



Petroleum Products Leaving Portsmouth by Destination



SOURCE: Date Extracted from Waterborne Commerce statistics, 1978.

Table 3

Portsmouth Harbor 1981 Freight Traffic

*

(Short Tons)

PORTSMOUTH HARBOR, N. H.

SECTION INCLUDED: FROM MOUTH TO NEWINGTON, N. H., ON THE WEST BANK OF THE PISCATAQUA RIVER. CONTROLLING DEPTH: 32.0 FEET IN THE 35-FOOT CHANNEL TO SIMPLEX DOCK; THENCE 30 FEET TO UPSTREAM LIMIT. PROJECT DEPTH: 35 FEET AT MEAN LOW WATER OVER LEDGES.

COMPARATIVE STATEMENT OF TRAFFIC

YEAR	TONS	PASSENGERS	YEAR	TONS	PASSENGERS
1972	2,188,871	----------	1977	3,499,894	94,284
1973	2,314,950	----------	1978	3,365,303	102,986
1974	2,384,298	----------	1979	3,519,926	109,566
1975	2,943,343	----------	1980	2,783,781	91,160
1976	3,143,313	77,884	1981	3,679,214	191,808

FREIGHT TRAFFIC, 1981

(SHORT TONS)

COMMODITY	TOTAL	FOREIGN		DOMESTIC			
				COASTWISE		INTERNAL	LOCAL
		IMPORTS	EXPORTS	RECEIPTS	SHIPMENTS	RECEIPTS	
TOTAL	3,672,214	1,707,674	182,959	880,250	291,165	56	50,110
0121 TOBACCO, LEAF	1,546	1,546	----------	----------	----------	----------	----------
0131 FRESH FRUITS	436	----------	436	----------	----------	----------	----------
0133 COFFEE	9	9	----------	----------	----------	----------	----------
0911 FRESH FISH, EXCEPT SHELLFISH	98	42	----------	----------	----------	56	----------
1311 CRUDE PETROLEUM	198,385	198,385	----------	----------	----------	----------	----------
1411 LIMESTONE	199,376	199,376	----------	----------	----------	----------	----------
1491 SALT	188,079	188,079	----------	----------	----------	----------	----------
2019 ANIMAL BY-PRODUCTS, NEC	68	----------	68	----------	----------	----------	----------
2031 FISH AND SHELLFISH, PREPARED	146	146	----------	----------	----------	----------	----------
2061 SUGAR	32,379	----------	32,379	----------	----------	----------	----------
2081 ALCOHOLIC BEVERAGES	5,277	5,277	----------	----------	----------	----------	----------
2211 BASIC TEXTILE PRODUCTS	79	41	38	----------	----------	----------	----------
2421 LUMBER	148	----------	148	----------	----------	----------	----------
2511 FURNITURE AND FIXTURES	8	----------	8	----------	----------	----------	----------
2631 PAPER AND PAPERBOARD	372	24	348	----------	----------	----------	----------
2821 PLASTIC MATERIALS	5	----------	5	----------	----------	----------	----------
2851 PAINTS	141	141	----------	----------	----------	----------	----------
2891 MISCELLANEOUS CHEMICAL PROD	1	----------	1	----------	----------	----------	----------
2911 GASOLINE	188,895	4,392	----------	184,503	----------	----------	----------
2912 JET FUEL	84,084	----------	----------	75,398	8,614	----------	----------
2913 KEROSENE	41,549	----------	----------	41,549	----------	----------	----------
2914 DISTILLATE FUEL OIL	576,201	197,534	----------	361,412	7,621	----------	9,634
2915 RESIDUAL FUEL OIL	1,260,528	809,485	----------	281,714	216,403	----------	48,676
2917 NAPHTHA, PETROLEUM SOLVENTS	17,272	----------	----------	----------	17,272	----------	----------
2918 ASPHALT, TAR, AND PITCHES	39,539	35,267	----------	4,272	----------	----------	----------
2921 LIQUEFIED GASES	75,346	75,346	----------	----------	----------	----------	----------
2991 PETROLEUM AND COAL PROD, NEC	31,410	----------	----------	31,410	----------	----------	----------
3011 RUBBER AND MISC PLASTIC PROD	16	16	----------	----------	----------	----------	----------
3111 LEATHER AND LEATHER PRODUCTS	603	461	142	----------	----------	----------	----------
3291 MISC NONMETALLIC MINERAL PROD	4	4	----------	----------	----------	----------	----------
3315 IRON, STEEL SHAPES, EXC SHEET	898	898	----------	----------	----------	----------	----------
3319 IRON AND STEEL PRODUCTS, NEC	931	931	----------	----------	----------	----------	----------
3321 NONFERROUS METALS, NEC	2,798	----------	2,798	----------	----------	----------	----------
3322 COPPER ALLOYS, UNWORKED	118	118	----------	----------	----------	----------	----------
3411 FABRICATED METAL PRODUCTS	987	987	----------	----------	----------	----------	----------
3511 MACHINERY, EXCEPT ELECTRICAL	1,674	1,272	137	----------	265	----------	----------

*Asterisks denote changes from previous report.

Table 4
Commodity Trends at Portsmouth Harbor

	Year	Commodities in Short Tons Petroleum Products (Imports, coastwise receipts)	Limestone (imports)	Salt (imports)
	1969	1,467,281	90,832	209,472
	1970	1,811,918	133,663	146,656
	1971	1,859,572	96,703	159,023
	1972	1,830,045	133,569	170,194
	1973	2,031,871	115,706	84,277
	1974	1,807,177	149,023	31,534
	1975	2,231,732	135,669	52,069
	1976	2,368,649	164,079	183,251
	1977	2,931,504	85,627	144,799
	1978	2,578,349	157,739	197,642
*	1979	2,707,554	157,818	214,035
*	1980	2,161,789	109,219	198,919
*	1981	2,200,779	195,376	180,079

Source: Waterborne Commerce of the United States

Waterborne Commerce Projections

In order to formulate plans for port maintenance and improvement, the New England Division of the U.S. Army Corps of Engineers retained Resource Planning Associates Inc. (RPA) to project shipments of petroleum products through the 17 major ports in New England including Portsmouth Harbor.* To carry out the study various forecasts of demand for petroleum products for the New England region as a whole were surveyed. The projections of the U.S. Department of Energy, Energy Information Administration (EIA) were selected as the most comprehensive and accurate estimates of the region's future use of six principal petroleum products: residual, distillate, gasoline, jet fuel, liquid gas, and naptha. Using these projections and data developed on product consumption among the states in 1977, RPA estimated the amounts of each fuel that will be shipped through each major port in 1985, 1990, and 1995.

RPA concluded that shipments of petroleum products through New England ports will decrease in the long run. After an increase in the short term, total volume will begin to decline. The most rapid declines in petroleum product consumption are anticipated to occur in the electric utilities and industrial sector, where residual and distillate fuels will be increasingly replaced by coal. Consumption in the residential,

*Resource Planning Associates, Projections of Petroleum Product Shipments through New England Ports, 1979 - on file at New England Division Headquarters

*Asterisks denote changes from previous report. Rev. 3/84

commercial, and transportation sectors is expected to remain relatively constant over time.

The specific projections for the port of Portsmouth are presented in Table 5. RPA's projections end in 1995 due to the extremely unpredictable nature of the petroleum industry. Projected commerce was therefore held constant for the years following 1995. The projections for products not covered by RPA were based on an analysis of commodity trends and discussion with the commodity shipper/receivers. The major assumptions which underlie the RPA projections are as follows.

Supply-Related Assumptions

1. Crude oil prices will be decontrolled by 1981.

2. Natural gas prices to producers will be limited by the terms of the Natural Gas Policy Act of 1978.

3. Imports of Canadian and Mexican natural gas and liquified natural gas will be limited.

4. The price of natural gas imports under new contracts will be tied to the world market price of oil.

5. The Alaskan Natural Gas Pipeline will be completed by 1985.

6. The Trans-Alaskan Pipeline will be expanded to a capacity of million barrels of oil a day by 1985, and to 2.2 million barrels a day by 1990.

7. The PACTEX oil pipeline will be the only oil pipeline link connecting the West Coast to the midwestern and southeastern pipeline networks.*

8. Export of domestically produced crude oil will not be permitted.

Demand-Related Assumptions

1. Only the coal-fired electric power plants currently (1979) in planning stages will be operating in 1985. Thereafter, these shares will remain constant.

*This project was cancelled.

Table 5
Commodity Projections - Portsmouth Harbor

(Thousands of Short Tons)

Commodity	1977	1978	Actual 1979	1980	1981	Projected 1985	1990	1995
Salt	144.7	197.6	214.0	198.9	180.1	260.4	260.4	260.4
Crude Petroleum	560.9	383.0	373.5	269.6	198.3	650.0	690.0	730.0
Liquid Gas	157	109.7	78.2	79.9	75.3	202.0	196.0	193.0
Petroleum Products[1]	2049.5	2097.3	2255.9	1812.2	1927.1	2307.7	2337.7	2174.0

Source: Resource Planning Associstes, terminal operators, various industry sources.
[1]Excludes liquified gases, includes kerosene, other

Vessel Fleet Composition

Most of the commodity tonnage shipped to Portsmouth arrives on vessels in the 30-35,000 DWT range. An indicator of sizes of the vessels using the harbor is provided by Table 6 which shows trips and drafts from 1969 to 1981. The table also reveals that the total number of vessels calling in Portsmouth has risen substantially during this time period.

As previously noted, vessels carrying petroleum products account for approximately 80 percent of all harbor tonnage. Information extracted from Waterborne Commerce data indicates that between 15 and 20 percent of petroleum tonnage is delivered by barge, while the remainder arrives on tankers. Typical dimensions of vessel types are provided in Table 7.

Table 6
Trips and Drafts of Vessels

(Inbound Onl)

Draft (ft)	1981*	1980*	1979*	1978	1977	1976	1975	1974	1973	1972	1971	1970	1969
37			8	11	-	6	7	4	4	2	6	5	1
36			16	18	32	13	10	9	9	15	14	9	2
35	36	42	18	15	16	17	17	13	9	23	10	17	6
34	12	17	15	11	11	14	10	10	15	8	9	9	8
33	6	11	14	9	7	8	7	2	7	1	4	2	8
32	5	4	3	4	7	8	9	12	19	5	4	10	9
31	4	3	9	7	14	8	11	14	14	14	16	11	12
30	3	2	4	6	5	6	3	1	3	5	5	6	8
29	5	-	-	1	-	1	3	5	3	5	5	6	8
28	4	3	7	-	5	2	5	5	2	3	1	2	5
27	2	1	2	2	2	2	5	3	2	1	2	5	1
26	11	2	6	4	9	8	5	3	3	5	2	6	3
25	10	7	3	3	2	5	5	4	6	7	6	5	4
24	5	6	5	7	-	3	2	4	4	6	5	9	4
23	6	2	5	3	5	3	4	1	5	6	8	3	8
22	3	2	7	5	2	3	7	3	7	8	6	5	4
21	7	8	9	6	2	2	3	2	3	8	13	6	1
20	-	6	8	5	1	2	3	4	2	8	3	6	1
19	7	4	4	2	5	3	4	1	5	2	2	4	2
18 and less	585	428	585	393	354	422	300	301	244	237	211	206	218
Total	711	548	728	512	478	536	419	401	366	366	334	329	310

Source: Waterborne Commerce of the United States

Note: Drafts shown are "out of trim" values and not draft amidships. They are rounded up to next even foot.

*Asterisks denote changes from previous report.

Table 7
Typical Vessel Dimensions of Vessel Fleet
By Type and Deadweight Tonnage

Type	Vessel Characteristics DWT	Length	Beam	Draft, Loaded
U.S. Flag Tankers				
	20,000	529	77	32
	30,000	582	83	32
	40,000	703	87	34.5
	50,000	677	96	39.5.
Foreign Flag Tankers				
	20,000	529	77	32
	40,000	622	95	37
	50,000	680	106	41.5
	Gross Tons			
Barge (57,000 Barrel) Capacity	3,374	335	64	23
	DWT			
Foreign Flag Dry Bulk Vessels				
	15,000	454	70	29.6
	25,000	586	75	33.4
	35,000	643	79	36.6
	50,000	707	92	41.2
LPG Carriers				
	Length	693 ft.		
	Width	104 ft.		
	Draft	34 ft. 6 in.		
	Capacity	59,000 cubic meters		

Source: U.S. Maritime Administration, various industry sources

Domestic and World Fleet Trends

According to a merchant fleet forecast prepared for the U.S. Maritime Administration, the average deadweight of new construction for the world fleet will continue to increase consistent with historical growth (see Figure 2). One exception is tankers where replacement requirements for large numbers of small vessels will cause the average size of tanker construction to drop significantly after 1985.

Although relatively small tankers will be built, according to Portsmouth shipping interests, the smallest sizes in use at Portsmouth are coming scarce. A cursory review of various shipping publications reveals that the smallest U.S. flag tankers ordered for the near-term future are ships similar to two 34,400 DWT tankers recently delivered by Sun Ship, Inc. for use on various U.S. intercoastal trade routes. American Tankship has applied for financial assistance for the construction of three 37,500 DWT tankers for use at Eastern Coast ports. Also, Exxon plans to take delivery on three 43,000 ton tankers during 1983 and 1984. The cursory review of shipping publications did not reveal any anticipated U.S. constructions below 30,000 DWT.

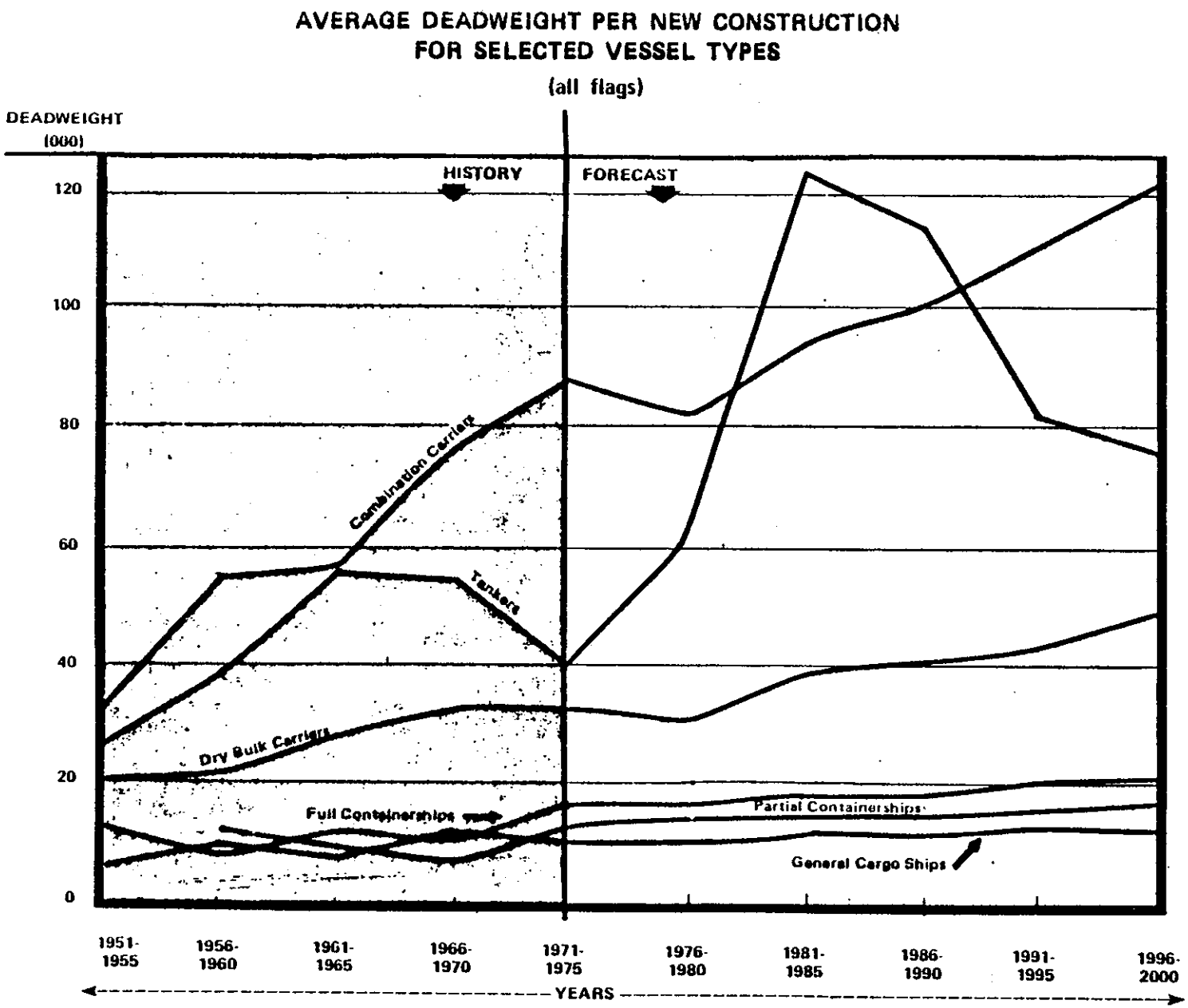

AVERAGE DEADWEIGHT PER NEW CONSTRUCTION
FOR SELECTED VESSEL TYPES
(all flags)
DEADWEIGHT
(000)
120
100
80
60
40
20
0
HISTORY
FORECAST
Combination Carriers
Tankers
Dry Bulk Carriers
Full Containerships
Partial Containerships
General Cargo Ships
1951-1955
1956-1960
1961-1965
1966-1970
1971-1975
1976-1980
1981-1985
1986-1990
1991-1995
1996-2000
YEARS

Figure 2

Temple, Barker and Sloane, Inc. forecasts of new constructions indicate that foreign tankers below 30,000 DWT will be built for use in U.S.-foreign trade. Also a small number of U.S. flag tankers below 30,000 DWT will be built for use in U.S.-foreign trade. These construction forecasts are presented in Table 8.

Table 8
New Constructions
Liquid Bulk Carriers

Deadweight (000)	1981-1985 Number of Ships		1986-1990 Number of Ships		1991-1995 Number of Ships		1996-2000 Number of Ships	
	World	US	World	US	World	US	World	US
1-10		3	0	2	0	2	0	110
10-20	5	0	3	0	5	0	9	0
20-30	16	3	13	1	18	0	51	0
30-50	23	12	17	7	24	3	70	4
50-70	11	1	6	2	10	1	38	0
70-125	11	1	5	1	8	2	39	1
125-175	14	0	10	0	13	1	15	1
175-225	8	0	5	0	3	0	10	0
225-300	15	0	9	0	5	0	13	3
300+	10	3	6	2	3	1	9	4

Source: Merchant Fleet Forecsst of Vessels in U.S. Foreign Trade, Temple, Barker and Sloane, Inc., Wellesley Hills, MA prepared for the Maritime Administration, Washington, DC, May 1978.

Although small tankers will comprise a limited portion of future world fleet construction, the rate of replacement for these vessels will fall below the rate of scrapping. The result will be a decrease in the absolute number of tankers below 30,000 DWT in future years. The projections of the world fleet shown in Table 9 demonstrate the forecasted decline in the number of small tankers.

Although small tankers may be in short supply, large barges have been replacing small tankers in recent years. The role of tugs and barges has expanced from short-haul harbor service to encompass long-haul coastwise, intercoastal, and worldwide traffic. Barges of up to 55,000 DWT are under construction.

In general each generation of tugs and barges is successively more expensive. First generation tugs snd barges were typically small snd used for short-haul distances. Second generation tugs and barges are usually designed for coastwise service and the tugs tend to be heavier, more powerful and more extensively outfitted. The cost of third generation integrated tug-barge systems can approach or exceed the cost of self-propelled vessels with equivalent capacity. As barges become more

expensive and hauling distances for barges increase, the costs of small tankers versus barges tend to equalize.

Table 9
Liquid Bulk Carriers - Atlantic Coast

DWT (000)	1980 Number of Ships World	1980 US	1985 Number of Ships World	1985 US	1990 Number of Ships World	1990 US	1995 Number of Ships World	1995 US	2000 Number of Ships World	2000 US
1-10	43		43		38		31		12	
10-20	16		15		13		12		9	
20-30	115	1	116	1	108	2	85	2	62	2
30-50	129	11	121	11	121	11	110	11	76	11
50-70	95	3	69	2	66	2	69	3	33	2
70-125	115	5	106	5	88	4	83	5	30	2
125-175	3		10	1	15	1	18	1	23	
175-225	2		6		9		11		13	
225-300	4		14		21		25		27	
300+	3	1	9	4	14	5	17	7	18	7

Vessels include only those engaged in U.S.-foreign trade. World fleet includes U.S. fleet.

Source: Merchant Fleet Forecast of Vessels in U.S. Foreign Trade, Temple, Barker and Sloane, Inc.

Future Fleet at Portsmouth Under With and Without Project Conditions

* The largest fully loaded tankers in use at Portsmouth are approximately 40,000 DWT. Because the berths at the various facilities in the harbor average 35 to 38 feet in depth, and the channel itself is at 35 feet, a ship with drafts varying from 35 to 37 feet must be brought in utilizing the tides. Thus, even with the recommended improvements, the largest fully loaded ship that could be brought in is a 40,000 DWT vessel. This same size is now brought in, but under hazardous conditions. Larger vessels, ranging up to 60,000 DWT's are also brought in, but in a lightloaded condition. Because of the vertical height restriction of 135 feet determined by the bridges, only certain of these vessels can come in.

A fully loaded 45,000 DWT vessel, for example, would have a draft of up to 40 feet and could be utilized today only if it were lightloaded. One individual facility has deepened its berth to 38 feet plus 2 feet of overdraft to handle ships this size. A fully loaded 45,000 DWT tanker with up to a 40 foot draft would have difficulty even with the eight foot tide and the channel depth of 35 feet. Such a ship would have to be lightloaded and even then a question of safety is raised because of length and beam.

Today, bringing in a 40,000 DWT vessel presents a safety hazard because of its length and width ranging up to 700 feet and 100 feet respectively. Few of these vessels are utilized because of the safety risks at the bends and between the bridges. Smaller vessels of 16 to 21,000 DWT's and up to 430 feet long are considered by the pilot to be relatively risk free in transiting the harbor. Although world and U.S. shipping trends show a movement toward larger vessels (wider and longer without having deeper drafts), expanded use of large ships at Portsmouth will not be practical without channel improvements to reduce risk.

Without structural modifications to the harbor, the average vessel size at Portsmouth can be expected to exhibit only a slight increase as smaller vessels are retired. To some extent, increased use of large barges can be expected to partially compensate for the forecasted decline in the number of small tankers. However, as small vessels are retired, it is likely that slightly greater use of large tankers will contribute to a worsening of the safety hazard at the harbor.

If a structural plan is implemented, it will become feasible to make use of more tankers in the 35-45,000 DWT range. Based on discussions with terminal operators and the pilot, the perception is that the harbor will be safer under the with project condition. Although many of the ships st Portsmouth are currently in the 35-40,000 DWT category, they tend to be concentrated at the lower end of the range. Because of a wide varience in maneuverability of ships in this range, many cannot be brought in safely now and have been refused entry into the harbor by the chief pilot. If the channel is improved, Portsmouth shipping interests indicate that they *

*Asterisks denote changes from previous report. Rev. 3/84

will use more large vessels and a shift toward the upper limit of the 35-45,000 DWT range can be expected. The project would encourage use of more 40-45,000 DWT vessels by making it safer for them to transit the channel.

Among the ships that call on Portsmouth are liquified petroleum gas (LPG) carriers. Like conventional tankers, they carry liquid petroleum in bulk. However, the characteristics of the LPG vessels are much different than traditional tankers. The gas ships are designed to carry cargo pressurized, semi-refrigerated, fully refrigerated, etc. Also, in place of DWT, which describes the carrying capacity of a tanker by weight, cubic meters are used to describe the carrying capacity of the LPG vessels in terms of volume.

At Portsmouth, propane and butane are imported on LPG vessels. Much of the cargo is received on 40,000 cubic meter ships. Most LPG carriers being built today, however, are in the 50-59,000 cubic meters range. If the project is implemented, there would be greater opportunity for safe delivery using the 50-59,000 cubic meter ships.

Salt is imported to Portsmouth with dry bulk vessels of up to 50,000 DWT. These ships first discharge part of their cargo at another port before entering Portsmouth. According to the salt importer, the harbor modifications would enable fully-loaded 45-50,000 DWT ships to be utilized by allowing for improved maneuverability.

A complete vessel fleet forecast for Portsmouth Harbor is presented in Table 10. This forecast is based on an analysis of U.S. and world fleet trends and on discussions with Portsmouth terminal operators and shipping interests. The projections of future vessels considers both the "with project condition" and "without project condition". Additionally, both foreign and domestic fleet forecasts are provided. Projected vessel trips for each size ship for various years over the project life are shown in Table 11.

Table 10
Portsmouth Harbor Fleet Projections
Projected Size Distribution of Tanker Fleet
Transporting Petroleum Products to Portsmouth by Percentage

Without Project

Foreign
% of Tonnage

DWT	Midpoint	1981	1985	1995	2005	2015	2025	2035
0-15,000	7,500	0	0	0	0	0	0	0
15-25,000	20,000	16	16	16	15	15	14	14
25-35,000	30,000	37	37	37	35	35	34	34
35-45,000	40,000	47	47	47	50	50	52	52

US
% of Tonnage

DWT	Midpoint	1981	1985	1995	2005	2015	2025	2035
0-15,000	7,500	41	41	41	41	41	41	41
15-25,000	20,000	19	19	19	19	19	18	18
25-35,000	30,000	36	36	36	35	35	34	34
35-45,000	40,000	4	4	4	5	5	7	7

With Project

Foreign
% of Tonnage

DWT	Midpoint	1981	1985	1995	2005	2015	2025	2035
0-15,000	7,500	0	0	0	0	0	0	0
15-25,000	20,000	16	8	8	7	7	5	5
25-35,000	30,000	37	20	20	18	18	15	15
35-45,000	40,000	47	72	72	75	75	80	80

US
% of Tonnage

DWT	Midpoint	1981	1985	1995	2005	2015	2025	2035
0-15,000	7,500	41	41	41	41	41	41	41
15-25,000	20,000	19	11	11	10	10	8	8
25-35,000	30,000	36	24	24	22	22	21	21
35-45,000	40	4	24	24	27	27	30	30

Projected Size Distribution of LPG Fleet Transporting
Propane, Butane to Portsmouth by Percentage (foreign flag)

Without Project

% of Tonnage

Cubic Meters	1981	1985	1995	2005	2015	2025	2035
10-29,000	24	10	10	10	10	10	5
30,39,000	33	20	20	10	10	10	10
40-49,000	22	20	20	20	20	20	25
50-59,000	21	50	50	60	60	60	60

With Project

Cubic Meters	1981	1985	1995	2005	2015	2025	2035
10-29,000	24	0	0	0	0	0	0
30-39,000	33	15	15	15	15	15	15
40-49,000	22	15	15	15	15	15	15
50-59,000	21	70	70	70	70	70	70

Projected Size Distribution of Dry Bulk Fleet Transporting
Salt to Portsmouth

Without Project

% of Tonnage

DWT	1981	1985	1995	2005	2015	2025	2035
25,000 Av	20	20	20	20	20	20	20
50,000 Av	80	80	80	80	80	80	80

With Project

% of Tonnage

DWT	1981	1985	1995	2005	2015	2025	2035
25,000 Av	20	20	20	20	20	20	20
50,000 Av (1 port)	80	80	80	80	80	80	80

Table 11
Projected Vessel Trips for Deep Draft Traffic ***

Vessel Type	1981	1985	1995	2005	2015	2025	2035
Without Project							
TANKER, BARGE (petroleum)*							
7,500 DWT	63	72	71	71	71	71	71
20,000 DWT	24	27	26	26	26	25	25
30,000 DWT	35	39	38	37	37	35	35
40,000 DWT	20	23	23	24	24	26	26
With Project							
7,500 DWT	63	72	71	71	71	71	71
20,000 DWT	24	14	14	12	13	10	10
30,000 DWT	35	24	23	21	21	18	18
40,000 DWT	20	41	40	43	43	47	47
Without Project							
Dry Bulk (Salt)							
20,000 DWT	2	2	2	2	2	2	2
50,000 DWT**	7	7	7	7	7	7	7
With Project							
25,000 DWT	2	2	2	2	2	2	2
50,000 DWT	7	4	4	4	4	4	4

*Includes Crude, LPG
**Two ports
***Coastwise shipments, imports only. Table is intended to provide indication of rate of change of vessel trips. Absolute numbers are only
* approximations. These are fully loaded ships required to carry only the commerce destined for Portsmouth. Some ships offload a partial shipload at Portsmouth, the proceed to other ports, as shown by the larger number of actual trips in Table 6. Benefits are claimed only for commerce and trips necessary for fully loaded ships to serve Portsmouth. *

*Asterisks denote changes from previous report. Rev. 3/84

Transportation Cost Savings

Table 12 displays hourly operating costs for various vessel types. These general costs were used to determine the transportation cost per ton for commodities shipped to Portsmouth. Unit costs were based on round trip distances from chief ports of origin and include an allowance for tidal delay. Because all vessels must dock during slack water at Portsmouth tidal delay was held constant for all vessel sizes. A typical computation of vessel voyage is shown in Table 13. Average unit costs for various size vessels are presented in Table 14.

By allowing more large petroleum ships to use the ports, structural channel modifications would result in transportation cost savings. These savings are based on a comparison of transportation costs without the project and transportation costs with the project. Annual costs and savings are displayed in Table 15. A summary of benefits is provided in Table 16.

* Transportation cost savings are computed for petroleum vessels transiting the main channel and emergency maneuvering area in Area 1. Incidental transportation and operational savings are also computed for ships visiting the Port Authority facilities and the salt termilnal. Larger salt ships (45,000 to 50,000 DWT) can only be turned if lightloaded. The emergency maneuvering area will permit fully loaded salt ships to be turned safely, thus realizing cost/ton savings achieved by the use of the larger vessels aready calling at Portsmouth. *

*Asterisks denote changes from previous report. Rev. 3/84

Table 12

Vessel Hourly Operating Costs

Type	Size	Foreign Flag		U.S. Flag	
		At Sea	In Port	At Sea	In Port
Tankers	20,000 DWT	$ 950	$ 690	$1,707	$1,525
	30,000 DWT	$ 1,112	$ 749	$1,980	$1,620
	40,000 DWT	$ 1,220	$ 826	$2,177	$1,787
	50,000 DWT	$ 1,369	$ 913	$2,410	$1,960
Dry Bulk	25,000	$ 1,011	$ 674		
	50,000	$ 1,311	$ 932		
LPG	10-29,000 cm	$16,579	$14,028		
	30-39,000 cm	$20,404	$16,579		
	40-49,000 cm	$25,506	$19,130		
	50-59,000 cm	$36 984	$20,405		

Barge - Cost Per Barrel*
- from Boston: $46.6¢
- from New York $1.39

* includes surcharge

Source: Department of the Army, Water Resources Support Center, Corps of Engineers, July 1981, Barge Companies

Table 13
Typical Calculation of Vessel Voyage Cost

U.S. Gulf - 30,000 DWT Vessel

a.	Round Trip Distance	4,200 naut. mi.
b.	Cruising time at 16 knots vessel speed	262 hrs.
c.	Cost at sea (262 hrs x 41,6341/hr)	$518,760
d.	Cost in port (48 hrs x $1,175/hr)	$ 77,760
e.	Tidal delay costs (7.2 hrs x $1,175/hr)	$ 11,664
f.	Total Round Trip Cost	$608,184
g.	Tonnage: (DWT x 1.12)	33,600 short tons
	Net (x .96)	32,256
h.	Cost per ton ($608,184 - 32,256 tons)	$18.85

* This $18.85 cost is averaged with the costs from other ports of origin to obtain the $16.01 unit cost for a 30,000 DWT vessel in Table 14.

Table 14

Average Unit Transportation Costs

Commodity	Vessel Size	Flag	Unit Cost
Petroleum Products (excluding LPG)	7,500 DWT	U.S.	$ 6.14/ton
	20,000 DWT	U.S.	$21.62/ton
	20,000 DWT	Foreign	$13.17/ton
	30,000 DWT	U.S.	$16.01/ton
	30,000 DWT	Foreign	$10.11/ton
	40,000 DWT	U.S.	$13.30/ton
	40,000 DWT	Foreign	$ 8.36/ton
LPG	10-29,000 cm	Foreign	$13.61/cm
	30-39,000 cm	Foreign	$11.18/cm
	40-49,000 cm	Foreign	$10.22/cm
	50-59,000 cm	Foreign	$ 9.93/cm
Salt	25,000 DWT (avg.)	Foreign	$26.70/ton
	50,000 DWT (two ports)	Foreign	$19.47/ton
	50,000 DWT (one port)	Foreign	$19.10/ton

Table 15
Computation of Annual Transportation Costs and Savings for Petroleum Products*

Year 1985

DWT Group (000)	Without Project: Tonnage Percent	Without Project: Carried Volume (000)	Without Project: Unit Cost	Without Project: Total Cost (000)	With Project: Tonnage Percent	With Project: Carried Volume (000)	With Project: Unit Cost	With Project: Total Cost (000)	Savings $(000)
FOREIGN									
7.5	0	0	-	-	0	0	0	-	
20	16	279.2	13.17	3,677.1	8	139.6	13.17	1,838.5	
30	37	645.7	10.11	6,528.0	20	349.0	10.11	3,528.4	
40	47	820.2	8.36	6,856.9	72	1,256.4	8.36	10,503.5	
TOTAL		1,745.1		17,062.0		1,745.0		15,870.4	1,191.6
DOMESTIC									
7.5	41	497.2	6.14	3,052.8	41	497.2	6.14	3,052.8	
20	19	230.4	21.62	4,981.2	11	133.4	21.62	2,884.1	
30	36	436.6	16.01	6,990.0	24	291.0	16.08	4,658.9	
40	4	48.5	13.30	645.1	24	291.0	13.30	3,870.3	
TOTAL		1,212.7		15,669.1		1,212.6		14,466.1	1,203.0

*excludes LPG, includes crude

Table 15
Computation of Annual Transportation Costs and Savings for Petroleum Products*

Year 1995

DWT Group (000)	Without Project: Tonnage carried Percent	Volume (000)	Unit Cost	Total Cost (000)	With Project: Tonnage carried Percent	Volume (000)	Unit Cost	Total Cost (000)	Savings $(000)
FOREIGN									
7.5	0	0	-	-	0	0	-	-	
20	16	274.1	13.17	3,609.9	8	137.1	13.17	1,805.6	
30	37	633.9	10.11	6,408.7	20	342.7	10.11	3,464.7	
40	47	805.2	8.36	6,731.5	72	1,233.6	8.36	10,312.7	
Total		1,713.2		16,750.1		1,713.4		15,583.2	1,166.9
DOMESTIC									
7.5	41	488.2	6.14	2,997.5	41	488.2	6.14	2,997.5	
20	19	226.2	21.62	4,890.4	11	131.0	21.62	2,832.2	
30	36	428.6	16.01	6,861.9	24	285.8	16.01	4,575.7	
40	4	47.6	13.30	663.1	24	285.8	13.30	3,801.1	
Total		1,190.6		15,382.9		1,190.8		14,206.5	1,176.4

*excludes LPG, includes crude

Table 15
Computation of Annual Transportation Costs and Savings for Petroleum Products*

Year: 2005, 2015

DWT Group	Without Project: Tonnage carried Percent	Volume (000)	Unit Cost	Total Cost (000)	With Project: Tonnage carried Percent	Volume (000)	Unit Cost	Total Cost (000)	Savings $(000)
FOREIGN									
7.5	0	0	-	-	0	0	-	-	
20	15	257.0	13.17	3,384.7	7	119.9	13.17	1,579.1	
30	35	599.7	10.11	6,063.0	18	308.4	10.11	3,117.9	
40	50	856.7	8.36	7,162.0	75	1,285.0	8.36	10,742.6	
Total		1,713.4		16,609.7		1,713.3		15,439.6	1,170.1
DOMESTIC									
7.5	41	488.2	6.14	2,997.5	41	488.1	6.14	2,996.9	
20	19	226.2	21.62	4,890.4	10	119.1	21.62	2,574.9	
30	35	416.7	16.01	6,671.4	22	261.9	16.01	4,193.0	
40	5	59.5	13.30	791.4	27	321.5	13.30	4,276.0	
Total		1,190.6		15,350.7		1,190.6		14,040.8	1,309.9

*excludes LPG, includes crude

Table 15
Computation of Annual Transportation Costs and Savings for Petroleum Products*

YEAR: 2025, 2035

DWT Group	Without Condition: Tonnage Percent	Without Condition: carried Volume	Without Condition: Unit Cost	Without Condition: Total Cost	With Condition: Tonnage Percent	With Condition: carried Volume	With Condition: Unit Cost	With Condition: Total Cost	Savings ($000)
FOREIGN									
7.5	0	0	-	-	0	0	-	-	
20	14	239.8	13.17	3,158.2	5	85.7	13.17	1,128.7	
30	34	582.5	10.11	5,889.1	15	257.0	10.11	2,598.2	
40	52	890.9	8.36	7,448.0	80	1,370.7	8.36	11,459.1	
Total		1,713.2		16,495.3		1,713.4		15,186.0	1,309.3
DOMESTIC									
7.5	41	488.2	6.14	2,997.5	41	488.2	6.14	2,997.5	
20	18	214.3	21.62	4,633.1	8	95.3	21.62	2,060.4	
30	34	404.8	16.01	6,480.8	21	250.0	16.01	4,002.5	
40	7	83.3	13.30	1,107.9	30	357.2	13.30	4,750.8	
Total		1,190.6		15,219.3		1,190.7		13,811.0	1,408.1

*excludes LPG, includes crude

Table 15
Computation of Annual Transportation Costs
and Savings for LPG*

Cubic Meter Group (000)	Without Project: Tonnage carried Percent	Volume (000)	Unit Cost*	Total Cost (000)	With Project: Tonnage carried Percent	Volume (000)	Unit Cost*	Total Cost (000)	Savings ($000)
Year: 1985									
10-29,000	10	34.3	13.61	467	0	0	-	-	
30-39,000	20	68.6	11.81	767	15	51.5	11.18	576	
40-49,000	20	68.6	10.22	701	15	51.5	10.22	526	
50-59,000	50	171.5	9.93	1,703	70	240.1	9.93	2,384	
Total	100			3,638	100			3,486	152
Year: 1995									
10-29,000	10	32.8	13.61	446	0	0	-	-	
30-39,000	20	65.6	11.18	733	15	49.2	11.18	550	
40-49,000	20	65.6	10.22	670	15	49.2	10.22	503	
50-59,000	50	164.0	9.93	1,629	70	229.6	9.93	2,280	
Total	100			3,478	100			3,333	145

*All foreign traffic

Table 15
Computation of Annual Transportation Costs
and Savings for LPG*

Cubic Meter Group (000)	Without Project: Tonnage carried Percent	Volume (000)	Unit Cost*	Total Cost (000)	With Project: Tonnage carried Percent	Volume (000)	Unit Cost*	Total Cost (000)	Savings ($000)
Year: 2005, 2015									
10-29,000	10	32.8	13,61	464	0	0	-	-	
30-39,000	10	32.8	11.18	367	15	49.2	11.18	550	
40-49,000	20	65.6	10.22	670	15	49.2	10.22	503	
50-59,000	60	196.8	9.93	1,954	70	229.6	9.93	2,280	
TOTAL	100			3,437	100			3,333	104
Year: 2025, 2035									
10-29,000	5	16.4	13.61	223	0	0	-	-	
30-39,000	10	32.8	11.81	367	15	49.2	11.18	550	
40-49,000	25	82.0	10.22	838	15	49.2	10.22	503	
50-59,000	60	196.8	9.93	1,954	70	229.6	9.93	2,280	
Total	100			3,382	100			3,333	49

*All foreign traffic

Table 15
Computation of Annual Transportation Costs
and Savings for Salt*

DWT Group (000)	Without Project: Tonnage carried Percent	Volume (000)	Unit Cost	Total Cost (000)	With Project: Tonnage carried Percent	Volume (000)	Unit Cost	Total Cost (000)	Savings
				Year: 1985-2035					
25,000	20	52.1	26.70	1,391	20	52.1	26.70	1,391	
50,000	80	208.3	19.47	4,056	80	208.3	19.10	3,979	
Total	100			5,447	100			5,370	77

Table 16

* Summary of Transportation Cost Savings ($000)

Channel Modifications - Areas 1 and 3 - and Emergency Manuevering Area

Year	Petroleum Foreign	Petroleum Domestic	Total	LPG*	Total
1985	1,192	1,203	2,395	152	2,547
1995	1,167	1,176	2,343	145	2,488
2005	1,170	1,310	2,480	104	2,584
2015	1,170	1,310	2,480	104	2,584
2025	1,309	1,408	2,717	49	2,766
2035	1,309	1,408	2,717	49	2,766

*LPG shipments all foreign

Average Annual Equivalent - 2,548

Emergency Manuevering Area - Area 1

Year	Salt*	Average Annual Equivalent
1985-2035	77	77 *

*Salt shipments all foreign

*Asterisks denote changes from previous report. Rev. 3/84

OPERATIONAL SAVINGS

* Incidental operational savings are expected to also accrue to the emergency maneuvering area proposed for Area 1. The existing channel here is 600 feet wide and in combination with berthing areas is now used to turn salt and scrap iron ships calling at the Granite State Minerals and New Hampshire Port Authority terminals respectively. Approximately 8 to 10 larger scrap iron vessels of the 28,000 to 32,000 DWT size and 625 and 645 feet in length are turned yearly in this area. In addition, about 6 to 8 salt vessels ranging from 40,000 to 50,000 DWT and up to 700 feet are also turned yearly (but only lightloaded).

With the proposed emergency maneuvering area in place, approximately 1000 feet will be made available for turning operations resulting in time savings and improved safety. Discussions with the chief harbor pilot indicate that roughly 1/2 hour could be saved each time a larger vessel is turned. With approximately 16 larger vessels coming in each year and tugboat time valued at $300/hour, the following savings would be realized:

16 vessels turned/year x 1/2 hour saved/turn x $300/hour per tug X 3 tugs = $7,200

The same time saving - 1/2 hour per turning operation will also mean less time in port for the 16 salt and scrap iron vessels. Using foreign in port hourly rates for 30,000 DWT scrap iron ships and 45,000 DWT salt vessels, the following saving are computed:

9 scrap iron vessels X $441/hour in port X 1/2 hour =	$1,985
7 salt vessels X $495/hour in port X 1/2 hours =	$1,733
TOTAL:	$3,718
SAY:	$3,700

Under existing conditions, these larger vessels are turned only at high tide. With the proposed emergency maneuvering area and channel width adding up to 1000 feet, turning operations, according to the chief pilot, could be conducted at any time during the 12.4 hour tide cycle, even at low water. Therefore, when a ship is finished unloading, waiting time for high tide would be eliminated. These savings are calculated as follows:

9 scrap iron vessels X $441/hour in port X 6 hours average waiting time =	$23,814
7 salt vessels X $495/hour in port X 6 hours average waiting time =	$20,790
TOTAL:	$44,604
SAY:	$44,600

Total incidental operational savings amount to the following:

Turning Savings-Tug	$7,200
-Vessel	3,700
Tidal Delay Savings	$44,600
TOTAL:	$55,500

*

*Asterisks denote changes from previous report. Rev. 3/84

Risk Analysis

* Risk can be viewed as the probability of damages multiplied by the dollar amount of damages. Theoretically, the average annual amount of risk should equal the expected average annual losses resulting from navigation-related accidents. Damage-frequency information is required if risk is to be quantified in an exact manner. At Portsmouth this information is non-existent.

Despite the lack of information required for exact computation, an approximation of risk can be developed using the unit transportation costs displayed in Table 14. For example, the unit transportation cost for a 20,000 DWT vessel (U.S.) at Portsmouth is $21.62. For a 30,000 DWT vessel transportation cost is $16.01 per ton. A shipper apparently saves $5.61 per ton by using the larger vessel. But the apparent savings must be reduced by the increased risk of using the larger vessel. At this point we cannot state the exact amount of increased risk, but we do know that if it were more than $5.61, the shipper would not use the larger vessel because true costs per ton for the 30,000 DWT vessel would exceed those of a 20,000 DWT vessel. So we do know that the maximum dollar amount of risk created by moving from a 20,000 DWT vessel to a 30,000 DWT vessel is $5.61.

If given a choice, a shipper will not move to a larger vessel size if the additional risk of using that vessel exceeds the transportation savings. If a shipper is to maximize savings he will use larger and larger vessels until he reached the size at which the additional risk just equals the additional transportation savings. At Portsmouth, the largest vessels in use are in the 40,000 DWT range. Because of the dimensions of the river and harbor, use of larger vessels would bring about an unacceptable level of risk. If shippers at Portsmouth act in an economically rational manner, it can be assumed that the risk created by moving up from a 30,000 DWT vessel to a 40,000 DWT vessel just equals the additional transportation savings. According to Table 14 which lists unit transportation costs, this amount is $2.71. This is assumed to represent the total risk for a 40,000 DWT vessel.

For the with project condition it is necessary to determine to what degree risk is reduced by the proposed engineering improvements to the harbor. The most liberal standpoint would be to maintain that all risk - human and mechanical - would be eliminated and that shippers will then face no additional risk by moving up in vessel class size. On the other hand, it could be assumed that there would be no decrease in risk at all. Channel improvements do little to reduce risk of catastrophy due to human error or adverse conditions.

Both extremes seem unrealistic. Since the measurement of decreased risk is highly theorectical and can only be an approximation, a simplistic approach is taken. And since the risk being measured is the potential losses perceived by shippers, it is assumed that the source of this risk *

*Asterisks denote changes from previous report. Rev. 3/84

* lies in Portsmouth Harbor itself. In essence, the decision of which ships to be utilized is based on harbor characteristics at Portsmouth. Discussions were held with the chief pilot at Portsmouth in an effort to estimate the allocation of risk in the harbor. Looking at the harbor overall, it is felt that 70 percent of the entire risk is located in Area 1, 20 percent in Area 3 and 10 percent in Area 2. Within Area 1, 70 percent is allocated to the maneuvering area and the remaining 30 percent equally divided between the bend at Badger's Island and the Interstate Bridge passage. It is also assumed that the project will have its greatest effect on the larger vessels and will have a lesser effect on smaller vessels. More specifically it is assumed that there will be no effect on vessels below 20,000 DWT and that the maximum effect will be on the 30,000/40,000 DWT vessels. The above percentages are used to determine risk per ton as shown below for petroleum products.

Vessel DWT Class		Total Harbor $ Risk/Ton	With Project $ Risk/Ton
20,000		0	0
30,000	Foreign	0.88	0.18
	U.S.	1.34	1.27
40,000	Foreign	1.75	1.35
	U.S.	2.71	0.54

Information from Table 14 is used in combination with information in Table 15 in order to quantify the benefit of reduction in risk for U.S. and foreign traffic carrying petroleum products to terminals above the bridges and for foreign traffic to the terminals in Area 1. The annual benefits of reduction in risk are displayed in Table 17 and a summary in Table 18. It is assumed that the most that risk can be reduced for ships in the 30,000/40,000 DWT range by any engineering improvement in any area is 50 percent. Therefore, benefits from Table 17 are reduced by 50 percent when summarized in Table 18.

Risk benefits calculated for vessels docking at the terminals in Area 1 are derived soley from turning operations. Under existing conditions, the channel here is 600 feet wide. Larger salt and scrap iron boats varying from 625 to 700 feet in length are now turned in the channel and terminal berthing areas combined during high tide only. If Corps criteria were strictly adhered to, only a 400 foot length vessel would be turned in the 600 foot channel. This would represent a no risk situation compared to the high risk situation currently existing. Under the with project condition, however, a 1000 foot wide area (channel plus maneuvering area) would allow close to 700 foot vessels to be turned with no risk.

Although the quantification of reduction in risk is only an approximation, it seems to be a reasonable estimate. Given the high value of the vessels and cargo at Portsmouth and the extremely high potential clean-up cost for an accident, the prevention of even one bad mishap would be significantly beneficial. For example, a single 35,000 DWT tanker *

*Asterisks denote changes from previous report. Rev. 3/84

* (U.S.) has a construction cost of over $630,000 on an average annual basis. This amount does not even include the prevention of the cost of clean-up and the cost of any law suit judgements. Although shippers generally have insurance to cover against the costs of an accident, project implementation would still prove beneficial by ultimately saving money for both shippers and insurance companies. Also, the potential prevention of the loss of human lives far outweights any potential monetary savings. *

*Asterisks denote changes from previous report. Rev. 3/84

*

Table 17
Computation of Annual Risk Benefits for Petroleum Products*
Year 1985

DWT Group (000)	Without Project: Tonnage Carried Percent	Without Project: Tonnage Carried Volume (000)	Without Project: Risk/Ton	Without Project: Total Risk	With Project: Tonnage Carried Percent	With Project: Tonnage Carried Volume	With Project: Risk/Ton	With Project: Total Risk	Reduction in Risk (000)
FOREIGN									
7.5	0	0	0	–	0	0	0	–	
20	16	279.2	0	–	8	139.6	0	–	
30	37	645.7	.88	568.2	20	349.0	.18	62.8	
40	47	820.2	1.75	1,435.4	72	1,256.4	.35	439.7	
TOTAL		1,745.1		2,003.6		1,745.0		502.5	1,501.1
DOMESTIC									
7.5	41	497.2	0	–	41	497.2	0	–	
20	19	230.4	0	–	11	133.4	0	–	
30	36	436.6	1.34	585.0	24	291.0	.27	78.6	
40	4	48.5	2.71	131.4	24	291.0	.54	157.1	
TOTAL		1,212.7		716.4		1,212.6		235.7	480.7
								TOTAL:	1,981.8 *

*Excludes LPG, includes crude

*Changes from previous report.

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*

Table 17
Computation of Annual Risk Benefits for Petroleum Products*
Year 1995

DWT Group (000)	Without Project: Tonnage Carried Percent	Without Project: Tonnage Carried Volume (000)	Without Project: Risk/Ton	Without Project: Total Risk	With Project: Tonnage Carried Percent	With Project: Tonnage Carried Volume	With Project: Risk/Ton	With Project: Total Risk	Reduction in Risk (000)
FOREIGN									
7.5	0	0	0	-	0	0	0	-	
20	16	274.1	0	-	8	137.1	0	-	
30	37	633.9	.88	557.8	20	342.7	.18	61.7	
40	47	805.2	1.75	1,409.1	72	1,233.6	.35	431.8	
TOTAL		1,713.2		1,966.9		1,713.4		493.5	1,473.4
DOMESTIC									
7.5	41	488.2	0	-	41	488.2	0	-	
20	19	226.2	0	-	11	131.0	0	-	
30	36	428.6	1.34	574.3	24	285.8	.27	77.2	
40	4	47.6	2.71	129.0	24	285.8	.54	154.3	
TOTAL		1,190.6		703.3		1,190.8		231.5	471.8
								TOTAL:	1,945.2 *

*Excludes LPG, includes crude

*Changes from previous report.

*

Table 17
Computation of Annual Risk Benefits for Petroleum Products*

Year 2005,2015

DWT Group (000)	Without Project: Tonnage Carried Percent	Without Project: Tonnage Carried Volume (000)	Without Project: Risk/Ton	Without Project: Total Risk	With Project: Tonnage Carried Percent	With Project: Tonnage Carried Volume	With Project: Risk/Ton	With Project: Total Risk	Reduction in risk
FOREIGN									
7.5	0	0	0	-	0	0	0	-	
20	15	257.0	0	-	7	119.0	0	-	
30	35	599.7	.88	527.7	18	308.4	.18	55.5	
40	50	856.7	1.75	1,499.2	75	1,285.0	.35	449.8	
TOTAL		1,713.4		2,026.9		1,713.3		505.3	1,521.6
DOMESTIC									
7.5	41	488.2	0	-	41	488.1	0	-	
20	19	226.2	0	-	10	119.1	0	-	
30	35	416.7	1.34	558.4	22	261.9	.27	70.7	
40	5	59.5	2.71	161.3	27	321.5	.54	173.6	
TOTAL		1,190.6		719.7		1,190.6		244.3	475.4
								TOTAL:	1,997.0 *

*Excludes LPG, includes crude

*Changes from previous report.

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*

Table 17
Computation of Annual Risk Benefits for Petroleum Products*

Year 2025, 2035

DWT Group (000)	Without Project: Tonnage Carried Percent	Without Project: Tonnage Carried Volume (000)	Without Project: Risk/Ton	Without Project: Total Risk	With Project: Tonnage Carried Percent	With Project: Tonnage Carried Volume	With Project: Risk/Ton	With Project: Total Risk	Reduction in Risk (000)
FOREIGN									
7.5	0	0	0	-	0	0	0	-	
20	14	239.8	0	-	5	85.7	0	-	
30	34	582.5	.88	512.6	15	257.0	.18	46.3	
40	52	890.9	1.75	1,559.1	80	1,370.7	.35	479.8	
TOTAL		1,713.2		2,071.7		1,713.4		526.1	1,545.6
DOMESTIC									
7.5	41	488.2	0	-	41	488.2	0	-	
20	18	214.3	0	-	8	95.3	0	-	
30	34	404.8	1.34	542.4	21	250.0	.27	67.5	
40	7	83.3	2.71	225.7	30	357.2	.54	192.9	
TOTAL		1,190.6		768.1		1,190.7		260.4	507.7
								TOTAL:	2,053.3 *

*Excludes LPG, includes crude

*Changes from previous report.

*

Table 17
Computation of Annual Risk Benefits for LPG*

DWT Group (000)	Without Project: Tonnage Carried Percent	Without Project: Tonnage Carried Volume (000)	Without Project: Risk/Ton	Without Project: Total Risk	With Project: Tonnage Carried Percent	With Project: Tonnage Carried Volume	With Project: Risk/Ton	With Project: Total Risk	Reduction in Risk (000)
Year 1985									
10-29,000	10	34.3	0	–	0	0	0	–	
30-39,000	20	68.6	0	–	15	51.5	0	–	
40-49,000	20	68.6	.14	9.6	15	51.5	.03	1.6	
50-59,000	50	171.5	.29	49.7	70	240.1	.06	14.4	
TOTAL	100			59.3	100			16.0	43.3
Year 1995									
10-29,000	10	32.8	0	–	0	0	0	–	
30-39,000	20	65.6	0	–	15	49.2	0	–	
40-49,000	20	65.6	.14	9.2	15	49.2	.03	1.5	
50-59,000	50	164.0	.29	47.6	70	229.6	.06	13.8	
TOTAL	100			56.8	100			15.3	41.5*

*All Foreign traffic

*Changes from previous report.

*

Table 17
Computation of Annual Risk Benefits for LPG*

DWT Group	Without Project: Tonnage Carried Percent	Without Project: Tonnage Carried Volume	Without Project: Risk/Ton	Without Project: Total Risk	With Project: Tonnage Carried Percent	With Project: Tonnage Carried Volume	With Project: Risk/Ton	With Project: Total Risk	Reduction in Risk
Year 2005, 2015									
10-29,000	10	32.8	0	-	0	0	0	-	
30-39,000	10	32.8	0	-	15	49.2	0	-	
40-49,000	20	65.6	.14	9.2	15	49.2	.03	1.5	
50-59,000	60	196.8	.29	57.1	70	229.6	.06	13.8	
TOTAL	100			66.3	100			15.3	51.0
Year 2025, 2035									
10-29,000	5	16.4	0	-	0	0	0	-	
30-39,000	10	32.8	0	-	15	49.2	0	-	
40-49,000	25	82.0	.14	11.5	15	49.2	.03	1.5	
50-59,000	60	196.8	.29	57.1	70	229.6	.06	13.8	
TOTAL	100			68.6	100			15.3	53.3 *

*All foreign traffic

*Changes from previous report.

*

Table 17
Computation of Annual Risk Benefits
for Dry Bulk-Foreign Traffic

1985-2035

DWT Group (000)	Without Project: Tonnage Carried Percent	Without Project: Tonnage Carried Volume (000)	Without Project: Risk/Ton	Without Project: Risk	With Project: Tonnage Carried Percent	With Project: Tonnage Carried Volume	With Project: Risk/Ton	With Project: Risk	Reduction in Risk (000)
20	12	52.1	0	-	12	52.1	0	-	
30	40	175.0	.74	129.5	40	175.0	.20	35.0	
40	48	208.3	1.40	291.6	48	208.3	.30	62.5	
TOTAL:		435.4		421.1		435.4		97.5	323.6 *

*Changes from previous report.

Table 18

* SUMMARY OF RISK BENEFITS ($000)

YEAR	PETROLEUM	LPG	DRY BULK	TOTAL
1985	990.9	21.7	161.8	1174.4
1995	972.6	20.8	"	1155.2
2005	998.5	25.5	"	1185.8
2015	998.5	25.5	"	1185.8
2025	1026.7	26.7	"	1215.2
2035	1026.7	26.7	"	1215.2
		Average Annual Equivalent:		1,172.9 *

Project Use With and Without Improvements

As previously noted, petroleum products comprise the vast majority of tonnage at Portsmouth. Without project improvements the average size of ships carrying these products will increase only very slowly. With project improvements better safety will stimulate immediate greater usage of vessels in the 35-45,000 DWT range.

Structural modifications at the harbor are not expected to alter the anticipated level of petroleum receipts. Other factors appear to have a greater influence on the amount of petroleum to be transported. Energy conservation and conversion are among the chief factors which are expected to cause petroleum tonnage to decline after 1990.

The conversion from petroleum products to coal will alter shipping operations at Portsmouth to some degree. Granite State Minerals Corporation is making plans to receive coal using two 30,000 ton barges. Also, Public Service Company of New Hampshire which uses the Sprague Terminal may bring coal into Portsmouth. Public Service has two power plants in the Portsmouth Area - Schiller Station and Newington Station. Schiller Station was a coal-fired plant at one time, but has been converted to petroleum.

This station may be reconverted to coal. It is anticipated that 30,000 ton barges or colliers with drafts of 25-30 feet would be used to supply the product. Although structural modifications to the channel would benefit coal vessels from a safety standpoint, it is not anticipated that transportation costs would be reduced.

*Asterisks denote changes from previous report. Rev. 3/84

With or without harbor improvements it is expected that movement of products other than petroleum will continue to exhibit steady growth. A new asphalt facility recently became operational. At the New Hampshire State Port Authority facility exports of bagged sugar are increasing. Movement of scrap metal and steel rails continues to grow. Also, a new State-owned and operated fish pier has resulted in increased fish shipments. Commodities such as wood, liquor, bricks, and apples may also be transported. Future plans call for further expansion of the State Port Authority facility by the addition of two wharves, a gantry crane, refueling capacity, and a set of berths for commercial fishing craft. The New Hampshire Legislature has allocated money for a roll on-roll off facility to be designed. A container feeder service was also started in Portsmouth in 1980. The feeder vessel stops in Portsmouth once a week and makes trips to Providence, Boston, and Halifax before sailing to Europe. It is anticipated that this service will continue to operate.

Structural channel modifications would improve safety for carriers of non-petroleum commodities. This would provide an additional incentive for manufacturers and traders to locate in Portsmouth and for shippers to use the harbor to a greater extent. Although it is reasonable to assume that harbor use would be promoted by the improvements, potential transportation savings for commodities other than petroleum and salt were not substantiated.

ECONOMIC JUSTIFICATION

* To be considered economically justified, a project must have a benefit/cost ratio of one or greater. The benefit/cost ratio for the NED plan (benefits shown in Table 19) is as follows:

Annual Benefits	Annual Costs	BCR	Net Benefits
3,853.0	1,837.0	2.1	2,016.0

TABLE 19

Summary of Benefits ($000)

Transportation Cost Savings	
Channel Modifications and Emergency Maneuvring Area	
Petroleum	$2,548.0
Salt	77.0
Operational Savings	
Emergency Manuevering Area	55.
Reduction in Risk	
Petroleum	1,011.0
Dry Bulk	162.0
TOTAL BENEFITS	3,853.0 *

*Asterisks denote changes from previous report. Rev. 3/84

Sensitivity Analysis

In order to deal with risk and uncertainty relating to commodity projections a sensitivity analysis was undertaken. The analysis investigates the effects on economic justification of a change in the commodity outlook. As previously discussed, the most probable future scenario calls for growth in the level of most petroleum receipts until 1990, when a decline caused by conservation and conversion is expected to occur. Crude petroleum receipts are assumed to continue to grow until refinery plant capacity is reached. The forecast for salt imports calls for a leveling off beginning in 1985.

The sensitivity analysis tests the impact on project benefits of a lower level of projections. Under this analysis the benefits for the structural alternatives are computed using actual 1978 tonnage figures assuming no growth in tonnage over the project lifetime.

* The methodology used in the computation of benefits is identical to the methodology used in developing Table 15. Utilization of the assumptions of the sensitivity analysis results in an annual benefit figure of $2,981,400. The respective benefit cost ratio is 1.6 to 1. *

*Asterisks denote changes from previous report. Rev. 3/84

APPENDIX 4

OTHER SOCIAL EFFECTS

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OTHER SOCIAL EFFECTS

This appendix presents impacts on the social components of the area under study. Social effects are described in terms of changes in the distribution of real income, effects on health, safety, community growth and well-being and impacts on educational, recreational, and cultural opportunities. Other important considerations are aesthetic values, community disruption, and displacement of people.

WITHOUT PROJECT CONDITION

Without the proposed channel improvements, the existing channel would be maintained with no additional improvements or modifications. The safety hazard would remain as a vital concern. Future development of the harbor would be limited somewhat, but economic activity could still be expected to expand, subject to variation in the supply and demand for petroleum. As noted previously, petroleum products comprise a large portion of the tonnage transported at Portsmouth Harbor. Any outside development that affects the petroleum industry will have a corresponding significant impact on Portsmouth.

Population

The outlook for Portsmouth in terms of population is shown in Table 1. It can be seen that the absence of improvements at the harbor is not expected to affect population growth. Between 1980 and the year 2030 population is expected to increase by 22 percent.

TABLE 1
Population Projections
For
Portsmouth, New Hampshire

Year	Population
1980	26,214
1990	26,562
2000	28,144
2010	29,527
2020	30,851
2030	31,100

Source: Demographic Projections - Southeastern, New Hampshire, ABT Associates Inc., Cambridge, Mass., November 1980.

Regional Development

It is anticipated that the population of the area will provide the foundation for additional economic development. Proof of the economic viability of the Portsmouth area is a recent decision by the Ducker and Rouse Companies to build a $25 million shopping center off Interstate 95 in Portsmouth. A secondary phase of the proposal calls for the development of an office-research and development complex. The shopping center is expected to employ between 500 and 1000 people and provide the city with an estimated $613,000 in tax revenues. In 1980 the companies estimated that 153,420 people lived in the primary trade area of the mall and that the average household income of the area was $18,286. Steady population growth was expected. Further evidence of the economic viability of Portsmouth is that in addition to the shopping mall, tentative plans have been formed to bring an additional industrial park to the city.

New Hampshire State Port Authority

At the harbor itself, plans for the future call for further expansion of the State Port Authority facility by the addition of two more wharves, a gantry crane, refueling capacity, and a separate set of berths for commercial fishing craft. The possibility of a roll-on-roll-off facility exists. Also in the planning stages is a 10-acre which could be used to provide room for additional sheds and outdoor storage.

At present, the principal commodities handled at the Port Authority are scrap and steel rails. Future possibilities include the transporting of wood products, liquor, bricks, apples, and various other commodities. Portsmouth was recently selected by the Federal government as a preferred port of export. This development could lead to additional exports from the New Hampshire State facility. Efforts to institute a free trade zone in the area could also spur futher growth.

Because there appears to be a need for additional recreational craft facilities in Portsmouth, a study is currently being done on the mooring and docking capabilities by the city. Depending on the outcome of the study, recreational cruise ships may be brought in on a regular basis. Tied into this proposal is the development of a downtown first-class hotel at a site adjacent to the Port Authority.

Without the proposed channel improvements, vessel capacity for most businesses should peak at the fully-loaded 40,000 DWT size. Even at their current sizes, vessels are faced with danger in the suggested areas of improvement. The sharp bend in the channel and the lack of proper turning area pose a threat to the existing fleet and would pose even more of a threat in the future as more vessels reach the 40,000 DWT limit.

The risk involved in coming into Portsmouth with a large ship would influence businesses to use other harbors. At least one case exists in which business was lost at the New Hampshire State Port Authority facility

because the channel could not handle larger vessels. Without the project therefore, economic growth would be hampered. Nevertheless, other attributes of the area should at least partially counteract the negative effect of no harbor improvements. The fact that New Hampshire currently has no state taxes on general income, inventory, or sales should help the Portsmouth area maintain a positive economic climate. Relatively low labor costs should work in Portsmouth's favor. The cultural insight that the city planners have shown in maintaining the historical atmosphere of the city should enhance its economic and social desirability. On the whole, the future of Portsmouth looks bright.

ALTERNATIVE PLANS

The alternatives under consideration for Portsmouth Harbor are:

Plan A which includes improvements to Areas 1 and 3;

Plan B which includes improvements to Areas 1, 2 and 3;

Plan C a nonstructrual approach which involves multiport operations.

Plan D which includes bridge modification added to Plan A.

Plan A

Short term impacts would occur while the project is under construction. Dredging operations would probably interfere with normal vessel passage in the harbor and/or traffic over nearby bridges, slowing or even stopping traffic at times. Since the passage of deep-draft vessels is governed by tidal cycles, it may be possible to avoid delays by timing blasting correctly. If not, there would be an adverse effect on firms which rely on shipping, causing temporary delays both in goods shipped and income flows. There is more than one bridge over the channel so motor vehicles would still be able to pass if a bridge is temporarily closed, but traffic congestion would increase due to greater density on alternate routes.

Other short term effects would be minimal diruption of activities near a disposal site. Also noise and air pollution would temporarily increase. Few local jobs would be created by the dredging project since the type of work being done would be capital intensive.

Over the long run, the project would support economic and community growth. Marine related businesses might be influenced to locate at Portsmouth, creating more employment and additional tax revenues. Those that are currently located in Portsmouth would be influenced to stay. The chief reasons would be the increased safety and reduced transportation costs resulting from the habor improvements.

The economic forces of waterborne commerce are tending to increase ship size in order to obtain efficiencies of scale and minimize transportation costs. Also smaller vessels are becoming scarce. At present

the largest fully-loaded vessel capable of being brought into the Piscataqua River channel is an occasional 40,000 DWT ship. Oil tankers currently average 35,000 DWT. The improvements would allow businesses in the area to use more 40,000 DWT tankers with reduced risk of an accident occurring. Since risk would be diminshed, companies in the area would also increase the number of 40,000 DWT vessels in use at a greater rate than would occur without the project.

In the case of salt imports at the harbor, vessels being used now must discharge part of their cargo at another port before entering Portsmouth. Granite State Minerals indicates that if the channel were widened, fully loaded salt-carrying vessels could be brought in. In addition to using bulk carriers for importing salt, Granite State and Sprague Energy might consider future transporting of coal if the economic climate is suitable. The harbor improvements therefore could potentially allow for larger coal-carrying vessels to enter the channel than would otherwise be possible.

Liquid propane gas (LPG) is currently brought into the port. The LPG fleet has been increasing in cargo capacity per vessel. Widening the channel would provide a greater margin of safety when these large vessels are navigating through the channel. Additionally, the EPG importer, if allowed to use larger vessels, would be able to buy in greater volume and pass some of these energy savings on to its customers.

In most instances, economic benefits are considered to be the primary and improved safety is considered to be secondary or intangible. In the case of Portsmouth, local officials and harbor users are very concerned with the safety factor. The channel improvements would allow.greater usage of large ships, resulting in fewer vessel trips for many businesses. The reduction in vessel trips would reduce the potential for accidents.

Plan B

Basic impacts would be the same as for Plan A. The economic benefits and safety derived from improvement of Area 1 would be augmented by the safety provided by improvements to Area 2 and Area 3. This alternative maximizes safety while providing the same amount of economic benefits as the two previous alternatives.

Physical changes to the channel under any of the two structural alternatives are not expected to adversely affect the aesthetic value of the area. In fact, the project should help maintain the area's aesthetic appeal by decreasing the probability of vessel accidents and resultant oil spills. Because of the treacherous currents at the harbor, the possibility of containing or cleaning up a spill is very limited. This difficulty was demonstrated on September 1, 1979 when an incident not related to navigation, 25,000 gallons of industrial grade oil leaked from a Liberian tanker and coated about 10 miles of shoreline along the Piscataqua River.

In addition to helping maintain the aesthetic value of the area, the modifications would prove beneficial for national defense purposes. The harbor would be made safer for vessels used to meet Pease Air Force Base and the Portsmouth US Naval Shipyard needs, as both installations are located in the immediate vicinity of the project site. Although the structural alternatives are not expected to have significant impacts on educational, recreational or cultural opportunities, they would enable Portsmouth to continue to combine its seafaring culture of the past with the industrial growth of the present and future. With the safety and cost effectiveness of transporting commodities improved, the business secto should continue to support the area in a manner that would stimulate community cohesion and growth.

Plan C

Investigation of the without project condition did not reveal anticipated expanded use of nonstructural alternatives. Of those nonstructural procedures which are potentially implementable by the public sector, none were found to useful from Portsmouth's standpoint. Of the nonstructural practices within the discretion of the private shipper, the most feasible was the expansion of multiport operations, including transshipment and offloading at two ports. Transshipment would be possible only for petroleum products. Additional transshipment would mean an increase in the transferring of petroleum from tanker to barge. This would increase the risk of oil spills, and safety hazard would remain as a concern.

Plan D

Basic impacts would be the same as for Plan A. Additionally, there would be temporary interruptions to road, rail, and navigation traffic. Additional short term impacts include reduced business activity along the Maine-New Hampshire Interstate Bridge approaches as well as increased congestion at the other bridges. The bridge alteration, as planned, would retain the present aesthetic appearance of the bridge. Bridge modification would improve safety at Portsmouth by allowing the ships to keep the tugs alongside while passing through the bridge.

APPENDIX 5

ENVIRONMENTAL BASELINE DATA

APPENDIX 5

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1. Ocean Disposal of Dredged Material

2. Sediment Analysis Laboratory Test Results

APPENDIX 5

ENVIRONMENTAL BASELINE DATA

1. Ocean Disposal of Dredged Material

As previously mentioned, the Foul Area is available for the discharge of dredged material that has been found to be in compliance with EPA's Ocean Dumping criteria (U.S. EPA, 1977). The criteria specify certain restrictions and sediment testing that must be applied to material proposed to be dredged in determining the ecological acceptability of its disposal in ocean waters.

Subpart B (Environmental Impact) of these regulations contains the specific guidelines to be considered for determining compliance.

Part 227.5 prohibits ocean dumping high-level radioactive wastes; materials used for warfare; insufficiently described materials; or persistent, inert substances that may interfere materially with legitimate uses of the ocean. The material to be dredged and excavated from the Portsmouth area is not known to contain any of those substances. The material will be dumped within an area designated solely for that purpose and should not interfere with any other legitimate uses of the ocean.

Part 227.6 prohibits the ocean disposal of material containing mercury (Hg), cadmium (Cd) and organohalogens as well as their compounds, oil of any kind or any form and known or suspected carcinogens, mutagens or teratogens in greater than trace amounts. These constituents are present in no more than trace amounts in the material as determined by tests on the sediment to be dredged.

Bulk chemical and physical analyses of sediment samples obtained from the three proposed improvement locations were performed. The results of these tests are discussed in the Environmental Assessment. The physical results show that the sediments of the excavated material consist of rock and sand and gravel. The bulk chemical data for the sediments show the material to be uncontaminated with the values being below available averages for harbor sediments within the Gulf of Maine tidal system of which the Portsmouth Harbor and Piscataqua River is a part. There are no values over the standard deviation greater than the harbor averages.

Based on these test results, no significant environmental problem would be expected to occur with either land or open-water disposal of the materials.

Part 227.13 (b) of the ocean dumping criteria identifies certain dredged materials that may be excluded from further testing (bioassays) and allows the material to be considered environmentally acceptable for ocean dumping in the following instances:

1. Dredged material which is composed predominantly of sand, gravel, rock or any other natural bottom material with particle sizes larger than silt, and the material is found in areas of high current or wave energy such as streams with large bed loads or coastal areas with shifting bars and channels; or

2. Dredged material which is for beach nourishment or restoration and is composed predominantly of sand, gravel or shells with particle sizes compatible with material on the receiving beaches; or

3. When: (i) the material proposed for dumping is substantially the same as the substrate at the proposed disposal site; and

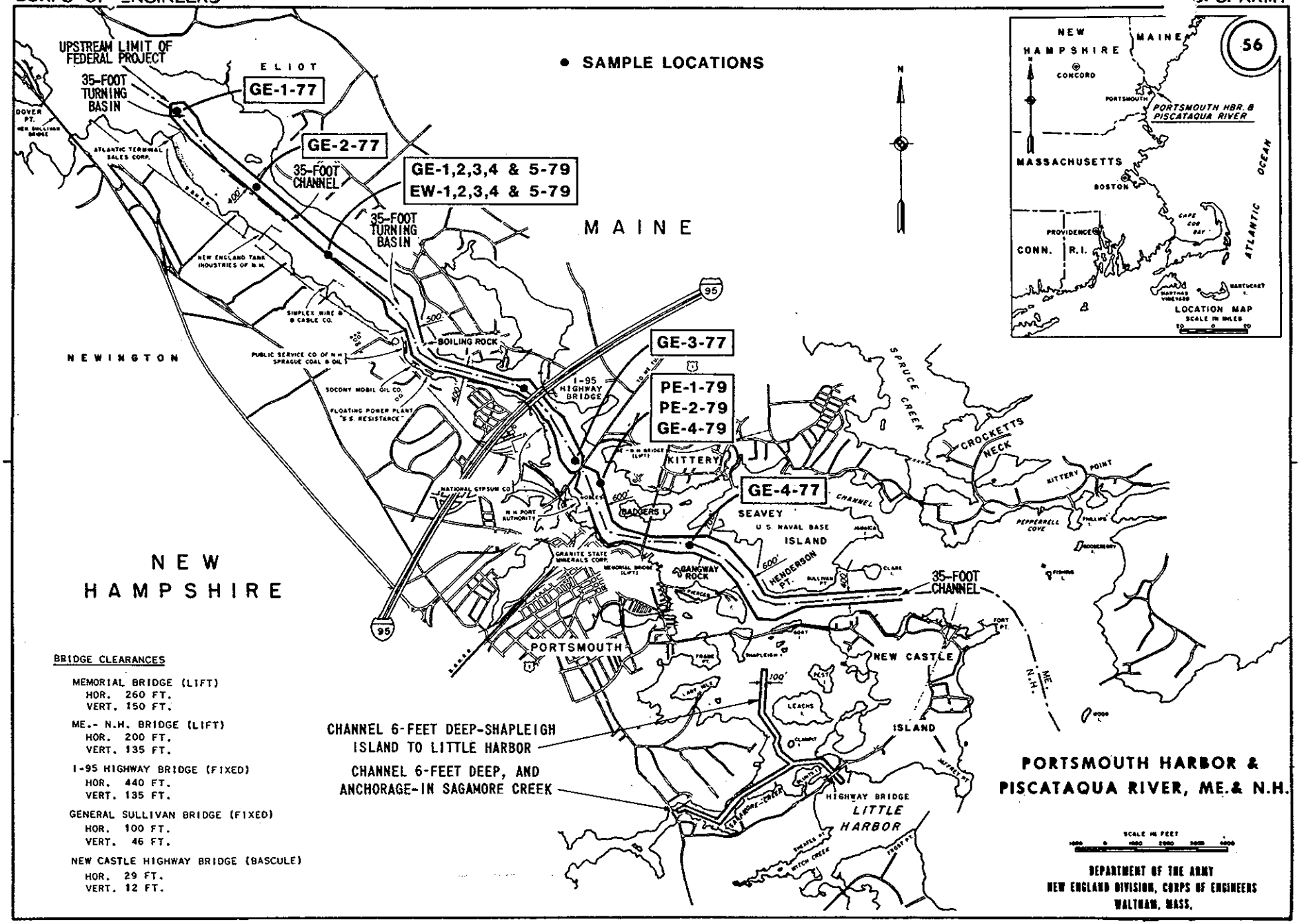
(ii) the site from which the material proposed for dumping to be taken is far removed from known existing and historical sources of pollution so as to provide reasonable assurance that such material has not been contaminated by such pollution.

The material to be removed from the project area has been tested as previously mentioned and is considered to be uncontaminated and in compliance with the above exclusion criteria.

Based on the above information and review of applicable criteria, the material to be dredged and excavated from this project is within compliance and is environmentally acceptable for disposal at the Foul Area.

SEDIMENT ANALYSIS - PORTSMOUTH HARBOR, MAINE
OCTOBER 5, 1977 and AUGUST 1979

CORPS OF ENGINEERS U. S. ARMY



PORTSMOUTH HARBOR & PISCATAQUA RIVER, ME.& N.H.

PROG #: 401U3D0801
PAGE: 77-CHA02- 01

BOTTOM SEDIMENT SAMPLE TEST RESULTS
STATUS AS OF 05 OCT 77

RCS NEEDED-6

77-CHA02 PISCATAQUA RIVER

YEAR 1977 STATE- NH TIDAL SYS- ME COM/REC- C

		01	02	03	04		
LAB SERIAL NO.	(01)	100-252-1	100-252-2	100-252-3	100-252-4		100-252-5
EXPLORATION NO.	(02)	GE-1-77	GE-2-77	GE-3-77	GE-4-77		GE-5-77
SAMPLE NO.	(03)	B-1	B-1	B-1	B-1		B-1
SAMPLE DEPTH (FT)	(04)	SURFACE	SURFACE	SURFACE	SURFACE		SURFACE
LATITUDE	(05)						
LONGITUDE	(06)						
CO-ORD LOC-NORTH	(07)	104,500	102,050	92,890	90,060		100,160
CO-ORD LOC-EAST	(08)	327,740	330,480	340,970	344,900		332,600
SOUNDING	(11)	38.0	47.0	50.0	52.0		40.0
REDUCED SOUNDING-MLW	(12)	-28.0	-37.9	-38.0	-42.0		-32.9
DATE - HOUR	(13)	7207-0845	7207-0900	7207-0920	7207-0940		7207-1025
WEATHER	(14)	0.1	0.1	0.1	0.1		0.1
SEA STATE	(15)	0.1	0.1	0.1	0.1		0.1
SECCHI DISC-BLACK	(16)	4.0	4.2	4.0	4.3		4.0
SECCHI DISC-WHITE	(17)	5.0	5.2	5.1	5.2		5.0
VISUAL CLASSIFICATION BY LABORATORY	(20)	LIGHT	GRAVEL(GP)	GRAVEL(GP)	GRAVEL(GP)		LIGHT
	(21)	BROWN	W/ALGAE	W/ALGAE	W/ALGAE		BROWN
	(22)	MEDIUM	AND	SHELL	AND		MEDIUM
	(23)	TO FINE	MARINE	FRAGMENTS	MARINE		TO FINE
	(24)	SAND(SP)	ODOR	AND	ODOR		SAND(SP)
	(25)	W/NUMEROUS		MARINE			W/MARINE
	(26)	PERIWINKLES,		ODOR			ODOR
	(27)	SEAWEED					
	(28)	AND SHELL					
	(29)	FRAGMENTS					
SOIL CLASS/DOMIN	(32)	S	G	G	G		S
SOIL CLASS/SUB-DOMIN	(33)						
GRAIN SIZE CURVE-MED	(34)						0.320
GRAIN SIZE CURVE-Q1	(35)						0.450
GRAIN SIZE CURVE-Q3	(36)						0.260
SRT COEF-(Q1/Q3)**.5							1.3155
GR SIZE CURVE-% FINE	(38)						0
NORMAL/BIMODAL	(39)						N
LIQUID LIMIT	(40)						
PLASTIC LIMIT	(41)						
PLASTIC INDEX	(42)						
SPEC GRAV SOLIDS	(47)	2.65					2.67
WET UNIT WGT (PCF)	(48)						
DRY UNIT WGT (PCF)	(49)						
PERCENT SOLIDS	(50)						
SEDIMENT PH	(51)	6.45					6.32
SED RDX POT (MV)	(52)	0.005					

PROG #: 401U3D0801 BOTTOM SEDIMENT SAMPLE TEST RESULTS RCS NEDED-6
PAGE: 77-CHA02- 03 STATUS AS OF 05 OCT 77

PROJECT SUMMARY		NUMBER OF OBSERVATIONS	RANGE OF VALUES LOWEST	HIGHEST	MEAN (AVG VALUE)	STANDARD DEVIATION
GRAIN SIZE CURVE-MED	(34)	1	0.320000	0.320000	0.320000	
GRAIN SIZE CURVE-Q1	(35)	1	0.450000	0.450000	0.450000	
GRAIN SIZE CURVE-Q3	(36)	1	0.260000	0.260000	0.260000	
SRT COEF=(Q1/Q3)**.5		1	1.315587	1.315587	1.315587	
GR SIZE CURVE-% FINE	(38)	1	0.000000	0.000000	0.000000	
LIQUID LIMIT	(40)					
PLASTIC LIMIT	(41)					
PLASTIC INDEX	(42)					
SPEC GRAV SOLIDS	(47)	2	2.650000	2.670000	2.660000	0.014142
WET UNIT WGT (PCF)	(48)					
DRY UNIT WGT (PCF)	(49)					
PERCENT SOLIDS	(50)					
SEDIMENT PH	(51)	2	6.320000	6.450000	6.385000	0.091923
SED RDX POT (MV)	(52)	1	0.005000	0.005000	0.005000	
% VOL SOLIDS- EPA	(57)					
% VOL SOLIDS- NED	(58)					
% TOT VOL SOL-EPA	(59)					
PPM CHEM OXYGEN DMND	(60)					
PPM TOT KJDL NIT	(61)					
PPM OIL + GREASE	(62)					
PPM MERCURY	(63)					
PPM LEAD	(64)					
PPM ZINC	(65)					
PPM ARSENIC	(70)					
PPM BISMUTH	(71)					
PPM CADMIUM	(72)					
PPM CHROMIUM	(73)					
PPM COPPER	(74)					
PPM IODINE	(75)					
PPM NICKEL	(76)					
PPM PHOSPHORUS	(77)					
PPM SILVER	(78)					
PPM TIN	(79)					
PPM VANADIUM	(80)					
% CARBON (ORGANIC)	(85)					
% CARBON (CARBONATE)	(86)					
% CARBON (TOTAL)	(87)					
% HYDROGEN	(88)					
% NITROGEN	(89)					
PPM BENZENE	(90)					
PPB DDT	(91)					
PPB PLYCHL BIPH	(92)					
CARBON 14 (YRS)	(93)					
RADIOACTIVITY(MR/HR)	(94)	2	0.000000	0.000000	0.000000	

7.4

PROG #: 401U300601
PAGE: 77-CHA02- 01

BOTTOM SEDIMENT SAMPLE TEST RESULTS
STATUS AS OF 05 OCT 77

RCS NEEDED-6

77-CHA02 PISCATAQUA RIVER

YEAR: 1977 STATE- NH TIDAL SYS- ME COM/REC- C

		01	02	03	04		
LAB SERIAL NO.	(01)	100-252-1	100-252-2	100-252-3	100-252-4		100-252-5
EXPLORATION NO.	(02)	GE-1-77	GE-2-77	GE-3-77	GE-4-77		GE-5-77
SAMPLE NO.	(03)	B-1	B-1	B-1	B-1		B-1
SAMPLE DEPTH (FT)	(04)	SURFACE	SURFACE	SURFACE	SURFACE		SURFACE
LATITUDE	(05)						
LONGITUDE	(06)						
CO-ORD LOC-NORTH	(07)	104,500	102,050	92,890	90,060		100,160
CO-ORD LOC-EAST	(08)	327,740	330,480	340,970	344,900		332,600
SOUNDING	(11)	38.0	47.0	50.0	52.0		40.0
REDUCED SOUNDING-MLW	(12)	-28.0	-37.9	-38.0	-42.0		-32.9
DATE - HOUR	(13)	7207-0845	7207-0900	7207-0920	7207-0940		7207-1025
WEATHER	(14)	0.1	0.1	0.1	0.1		0.1
SEA STATE	(15)	0.1	0.1	0.1	0.1		0.1
SECCHI DISC-BLACK	(16)	4.0	4.2	4.0	4.3		4.0
SECCHI DISC-WHITE	(17)	5.0	5.2	5.1	5.2		5.0
VISUAL CLASSIFICATION BY LABORATORY	(20)	LIGHT	GRAVEL(GP)	GRAVEL(GP)	GRAVEL(GP)		LIGHT
	(21)	BROWN	W/ALGAE	W/ALGAE	W/ALGAE		BROWN
	(22)	MEDIUM	AND	SHELL	AND		MEDIUM
	(23)	TO FINE	MARINE	FRAGMENTS	MARINE		TO FINE
	(24)	SAND(SP)	ODOR	AND	ODOR		SAND(SP)
	(25)	W/NUMEROUS		MARINE			W/MARINE
	(26)	PERIWINKLES,		ODOR			ODOR
	(27)	SEAWEED					
	(28)	AND SHELL					
	(29)	FRAGMENTS					
SOIL CLASS/DOMIN	(32)	S	G	G	G		S
SOIL CLASS/SUB-DOMIN	(33)						
GRAIN SIZE CURVE-MED	(34)						0.320
GRAIN SIZE CURVE-Q1	(35)						0.450
GRAIN SIZE CURVE-Q3	(36)						0.260
SRT COEF-(Q1/Q3)**.5							1.3155
GR SIZE CURVE-% FINE	(38)						0
NORMAL/BIMODAL	(39)						N
LIQUID LIMIT	(40)						
PLASTIC LIMIT	(41)						
PLASTIC INDEX	(42)						
SPEC GRAV SOLIDS	(47)	2.65					2.67
WET UNIT WGT (PCF)	(48)						
DRY UNIT WGT (PCF)	(49)						
PERCENT SOLIDS	(50)						
SEDIMENT PH	(51)	6.45					6.32
SED RDX POT (MV)	(52)	0.005					

PROG #: 401U3D0801 BOTTOM SEDIMENT SAMPLE TEST RESULTS RCS NEDED-6
PAGE: 77-CHA02- 03 STATUS AS OF 05 OCT 77

PROJECT SUMMARY		NUMBER OF OBSERVATIONS	RANGE OF VALUES LOWEST	HIGHEST	MEAN (AVG VALUE)	STANDARD DEVIATION
GRAIN SIZE CURVE-MED	(34)	1	0.320000	0.320000	0.320000	
GRAIN SIZE CURVE-Q1	(35)	1	0.450000	0.450000	0.450000	
GRAIN SIZE CURVE-Q3	(36)	1	0.260000	0.260000	0.260000	
SRT COEF-(Q1/Q3)**.5		1	1.315587	1.315587	1.315587	
GR SIZE CURVE-% FINE	(38)	1	0.000000	0.000000	0.000000	
LIQUID LIMIT	(40)					
PLASTIC LIMIT	(41)					
PLASTIC INDEX	(42)					
SPEC GRAV SOLIDS	(47)	2	2.650000	2.670000	2.660000	0.014142
WET UNIT WGT (PCF)	(48)					
DRY UNIT WGT (PCF)	(49)					
PERCENT SOLIDS	(50)					
SEDIMENT PH	(51)	2	6.320000	6.450000	6.385000	0.091923
SED RDX POT (MV)	(52)	1	0.005000	0.005000	0.005000	
% VOL SOLIDS- EPA	(57)					
% VOL SOLIDS- NED	(58)					
% TOT VOL SOL-EPA	(59)					
PPM CHEM OXYGEN DMND	(60)					
PPM TOT KJDL NIT	(61)					
PPM OIL + GREASE	(62)					
PPM MERCURY	(63)					
PPM LEAD	(64)					
PPM ZINC	(65)					
PPM ARSENIC	(70)					
PPM BISMUTH	(71)					
PPM CADMIUM	(72)					
PPM CHROMIUM	(73)					
PPM COPPER	(74)					
PPM IODINE	(75)					
PPM NICKEL	(76)					
PPM PHOSPHORUS	(77)					
PPM SILVER	(78)					
PPM TIN	(79)					
PPM VANADIUM	(80)					
% CARBON (ORGANIC)	(85)					
% CARBON (CARBONATE)	(86)					
% CARBON (TOTAL)	(87)					
% HYDROGEN	(88)					
% NITROGEN	(89)					
PPM BENZENE	(90)					
PPB DDT	(91)					
PPB PLYCHL BIPH	(92)					
CARBON 14 (YRS)	(93)					
RADIOACTIVITY(MR/HR)	(94)	2	0.000000	0.000000	0.000000	

PROG #: 401U3D0801
PAGE: 77-CHA02- 01

BOTTOM SEDIMENT SAMPLE TEST RESULTS
STATUS AS OF 03 OCT 77

RCS NEDED-6

77-CHA02 PISCATAQUA RIVER — YEAR 1977 — STATE- NH — TIDAL SYB- ME — COM/REC- C+H2O

		01	02	03	04	
LAB SERIAL NO.	(01)	100-252-1	100-252-2	100-252-3	100-252-4	100-252-5
EXPLORATION NO.	(02)	GE-1-77	GE-2-77	GE-3-77	GE-4-77	GE-5-77
SAMPLE NO.	(03)	B-1	B-1	B-1	B-1	B-1
SAMPLE DEPTH (FT)	(04)	SURFACE	SURFACE	SURFACE	SURFACE	SURFACE
LATITUDE	(05)					
LONGITUDE	(06)					
CO-ORD LOC-NORTH	(07)	104,500	102,050	92,890	90,060	100,160
CO-ORD LOC-EAST	(08)	327,740	330,480	340,970	344,900	332,600
SOUNDING	(11)	38.0	47.0	50.0	52.0	40.0
REDUCED SOUNDING-MLW	(12)	-28.0	-37.9	-38.0	-42.0	-32.9
DATE - HOUR	(13)	7207-0845	7207-0900	7207-0920	7207-0940	7207-1025
WEATHER	(14)	0.1	0.1	0.1	0.1	0.1
SEA STATE	(15)	0.1	0.1	0.1	0.1	0.1
SECCHI DISC-BLACK	(16)	4.0	4.2	4.0	4.3	4.0
SECCHI DISC-WHITE	(17)	5.0	5.2	5.1	5.2	5.0
VISUAL CLASSIFICATION BY LABORATORY	(20)	LIGHT	GRAVEL(GP)	GRAVEL(GP)	GRAVEL(GP)	LIGHT
	(21)	BROWN	W/ALGAE	W/ALGAE	W/ALGAE	BROWN
	(22)	MEDIUM	AND	SHELL	AND	MEDIUM
	(23)	TO FINE	MARINE	FRAGMENTS	MARINE	TO FINE
	(24)	SAND(SP)	ODOR	AND	ODOR	SAND(SP)
	(25)	W/NUMEROUS		MARINE		W/MARINE
	(26)	PERIWINKLES,		ODOR		ODOR
	(27)	SEAWEED				
	(28)	AND SHELL				
	(29)	FRAGMENTS				
SOIL CLASS/DOMIN	(32)	8	0	0	0	8
SOIL CLASS/SUB-DOMIN	(33)					
GRAIN SIZE CURVE-MED	(34)					0.320
GRAIN SIZE CURVE-Q1	(35)					0.450
GRAIN SIZE CURVE-Q3	(36)					0.260
SRT COEF-(Q1/Q3)**.5						1.3155
GR SIZE CURVE-% FINE	(38)					0
NORMAL/BIMODAL	(39)					N
LIQUID LIMIT	(40)					
PLASTIC LIMIT	(41)					
PLASTIC INDEX	(42)					
SPEC GRAV SOLIDS	(47)	2.65				2.67
WET UNIT WGT (PCF)	(48)					
DRY UNIT WGT (PCF)	(49)					
PERCENT SOLIDS	(50)					
SEDIMENT PH	(51)	6.45				6.32
SED RDX POT (MV)	(52)	0.005				

PROG #: 401U3D0801 BOTTOM SEDIMENT SAMPLE TEST RESULTS RCS NEDED-6
PAGE: 77-CHA02- 03 STATUS AS OF 05 OCT 77

PROJECT SUMMARY		NUMBER OF OBSERVATIONS	RANGE OF VALUES LOWEST	HIGHEST	MEAN (AVG VALUE)	STANDARD DEVIATION
GRAIN SIZE CURVE-MED	(34)	1	0.320000	0.320000	0.320000	
GRAIN SIZE CURVE-Q1	(35)	1	0.450000	0.450000	0.450000	
GRAIN SIZE CURVE-Q3	(36)	1	0.260000	0.260000	0.260000	
SRT COEF-(Q1/Q3)**.5		1	1.315587	1.315587	1.315587	
GR SIZE CURVE-% FINE	(38)	1	0.000000	0.000000	0.000000	
LIQUID LIMIT	(40)					
PLASTIC LIMIT	(41)					
PLASTIC INDEX	(42)					
SPEC GRAV SOLIDS	(47)	2	2.650000	2.670000	2.660000	0.014142
WET UNIT WGT (PCF)	(48)					
DRY UNIT WGT (PCF)	(49)					
PERCENT SOLIDS	(50)					
SEDIMENT PH	(51)	2	6.320000	6.450000	6.385000	0.091923
SED RDX POT (MV)	(52)	1	0.005000	0.005000	0.005000	
% VOL SOLIDS- EPA	(57)					
% VOL SOLIDS- NED	(58)					
% TOT VOL SOL-EPA	(59)					
PPM CHEM OXYGEN DMND	(60)					
PPM TOT KJDL NIT	(61)					
PPM OIL + GREASE	(62)					
PPM MERCURY	(63)					
PPM LEAD	(64)					
PPM ZINC	(65)					
PPM ARSENIC	(70)					
PPM BISMUTH	(71)					
PPM CADMIUM	(72)					
PPM CHROMIUM	(73)					
PPM COPPER	(74)					
PPM IODINE	(75)					
PPM NICKEL	(76)					
PPM PHOSPHORUS	(77)					
PPM SILVER	(78)					
PPM TIN	(79)					
PPM VANADIUM	(80)					
% CARBON (ORGANIC)	(85)					
% CARBON (CARBONATE)	(86)					
% CARBON (TOTAL)	(87)					
% HYDROGEN	(88)					
% NITROGEN	(89)					
PPM BENZENE	(90)					
PPB DDT	(91)					
PPB PLYCHL BIPH	(92)					
CARBON 14 (YRS)	(93)					
RADIOACTIVITY(MR/HR)	(94)	2	0.000000	0.000000	0.000000	

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PROG #: 401U300801
PAGE: 79-AA104- 01

BOTTOM SEDIMENT SAMPLE TEST RESULTS
STATUS AS OF 27 AUG 79

RCS NEEDED=6

79-AA104 PISCATAQUA RIVER YEAR- 1979 STATE- NH TIDAL SYS- ME COM/REC- C

		01	02	03	04	05
LAB SERIAL NO.	(01)	100-295-1	100-295-2	100-295-3		
EXPLORATION NO.	(02)	PE-1-79	PE-2-79	GE-4-79		
SAMPLE NO.	(03)	PE-1-79	PE-2-79	GE-4-79		
SAMPLE DEPTH (FT)	(04)	0.0-1.0	0.0-1.3'	SURFACE		
LATITUDE	(05)					
LONGITUDE	(06)					
CO-ORD LOC-NORTH	(07)	92,430	92,100	91,940		
CO-ORD LOC-EAST	(08)	341,940	342,300	341,975		
SOUNDING	(11)	9.0	8.0	9.0		
REDUCED SOUNDING-MLW	(12)	-2.0	-1.0	-2.0		
DATE - HOUR	(13)	790508	790509	790510		
WEATHER	(14)	03	03	03		
SEA STATE	(15)	1	1	1		
SECCHI DISC-BLACK	(16)	BOTTOM	BOTTOM	BOTTOM		
SECCHI DISC-WHITE	(17)	VISIBLE	VISIBLE	VISIBLE		
VISUAL CLASSIFICATION BY LABORATORY	(20)	GRAVELLY	GRAVELLY	GRAVELLY		
	(21)	CLAYEY	CLAYEY	SAND		
	(22)	SAND	SAND	(SP)		
	(23)	(SC)	(SC)			
	(24)	WITH	WITH			
	(25)	ORGANICS	ORGANICS			
	(26)					
	(27)					
	(28)					
	(29)					
SOIL CLASS/DOMIN	(32)					
SOIL CLASS/SUB-DOMIN	(33)					
GRAIN SIZE CURVE-MED	(34)	0.495	0.530	4.765		
GRAIN SIZE CURVE-Q1	(35)	2.000	1.650	15.000		
GRAIN SIZE CURVE-Q3	(36)	0.155	0.185	0.700		
SRT COEF-(Q1/Q3)**.5		3.5921	2.9864	4.6291		
GR SIZE CURVE-% FINE	(38)	16.50	14.00	2.50		
NORMAL/BIMODAL	(39)	N	N	B		
LIQUID LIMIT	(40)	70	50			
PLASTIC LIMIT	(41)	32	25			
PLASTIC INDEX	(42)	38	25			
SPEC GRAV SOLIDS	(47)	2.67	2.68			
WET UNIT WGT (PCF)	(48)					
DRY UNIT WGT (PCF)	(49)					
PERCENT SOLIDS	(50)	43.00	80.00	59.00		
SEDIMENT PH	(51)	6.70	7.10	7.10		
SED RDX POT (MV)	(52)					

PROG #: 4010300801
PAGE: 79-AA104- 02

BOTTOM SEDIMENT SAMPLE TEST RESULTS
STATUS AS OF 27 AUG 79

RCS NEDED-6

79-AA104 PISCATAQUA RIVER YEAR- 1979 STATE- NH TIDAL SYS- ME COM/REC- C

		01	02	03	04	05
% VOL SOLIDS- EPA	(57)	8.2	2.3	2.7		
% VOL SOLIDS- NED	(58)	5.1	0.9	1.3		
% TOT VOL SOL-EPA	(59)					
PPM CHEM OXYGEN DMND	(60)	8900.0	1200.0	1900.0		
PPM TOT KJDL NIT	(61)	2900.0	370.0	500.0		
PPM OIL + GREASE	(62)	3960.0	40.0	290.0		
PPM MERCURY	(63)	.LT. 0.2	.LT. 0.2	.LT. 0.2		
PPM LEAD	(64)	20.0	10.0	60.0		
PPM ZINC	(65)	42.0	24.0	35.0		
PPM ARSENIC	(70)	.LT. 0.5	.LT. 0.3	.R2.		
PPM BISMUTH	(71)					
PPM CADMIUM	(72)	2.0	1.0	2.0		
PPM CHROMIUM	(73)	92.0	16.0	20.0		
PPM COPPER	(74)	34.0	8.0	8.0		
PPM IODINE	(75)					
PPM NICKEL	(76)	[illegible]	[illegible]	[illegible]		
PPM PHOSPHORUS	(77)					
PPM SILVER	(78)					
PPM TIN	(79)					
PPM VANADIUM	(80)	81.0	16.0	53.0		
% CARBON (ORGANIC)	(85)					
% CARBON (CARBONATE)	(86)					
% CARBON (TOTAL)	(87)					
% HYDROGEN	(88)					
% NITROGEN	(89)					
PPM BENZENE	(90)					
PPB DDT	(91)					
PPB PLYCHL BIPH	(92)					
CARBON 14 (YRS)	(93)					
RADIOACTIVITY(MR/HR)	(94)	6.0	10.0	8.0		

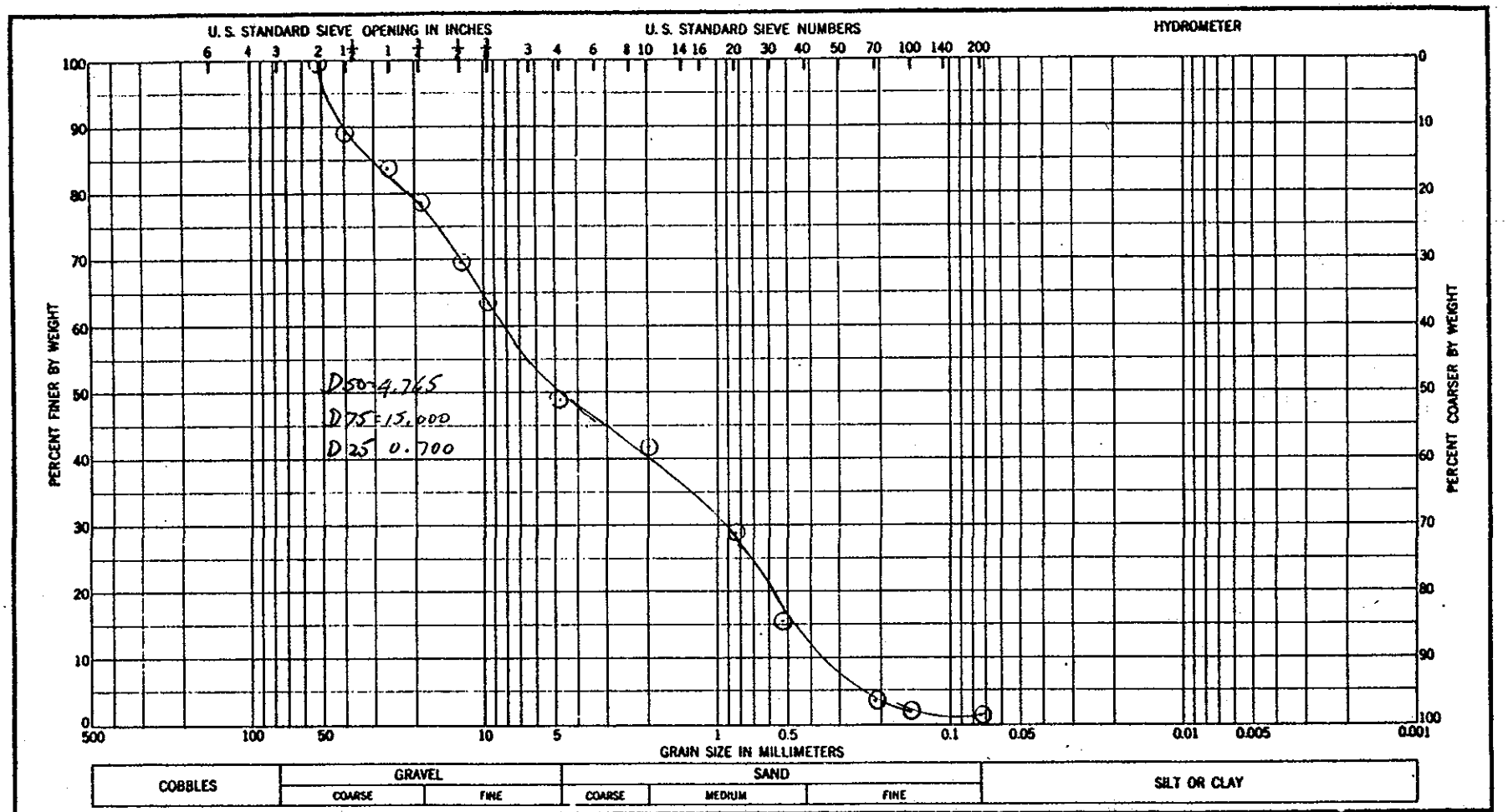
ALL TESTS, UNLESS OTHERWISE NOTED, WERE PERFORMED IN ACCORDANCE WITH THE EPA CHEMISTRY LABORATORY MANUAL.

REMARKS-
(R1)- RADIOACTIVITY BACKGROUND - 8 COUNTS/MINUTE (C/M)
(R2)- ANALYSIS NOT SUCCESSFUL - WILL REPEAT AT LATER DATE
(R3)-
(R4)-
(R5)-

LEGEND:
LI- LIMIT OF INSTRMT
NP- NON-PLASTIC
LT- LESS THAN
GT- GREATER THAN

PROG #: 401U3D0801 BOTTOM SEDIMENT SAMPLE TEST RESULTS RCS NEDED=6
PAGE: 79-AA104- 03 STATUS AS OF 27 AUG 79

PROJECT SUMMARY		NUMBER OF OBSERVATIONS	RANGE OF VALUES LOWEST	HIGHEST	MEAN (AVG VALUE)	STANDARD DEVIATION
GRAIN SIZE CURVE-MED	(34)	3	0.495000	4.765000	1.930000	2.455244
GRAIN SIZE CURVE-Q1	(35)	3	1.650000	15.000000	6.216667	7.608602
GRAIN SIZE CURVE-Q3	(36)	3	0.155000	0.700000	0.346667	0.306363
SRT COEF-(Q1/Q3)**.5		3	2.986456	4.629100	3.735887	0.830707
GR SIZE CURVE-% FINE	(38)	3	2.500000	16.500000	11.000000	7.466592
LIQUID LIMIT	(40)	2	50.000000	70.000000	60.000000	14.142135
PLASTIC LIMIT	(41)	2	25.000000	32.000000	28.500000	4.949747
PLASTIC INDEX	(42)	2	25.000000	38.000000	31.500000	9.192388
SPEC GRAV SOLIDS	(47)	2	2.670000	2.680000	2.675000	0.007071
WET UNIT WGT (PCF)	(48)					
DRY UNIT WGT (PCF)	(49)					
PERCENT SOLIDS	(50)	3	43.000000	80.000000	60.666667	18.556220
SEDIMENT PH	(51)	3	6.700000	7.100000	6.966667	0.230940
SED RDX POT (MV)	(52)					
% VOL SOLIDS- EPA	(57)	3	2.300000	8.200000	4.400000	3.296968
% VOL SOLIDS- NED	(58)	3	0.900000	5.100000	2.433333	2.318045
% TOT VOL SOL-EPA	(59)					
PPM CHEM OXYGEN DMND	(60)	3	1,200.000000	8,900.000000	4,000.000000	4,257.933771
PPM TOT KJDL NIT	(61)	3	370.000000	2,900.000000	1,256.666667	1,424.652004
PPM OIL + GREASE	(62)	3	40.000000	3,960.000000	1,430.000000	2,194.607026
PPM MERCURY	(63)	3	0.200000	0.200000	0.200000	
PPM LEAD	(64)	3	10.000000	60.000000	30.000000	26.457513
PPM ZINC	(65)	3	24.000000	42.000000	33.666667	9.073771
PPM ARSENIC	(70)	2	0.300000	0.500000	0.400000	0.141421
PPM BISMUTH	(71)					
PPM CADMIUM	(72)	3	1.000000	2.000000	1.666667	0.577350
PPM CHROMIUM	(73)	3	18.000000	92.000000	43.333333	42.158431
PPM COPPER	(74)	3	8.000000	34.000000	16.666667	15.011106
PPM IODINE	(75)					
PPM NICKEL	(76)	3	14.000000	84.000000	47.333333	35.118845
PPM PHOSPHORUS	(77)					
PPM SILVER	(78)					
PPM TIN	(79)					
PPM VANADIUM	(80)	3	16.000000	81.000000	50.000000	32.603680
% CARBON (ORGANIC)	(85)					
% CARBON (CARBONATE)	(86)					
% CARBON (TOTAL)	(87)					
% HYDROGEN	(88)					
% NITROGEN	(89)					
PPM BENZENE	(90)					
PPB DDT	(91)					
PPB PLYCHL BIPH	(92)					
CARBON 14 (YRS)	(93)					
RADIOACTIVITY(MR/HR)	(94)	3	6.000000	10.000000	8.000000	2.000000



Sample No.	Elev or Depth	Classification	Nat w %	LL	PL	PI
B1	Surface	Gravelly SAND (SP)				

Project Portsmouth Harbor
Piscataqua River, N.H.

Area

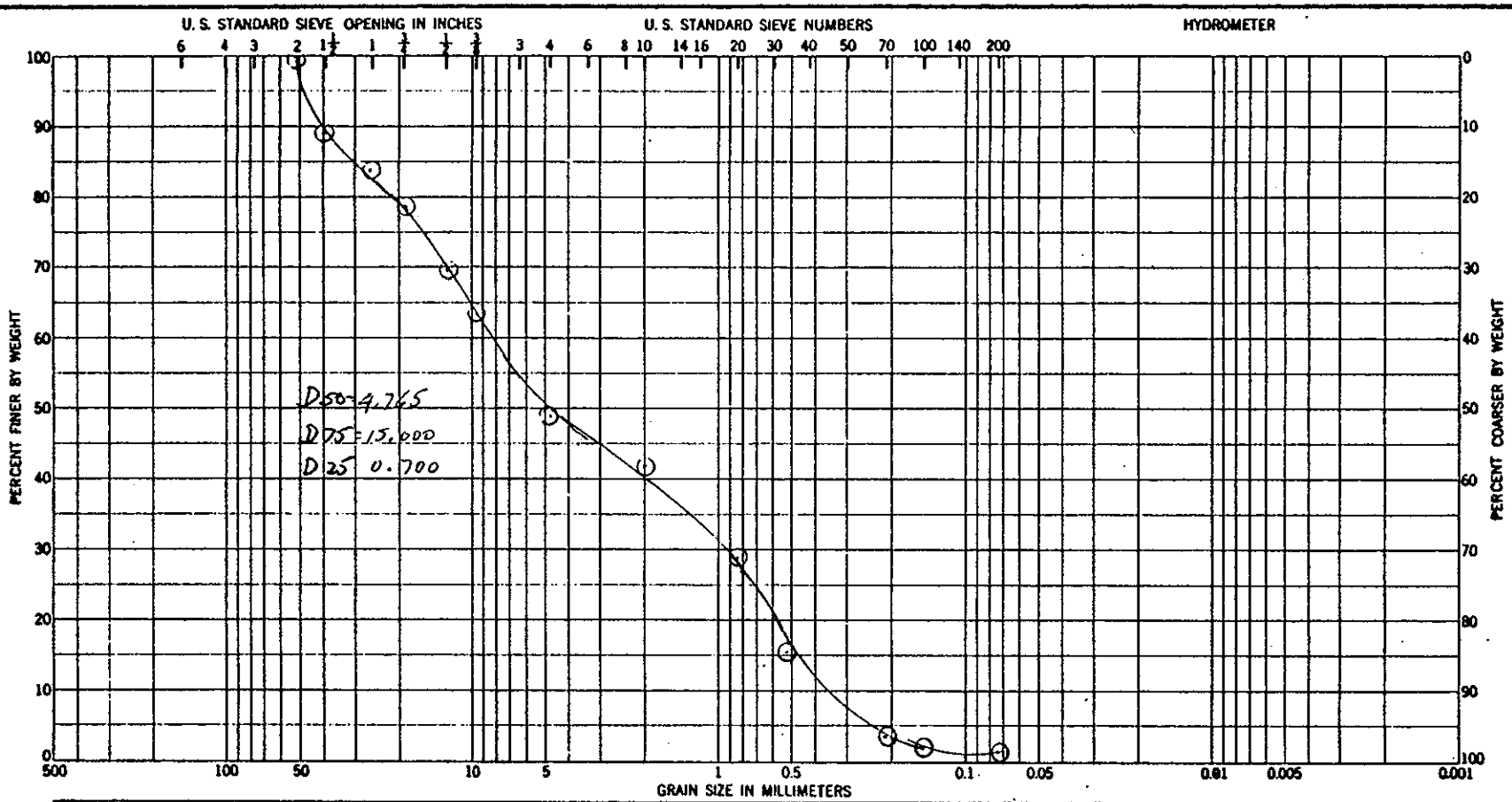
Boring No. GE 4-79 (Lab. Ser. No. 100-295-3)

Date June 1979

GRADATION CURVES

ENG FORM 1 MAY 63 2087

GPO 926-280



Sample No.	Elev or Depth	Classification	Nat w %	LL	PL	PI
B1	Surface	Gravelly SAND (SP)				

Project Portsmouth Harbor
Piscataqua River, N.H.

Area

Boring No. GE 4-79 (Lab. Ser. No. 100-295-3)

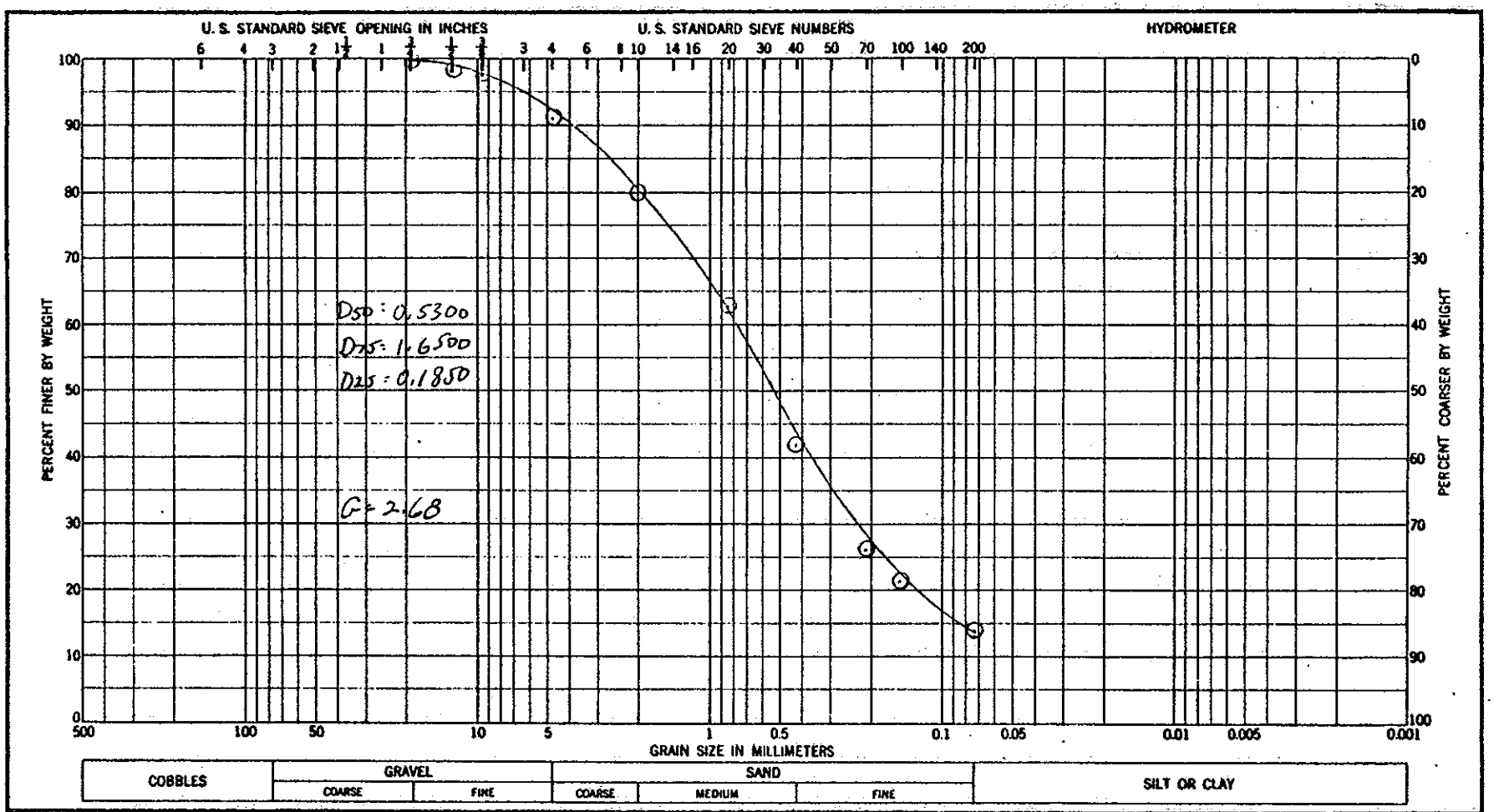
Date June 1979

GRADATION CURVES

ENG FORM 1 MAY 63 2087

GPO 926-280

13 1



Sample No.	Elev or Depth	Classification	Nat w %	LL	PL	PI
T2	0.0'-1.3'	Gravelly Clayey SAND(SC) w/organics		50	25	25
				*37	25	12
		*Overdried @ 140°F				

Project Portsmouth Harbor
Piscataque River, NH
Area
Boring No. PE2-79 (Lab. Ser. No 100-295-2)
Date June 1979

GRADATION CURVES

ENG FORM 1 MAY 63 2087

GPO 926-250

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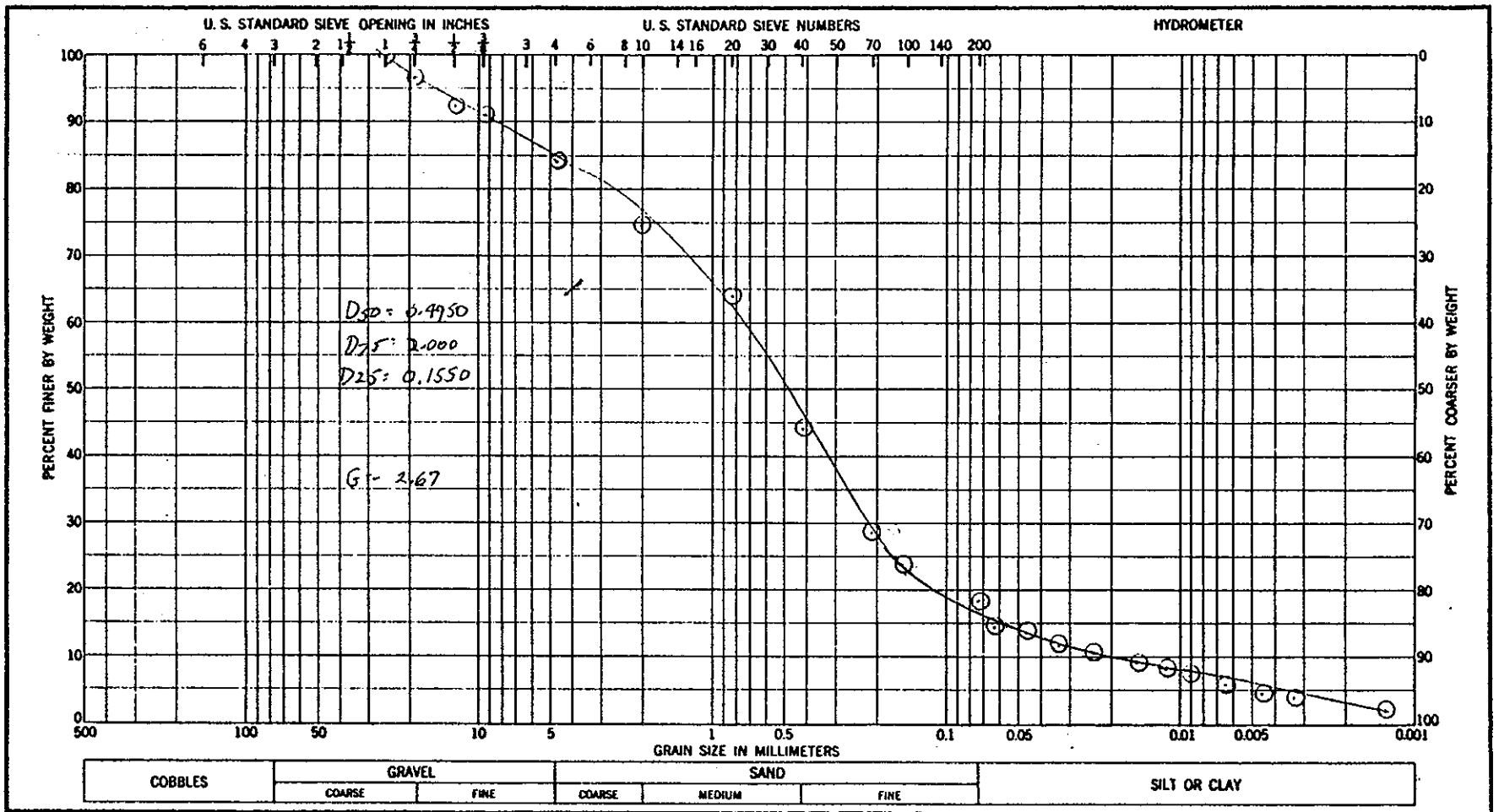

Sample No.	Elev or Depth	Classification	Nat w %	LL	PL	PI
T4	0.0' - 1.0'	Gravelly Clayey SAND (SC) w/ organics.		70	32	38
				*51	33	18
		*Tested of oven dried @ 140° F				

Project Portsmouth Harbor
Piscataque River, N.H.
Area
Boring No. PE 1-79 (Lab. Sr. No. 100-295-1)
Date June 1979

GRADATION CURVES

ENG FORM 1 MAY 63 2087

GPO 926-280

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APPENDIX 6

PUBLIC INVOLVEMENT

APPENDIX 6
PUBLIC INVOLVEMENT

Table of Contents

PUBLIC INVOLVEMENT DURING FEASIBILITY STUDY

Exhibits

Letter:	N.H. State Port Authority	24 Feb. 1970
Letter:	Portsmouth Harbor Safety Committee	19 Mar. 1976
Public Notice:	New England Division	15 Nov. 1976
Letter:	Congressman Norman E. D'Amours	15 Apr .1977
Letter:	U.S. Navy	4 Oct. 1977
Letter:	State of Maine, DEP	17 Oct. 1977
Letter:	Senator John A Durkin	25 May 1979
Resolution:	State of New Hampshire	29 May 1979
Meeting Notice:	New Hampshire Fish and Game Dept.	28 May 1981
Letter:	Fuel Storage Corporation	29 July 1981
Letter:	U.S. Fish and Wildlife Service	1 Dec. 1977
Letter:	U.S. Fish and Wildlife Service	29 Mar. 1979
Letter:	U.S. Fish and Wildlife Service	21 Aug. 1980
Letter:	U.S. Fish and Wildlife Service	12 June 1981

COMMENTS AND RESPONSES ON DRAFT FEASIBILITY REPORT

Letter:	Maine Historic Preservation Commission	9 Sep 1981
Letter:	Maine Dept. of Environmental Protection	23 Mar 1982
Letter:	U. S. Fish and Wildlife Service	19 Apr 1982
Letter:	U. S. Environmental Protection Agency	30 Apr 1982
Letter:	N. H. Dept. of Resources & Economic Dev.	17 May 1982
Letter:	N. H. State Port Authority	20 May 1982
Letter:	N. H. Dept. of Public Works & Highways	21 May 1982
Letter:	Maine-NH Interstate Bridge Authority	21 May 1982
Letter:	Greater Portsmouth Chamber of Commerce	28 May 1982
Letter:	Defense Fuel Supply Center	1 Jun 1982
Letter:	Maine Historic Preservation Commission	25 Jun 1982
Public Notice:	New England Division	18 Aug 1982
Letter:	New England Division	20 Aug 1982
Letter:	New England Division	20 Aug 1982
Letter:	Governor of New Hampshire	3 Sep 1982
Letter:	Congressman, New Hampshire, 1st District	7 Sep 1982
Letter:	Barton Machine, Inc.	7 Sep 1982
Letter:	New England Tank Industries of N.H., Inc.	9 Sep 1982
Letter:	New Hampshire, Office of State Planning	9 Sep 1982
Letter:	U. S. Coast Guard	9 Sep 1982
Letter:	Barton Machine, Inc.	10 Sep 1982
Letter:	The Town of Newington, N.H.	13 Sep 1982
Letter:	Pease Air Force Base, N.H.	14 Sep 1982
Letter:	City of Portsmouth, N.H.	14 Sep 1982
Letter:	Mendum Cove Abutters	15 Sep 1982
Letter:	New Hampshire Fish & Game Dept.	15 Sep 1982
Letter:	William L. Pingree, D.M.D.	16 Sep 1982
Letter:	The Dolphin Striker	16 Sep 1982
Letter:	Portsmouth Navigation	17 Sep 1982
Letter:	The Oar House	17 Sep 1982
Letter:	New England Division	17 Sep 1982
Letter:	Sprague Steamship Agency	17 Sep 1982
Letter:	Viking of Yarmouth, Inc.	19 Sep 1982
Letter:	U. S. Fish and Wildlife Service	20 Sep 1982
Letter:	New Hampshire State Port Authority	20 Sep 1982
Letter:	Geoffrey E. Clark, M.D.	20 Sep 1982
Letter:	Export Management Company, Inc.	20 Sep 1982
Letter:	Total Waste Management	20 Sep 1982
Letter:	David T. Brewster	20 Sep 1982
Letter:	Granite State Minerals, Inc.	20 Sep 1982
Letter:	N.H. Dept. of Resources & Economic Dev.	21 Sep 1982
Letter:	U.S. Environmental Protection Agency	21 Sep 1982
Letter:	RPM and Associates	22 Sep 1982
Letter:	A. N. Deringer, Inc.	23 Sep 1982
Letter:	Peabody and Lane, Inc.	24 Sep 1982
Letter:	William W. Seaward, Jr.	27 Sep 1982
Letter:	Winebaum News, Inc.	28 Sep 1982

COMMENTS AND RESPONSES ON DRAFT FEASIBILITY REPORT (Continued)

Letter:	Maine Dept. of Environmental Protection	28 Sep 1982
Letter:	George W. Duffy	29 Sep 1982
Letter:	Boston Overseas, Inc.	29 Sep 1982
Letter:	Boston and Maine Corporation	30 Sep 1982
Letter:	Maine Dept. of Marine Resources	1 Oct 1982
Letter:	Department of the Navy	5 Oct 1982
Letter:	Portsmouth Harbor Improvement Safety Comm.	5 Oct 1982
Letter:	Dorchester Sea-3 Products, Inc.	13 Oct 1982
Letter:	Greater Portsmouth Chamber of Commerce	20 Oct 1982
Letter:	New England Division	27 Oct 1982
Letter:	New England Division	29 Oct 1982
Letter:	New England Division	29 Oct 1982
Letter:	C. H. Sprague and Son, Company	2 Nov 1982
Letter:	Town of Newington, N.H.	15 Nov 1982
Letter:	Maine Dept. of Marine Resources	16 Nov 1982
Letter:	New England Division	15 Nov 1982
Memorandum:	New England Division	14 Dec 1982
Letter:	New England Division	27 Dec 1982
Memorandum:	New England Division	18 Jan 1983
Letter:	Dion's Yacht Yard, Inc.	18 Jan 1983
Letter:	Town of Newington, N.H.	27 Jan 1983
Letter:	New England Division	3 Feb 1983
Memorandum:	New England Division	3 Feb 1983
Letter:	N.H. Dept. of Public Works & Highways	3 Feb 1983
Letter:	N.H. Dept. of Public Works & Highways	15 Feb 1983
Letter:	Portsmouth Conservation Commission	21 Apr 1983
Letter:	U.S. Fish and Wildlife Service	8 Aug 1983
Letter:	Simplex Wire and Cable Company	4 Oct 1983
Letter:	C. H. Sprague & Son Company	27 Oct 1983
Letter:	Portsmouth Pilots	27 Oct 1983
Letter:	New England Division	28 Oct 1983
Letter:	Granite State Minerals	31 Oct 1983
Letter:	Dorchester Sea-3 Products, Inc.	3 Nov 1983
Letter:	Gold Bond Building Products	8 Nov 1983
Letter:	Northeast Petroleum	9 Nov 1983
Letter:	N.H. Dept. of Resources and Economic Dev.	14 Nov 1983
Letter:	New England Division	18 Nov 1983
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Letter:	U.S. Fish and Wildlife Service	23 Nov 1983
Letter:	U.S. Environmental Protection Agency	29 Nov 1983
Letter:	New England Division	29 Nov 1983
Letter:	U.S. National Marine Fisheries Service	30 Nov 1983
Letter:	U.S. Coast Guard	1 Dec 1983
Letter:	Simplex Wire and Cable Company	8 Dec 1983
Letter:	N.H. Office of State Planning	19 Dec 1983
Letter:	U.S. Dept. of the Navy	23 Dec 1983
Letter:	New England Division	23 Dec 1983
Letter:	New England Division	29 Dec 1983
Letter:	U.S. National Marine Fisheries Service	4 Jan 1984

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Letter:	New England Division	18 Jan 1984
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Letter:	U.S. Fish and Wildlife Service	1 Feb 1984
Letter:	Maine State Planning Office	2 Feb 1984
Letter:	New England Division	3 Feb 1984
Letter:	N.H. Office of State Planning	3 Feb 1984
Letter:	U.S. National Marine Fisheries Service	6 Feb 1984
Letter:	New England Division	6 Feb 1984
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NEW HAMPSHIRE STATE PORT AUTHORITY

555 MARKET ST., BOX 506 PORTSMOUTH, N.H. 03801 TELEPHONE 436-8500

ROBERT E. HINCHEY, CHAIRMAN JOHN P. REGAN, VICE CHAIRMAN ROBERT C. McKENNA, TREASURER

GODFREY H. SAVAGE JOHN E. SEYBOLT ROGER J. CROWLEY, JR.

A. DICKSON SMITH
EXECUTIVE DIRECTOR

February 24, 1970

Mr. Frank Fogarty, Chief
Operations Division
U.S. Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02154

Dear Frank:

With the advent of much larger ships, specifically tankers, bring in oil into the Portsmouth Harbor area, the Port Authority foresees the need to begin to think of some additional dredging being accomplished on the river, specifically in three areas. Two of the areas are between the Memorial and Interstate Bridges now marked by existing red nuns numbered N16 and N18. The other area would be the area known as Goat Island Ledge now marked by black can number 9.

We are now bringing into Portsmouth tankers approximating almost 700 feet in length, a beam approaching 90 feet in width, and a draft of 37 feet at high water using 4 or more tugs as assists in the handling of these vessels. It goes without saying that if any of these vessels should ever go aground within the confines of the harbor the possible extent of damage is almost next to impossible to calculate.

Your advise would be appreciated as to what initial steps should be taken in order for some consideration down the road being given to some channel improvement.

Could you advise as to the past dredging project on the river accomplished by American Dredging Company a few years ago, outlining if dredging done in the aforementioned areas was up to the limits of the original project or because of money did some shrinking have to take place.

Very truly yours,

6-1 Dick Smith

A. Dickson Smith
Executive Director

March 19, 1976

Senator Thomas McIntyre
Room 1215
Dirkson Senate Office Bldg.
Washington, DC 20510

Dear Senator McIntyre:

The Portsmouth Harbor-Piscataqua River Safety Improvement Committee would like your support influencing a study by the Army Engineers to make this port safer and to avoid a possible catastrophy. In the last ten years, ships using the river have increased in size from 600 feet long to 700 feet long and with deeper draft. Tonnage has increased from 1,397,389 tons in 1960 to 3,624,188 tons in 1975; an increase of 250% and still climbing.

The areas we are concerned with are (1) - (top priority) - The area between the Memorial Bridge and the Interstate Bridge - to eliminate a sharp turn and increase the width of the channel making it possible to turn a ship should the lifting devices of the bridge fail or trouble develops with the ships engines. As it now stands, there is insufficient room to turn a ship in this area. (2) - The same can be said for the turning basin at the up-river end of the channel where there is insufficient room to turn large ships. (3) - Henderson's Point and Goat Island, where we would like to widen a sharp bend in the river.

It is the feeling of the harbor pilots and the users of the river that with the larger and deeper draft vessels, the excellent safety record we have enjoyed, at this point, is in danger.

There are now sixteen major companies using the river; bringing in propane gas, jet fuel, gasoline, heating fuels and gypsum rock. It is a major part of the economy in this area.

We sincerely believe this merits your support.

Sincerely,

Portsmouth Harbor-Piscataqua
River Safety Improvement
Committee

F. H. Chadwick

F. H. Chadwick
Chairman

Enclosures:

1. Letter from Army Corps of Engineers
2. Listing of major companies using the river
3. Chart of harbor and river
4. Chart of Henderson's Point and Goat Island
5. Chart of area between bridges
6. Chart of area up-river - turning basin

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02154

REPLY TO
ATTENTION OF:

NEDPL-C

15 November 1976

TO WHOM IT MAY CONCERN:

PUBLIC NOTICE ON

NAVIGATION IMPROVEMENTS

The Division Engineer, New England Division, Corps of Engineers, has been directed to make a study of

PORTSMOUTH HARBOR-PISCATAQUA RIVER

NEW HAMPSHIRE AND MAINE

in response to a letter dated 19 March 1976 from the Portsmouth Harbor-Piscataqua River Harbor Improvement Committee. In their letter the Committee requested improvements to the existing Federal channel in the Piscataqua River by (1) enlarging the turning areas in the vicinity of the New Hampshire and Maine Interstate Bridge and at the head of the Federal channel, and (2), by removing ledge rock in the vicinity of Goat Island.

The activiation of this study for the modification of the Federal channel in the Piscataqua River is made in compliance with the following resolution adopted by the Committee on Public Works of the United States Senate on 23 April 1970:

"RESOLVED BY THE COMMITTEE ON PUBLIC WORKS OF THE UNITED STATES SENATE, The the Board of Engineers for Rivers and Harbors, created under the provisions of Section 3 of the River and Harbor Act approved June 13, 1902, be and is hereby requested to review the report of the Chief of Engineers on Portsmouth Harbor and Piscataqua River, Maine and New Hampshire, published as House Document Number 556, Eighty-Second Congress, and other pertinent reports, with a view to determining whether any modification of the existing project are advisable at the present time."

The original Corps of Engineers project in the waterway was for Portsmouth Harbor only and was authorized by the River and Harbor Act of 1879 and modified in 1890. It provided for a stone break-

water extending from Goat Island to Newcastle Island, the removal of a portion of ledge-rock on the southeast side of Badgers Island to a depth of 18 feet below mean low water, and the removal of Pier Rock to a depth of 12 feet below mean low water. Work was initiated in 1879, and the entire project was completed in 1892. The breakwater, which was designed to eliminate dangerous cross currents in the vicinity of Goat Island ledge, was completed in 1881. Removal of part of Gangway Rock to 20 feet began in 1881 and was completed in 1888. Removal of ledge at the southwest point of Badgers Island to 18 feet was started in 1881 and completed in 1891. Removal of Pier Rock to 12 feet as authorized by the River and Harbor Act of 1890 was accomplished in the two year period 1891 to 1892.

House Document No. 556, 82 nd Cong., 2nd Session dated 30 September 1952 provided for the removal of ledge rock in the vicinity of Gangway Rock, the southwest point of Badgers Island and Boiling Rock to 35 feet below mean low water. Construction of the project was initiated and completed in 1956.

The existing project, shown on the attached map, was adopted 3 September 1954 and was modified on 23 October 1962 and 23 December 1965 by the Chief of Engineers under Section 107 of the River and Harbor Act of 1960, as amended. This project provides for a 35-foot channel, 400 feet wide with additional width at the bends by removal of ledge rock at Henderson Point, Gangway Rock, Badgers Island, the Maine-New Hampshire Interstate Bridge, and Boiling Rock, from deep water in Portsmouth Harbor to a point about 1,700 feet above the Atlantic Terminal Sales dock in Newington, with a 950-foot turning basin above Boiling Rock and an 850-foot turning basin at the head of the project. The project also provided for the construction of two new channels in the vicinity of Sagamore Creek referred to as the Back Channels.

The present study, concerning channel improvements as requested by local interests, is shown on the attached map. The benefit of the improvements will be to deep-draft vessel interests and the costs of the improvements and all future maintenance will be a Federal responsibility should the study conclude that improvements are justified.

All Federal, State, County and municipal agencies, and those of commercial, industrial, civic, highway, railroad and water transportation interests, and property owners concerned are invited to express their

NEDPL-C 15 November 1976

views concerning the character and extent of the improvement desired and the need and advisability of its execution. Written statements may be forwarded to:

Division Engineer
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, MA 02154

Further information concerning this project is available from John Visniewski, Project Manager, Telephone (617) 894-2400, Extension 556.

Please bring the foregoing to the attention of persons known to you to be interested in the matter.

Incl
Project Map

RALPH T. GARVER
Colonel, Corps of Engineers
Acting Division Engineer

NORM D'AMOURS
1ST DISTRICT, NEW HAMPSHIRE

STANDING COMMITTEES:
BANKING, FINANCE AND URBAN AFFAIRS
MERCHANT MARINE AND FISHERIES
MEMBER—STEERING AND POLICY COMMITTEE

Congress of the United States
House of Representatives
Washington, D.C. 20515

WASHINGTON OFFICE:
1503 LONGWORTH HOUSE OFFICE BUILDING
WASHINGTON, D.C. 20515
(202) 225-5456

DISTRICT OFFICES:
MANCHESTER, NEW HAMPSHIRE 03105
720 NORRIS COTTON FEDERAL BUILDING
275 CHESTNUT STREET
(603) 668-6800
669-7011, EXT. 526
PORTSMOUTH, NEW HAMPSHIRE 03801
425 AND 426 FEDERAL BUILDING
80 DANIEL STREET
(603) 436-7720, EXT. 707
LACONIA, NEW HAMPSHIRE 03246
200 AND 223 FEDERAL BUILDING
719 MAIN STREET
(603) 524-7185

April 15, 1977

Col. John Chandler
Division Engineer
N.E. Division, Corps of Engineers
424 Trapelo Road
Waltham, Mass. 02154

Dear Col. Chandler:

The Corps of Engineers is presently conducting a study on the feasibility of dredging three portions of the harbor in Portsmouth, New Hampshire. I am writing you to express my extreme interest in this project.

Portsmouth harbor primarily supports shipping and fishing commercial activity. Although shipping in the past has not been extensive, recent industrial growth within the area has attracted greater shipping activity especially in the transport of fuels. The dredging of certain portions of the harbor by the Corps would facilitate this increased activity by eliminating the most treacherous navigational problems presently existing and serve to attract additional commercial shipping.

However, of even greater interest to me is the present danger that the present shipping activity holds for the harbor's fishing industry. The current flowing through the harbor is one of the most powerful in the whole eastern seaboard of the United States. An oil spill or other incident caused by the present navigational dangers, coupled with the current which make oil cleanup efforts impossible, would destroy the harbor's marine life and terminate an important source of livelihood for an indefinite period of time.

I would appreciate being kept informed of the status of this study. Thank you for your cooperation.

With best wishes, I am

Sincerely,

Norm D'Amours

NORMAN E. D'AMOURS
Member of Congress

NED/dr

PORTSMOUTH NAVAL SHIPYARD
PORTSMOUTH, N. H. 03801

IN REPLY REFER TO
404:SRM:mkv
11010 (23856)

5 OCT 1977

From: Commander, Portsmouth Naval Shipyard
To: Commanding Officer, Northern Division, Naval Facilities Engineering Command (Code 09BE)

Subj: Comments and recommendations on U. S. Army Corps of Engineers Portsmouth Harbor, Piscataqua River Navigation Study

Ref: (a) CO NORTHDIV ltr Code 09BE of 22 Sep 1977

1. In accordance with reference (a), the following comments are offered.

2. The proposed improvements to the river west of the Memorial Bridge (Areas #1 and #2) will not be of significant benefit to the Shipyard. U. S. Government vessels such as cable ships and tankers, however, would benefit.

3. The improvements in Area #3, on the other hand, would greatly benefit the Shipyard and it is highly recommended that they be made. The enlarged width of the channel here would facilitate turning near Henderson Point for the newer and larger submarines which will soon be arriving. Also, it is believed that the widening will reduce the current velocity in this area.

4. This Shipyard requests that it be provided with a more detailed description of the work involving ledge removal at Henderson Point. Only then can a determination be made as to whether or not this work will impact the Yard.

5. Finally, it should be noted that the Shipyard is scheduled to have the Power Plant converted to coal at some time in the future. This may require a coal handling facility for incoming barges in the vicinity of Henderson Point. This facility is, however, merely one possibility among many. The coal conversion project as currently under study by an A/E.

R. T. HARDY
By direction

STATE OF MAINE
Department of Environmental Protection

MAIN OFFICE: RAY BUILDING, HOSPITAL STREET, AUGUSTA
MAIL ADDRESS: STATE HOUSE, AUGUSTA 04333

Henry E. Warren
[redacted]
COMMISSIONER
289-2811

ADMINISTRATIVE SERVICES:
289-2691

BUREAUS:

AIR QUALITY CONTROL
289-2437

LAND QUALITY CONTROL
289-2111

WATER QUALITY CONTROL
289-2591
LABORATORY SERVICES
289-3866
OIL POLLUTION CONTROL
289-2591

REGIONAL OFFICES:

31 CENTRAL STREET
BANGOR 04401
947-6746

415 CONGRESS STREET
PORTLAND 04101
775-6587

634 MAIN STREET
PRESQUE ISLE 04769
764-3737

OIL POLLUTION CONTROL
40 COMMERCIAL STREET
PORTLAND
773-6491
OIL SPILL REPORTS ONLY
(TOLL FREE) 1-800-482-0777

CITIZENS' ENVIRONMENTAL
ASSISTANCE SERVICE
289-2691
(TOLL FREE) 1-800-452-1942

October 17, 1977

Joseph L. Ignazic
New England Division
Corps of Engineers
424 Trapelo Road
Waltham, Mass 02154

Dear Mr. Ignazic:

Thank you for your letter of 9/13/77. I apologize for taking so long to get back to you. The other day I spoke with a captain Holt of the Portsmouth Pilots. Captain Holt discussed the increase in vessel sizes he envisioned for the Piscatequa should the improvements the Corps is now considering are undertaken.

It is his judgement that the 5000 DWT increase mentioned for the largest vessels would not unduly stress the planned navigation channel. After talking with the Captain we are confident that they indeed know what the impact of the changes would be. They are not particularly worried about the slight increase in vessel size. Our experience on these matters clearly show us that the Pilots judgement carries a great deal of weight. We therefore are satisfied that the risk of having these larger vessels is not substantially greater than at present. For this reason the Maine D.E.P. will most likely fully support the proposed project provided that your study recommends that the changes be made.

Thanks again for your obvious efforts to keep us up to date on all developments pertaining to this matter.

Sincerely,

Marc Guerin

Marc Guerin, Division Director
Division of Oil Conveyance Services
Bureau of Water Quality Control

MG/ad

cc: Captain Richard C. Holt
Portsmouth Pilots
Ceres Street Wharf
Portsmouth, N.H. 03801

JOHN A. DURKIN
NEW HAMPSHIRE

COMMITTEES:
COMMERCE, SCIENCE AND TRANSPORTATION
ENERGY AND NATURAL RESOURCES
VETERANS' AFFAIRS

United States Senate
WASHINGTON, D.C. 20510

OFFICES:
DIRKSEN SENATE OFFICE BUILDING
ROOM 5230
202-224-3324
WASHINGTON, D.C. 20510
FEDERAL BUILDING
603-666-7591
MANCHESTER, NEW HAMPSHIRE 03101
FEDERAL BUILDING
603-431-5900
PORTSMOUTH, NEW HAMPSHIRE 03801

May 25, 1979

Portsmouth Harbor/Piscataqua River
Improvement Safety Committee
Propellor Club of U.S.
Port of Portsmouth #156
Portsmouth, NH 03801

Dear Friends:

I am pleased to have this opportunity to inform you of initiatives I am taking to improve the safety of navigation along the Piscataqua River.

I need remind no one assembled here today that safe passage of large ships in the river is a critically important issue for everyone who lives in this area. Portsmouth is a major terminus for energy supply -- heating oil, liquid propane gas, kerosene and jet fuel -- and it is a rare day when loaded tankers are not negotiating the tricky waters of the Piscataqua to deliver their product. The implications of a tanker accident to the Portsmouth area are devastating. An explosion on a gas carrying tanker has the potential to do tremendous damage to lives and property. A major oil spill could seriously harm the beauty and ecological integrity of the seacoast. And, even a relatively minor accident in the ship channel could disrupt the flow of traffic along the river and with it the vital delivery of energy supplies. Indeed, it is a testament to the exceptional skill of our local pilots that there has never been a serious accident involving tankers in the Portsmouth area.

Against this backdrop of extremely hazardous cargoes and in often times unpredictable river current, one would think that the Federal Government would do everything possible to see that the hazards of navigating tankers in the river are minimized. That, unfortunately, has not been the case. In 1970 the Senate Committee on Environment and Public Works authorized a study to investigate the possibility of making navigation improvements along the river. Although nine years have elapsed since that initial authorization, I am sorry to report that the study is still not complete and the much needed improvements are no closer to reality than they were when the study began.

TOLL FREE CITIZEN HOT LINE
(800) 562-1110

I believe there is a unanimous agreement that what the Piscataqua needs most is a turnaround basin between the first and second lift bridges. Should one of these bridges malfunction and trap a ship, the turning basin will allow a loaded vessel to reverse its direction and head back to the open sea, out of harm's way. As you know, a tanker must now go all the way to the Newington terminal before it can turn around and return to the channel.

Because of the pressing need for this turning basin, I have decided to submit legislation in the Congress which will direct the Army Corp of Engineers to proceed with the dredging of this much needed safety improvement plus some additional dredging off Goat Island. While I am not demeaning studies, I think that we have an unfortunate tendency in Government to study everything to death. From my investigation of this issue, it is obvious that a pressing safety question exists here. The time to perform this work is now, not after a tragic accident occurs.

This legislation for the turning basin will be an excellent companion to a bill I recently introduced which mandates strict standards for the storage and transportation of liquid energy gases. Together these bills will insure that the Seacoast area will not be threatened by the movement of highly flammable materials. It is my hope and expectation that the Congress will see the wisdom of both these projects and appropriate the necessary funds to see they are carried out.

Thank you very much for letting me explain my position on this very important issue. It is my sincere hope that we will be able to work together to make Portsmouth and the Seacoast a safe place for all of us.

Sincerely,

John A. Durkin

JAD:vc

State of New Hampshire

OFFICE OF SECRETARY OF STATE

I, WILLIAM M. GARDNER, Secretary of State of the State of New Hampshire, do hereby certify that the following and hereto attached is a true copy of HOUSE CONCURRENT RESOLUTION NO. 12 (Passed May 29, 1979) as filed in this office and held in my custody as Secretary of State.

In Testimony Whereof, *I hereto set my hand and cause to be affixed the Seal of the State, at Concord, this* ....31st.. *day of* .May... *A.D. 19* 79

Secretary of State

6-12

HCR 12

STATE OF NEW HAMPSHIRE

In the year of Our Lord one thousand
nine hundred and seventy-nine

A RESOLUTION

relative to the dredging and widening of the
Piscataqua River.

Whereas, the U. S. Army Corps of Engineers determined dredging and widening of the Piscataqua River for the construction of a turning basin should be based on cost effectiveness; and

Whereas, safety measures taken into consideration of the siting of a turning basin causing increased costs have been ignored; and

Whereas, on an occasion when a vessel carrying gasoline, fuel oil or liquified petroleum gas to terminals along the river may be subject to an emergency action; now, therefore, be it

Resolved by the House of Representatives, the Senate concurring:

That this body proposes to the Congress of the United States that it review the manner in which the U. S. Army Corps of Engineers made the decision to dredge and widen the Piscataqua River; and

That this body respectfully requests that the Congress cause the U. S. Army Corps of Engineers to make its determinations as to constructing a

turning basin relative to safeguarding the lives of New Hampshire citizens rather than relative to economical considerations; and

That copies of this resolution be sent to the Speaker and Clerk of the United States House of Representatives, the President and the Secretary of the United States Senate, and to each member of the New Hampshire Congressional delegation.

Passed: May 29, 1979

STATE OF NEW HAMPSHIRE

FISH AND GAME DEPARTMENT

CHARLES E. BARRY
EXECUTIVE DIRECTOR

Box 2003
34 Bridge Street
Concord, N.H. 03301
(603) 271-3421

May 11, 1981

Dear Sir:

The U.S. Army Corps of Engineers has asked for our assistance in notifying you of an informal informational meeting to be held at 7:30 P.M. on May 28, 1981 in the Portsmouth City Council Chambers. The purpose of this meeting is to discuss possible ocean dump sites for the material from the proposed navigation improvements to Portsmouth Harbor and the Piscataqua River. Since any at-sea disposal area selected could effect your fishing activities, over the short-term and permanently, your participation and input at this meeting will be important.

For further information, contact Gib Chase, Corps of Engineers, 424 Trapelo Road, Waltham, Massachusetts 02154 (telephone number - 617-894-2400).

Sincerely yours,

E. W. Spurr

Edward W. Spurr, Supervisor
Fisheries Research

EWS/nkc
cc: Gib Chase
Winn Robinson, USFWS
Ruth Reyfus, NMFS
Advisory Committee

FUEL STORAGE CORPORATION

PATTERSON LANE
NEWINGTON, NEW HAMPSHIRE

BOSTON OFFICE
135 FIRST STREET
CAMBRIDGE, MASS.

JULY 29, 1981

MR. JOSEPH L. IGNAZIO
CHIEG, PLANNING DIVISION
U. S. ARMY CORPS OF ENGINEERS
414 TRAPELO ROAD
WALTHAM, MA 02254

DEAR MR. IGNAZIO:

THIS IS IN RESPONE TO YOUR LETTER OF 29 JULY 1981 REGARDING THE USE OF LAND OWNED BY FUEL STORAGE CORPORATING IN NEWINGTON, N.H., AS A DISPOSAL SITE FOR YOUR PROPOSED IMPROVEMENTS TP PORTSMOUTH HARBOR.

AS YOU ARE AWARE, IN THE PAST WE HAVE ALLOWED THE CORPS TO USE THE SITE FOR DISPOSAL OF MATERIAL FROM VARIOUS MAINTENANCE PROJECTS. AFTER MEETING AND DISCUSSING THE PROPOSED PROJECT WITH MR. MARKIEWICS OF YOUR STAFF WE REALIZE THE AMOUNT TO BE REMOVED IS MORE THAN WE HAVE TAKEN IN THE PAST. HOWEVER, WE DO HAVE THE CAPABILITY TO UTILIZE THIS AMOUNT OF MATERIAL.

WE REALIZE THAT YOUR STUDY IS CURRENTLY IN THE FINAL STAGES OF THE PLANNING PROCESS AND ACTUAL CONSTRUCTION IS STILL A FEW YEARS AWAY. THEREFORE, ALTHOUGH THE SITE IS AVAILABLE FOR DISPOSAL OF DREDGED MATERIAL TODAY, FUTURE CONDITIONS MAY CHANGE AND WE CANNOT QUARANTEE THE AVAILABILITY OF THE SITE. CURRENTLY WE HAVE NO REASON TO BELIEVE THAT THE SITE WILL BE UNAVAILABLE.

AS A USER OF THE HARBOR, WE REALIZE THE NEED AND IMPORYANCE OF THE PROJECT TO THE LOCAL ECONOMY. WE WOULD LIKE TO DO WHAT WE CAN TO HELP MAKE THE PROJECT A REALITY.

WE HOPE YOUR OFFICE WILL KEEP US INFORMED OF THE PROJECT STATUS.

YOUR TRULY,

ELIOT W. DENAULT, JR.

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Ecological Services
P. O. Box 1518
Concord, New Hampshire 03301

December 1, 1977

Division Engineer
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02154

ATTN: Mr. John A. Visniewski

Dear Sir:

This is the U. S. Fish and Wildlife Service's Planning Aid Letter on the Portsmouth Harbor-Piscataqua River Navigation Study, New Hampshire, and is in response to Mr. Ignazio's letter of August 17, 1977. It is intended to inform you of our preliminary concerns for and impressions of the type of project described in your Public Notice of November 15, 1976, and to let you know the information we would like to see developed in future planning stages of this study. Our Fish and Wildlife Coordination Act report will follow at a later date after project plans are developed.

Our first major concern with this type of project is the disposal of the dredged material. It should be disposed of in an environmentally acceptable manner and should not be deposited on wetlands, productive shallow water areas, fishing grounds, or other valuable fish and wildlife habitat. A search for appropriate disposal sites, in which we will assist, should be systematically planned and carried out. A chemical and physical analysis of the spoil should be made to assist in determining where it should be disposed. The possibility of using the spoil for improving fish and wildlife habitat should also be investigated. The ledge rock to be removed in the vicinity of Goat Island might be used to construct a reef type structure on the ocean floor, in an appropriate area. Fine sediments for establishing wetlands or shellfish flats is also a possibility.

A second concern is project scheduling. Many species of fish are concentrated in the study area at various times of the year. Adults of several anadromous species pass through on spawning migrations and juveniles pass downstream later. Other species are seasonally abundant in the study area. Species of particular concern include American smelt, river herring (alewives and blueback herring), striped bass, American shad, and coho

salmon. Several experimental programs are being conducted in the study area to establish, re-establish, or enhance populations of certain species of fish. Information should be gathered on the status of these programs to minimize conflict.

Two potential disposal sites are shown on the map accompanying Mr. Ignazio's letter. The upland at New England Tank Industries appears to be an acceptable site for disposal, if spoil is adequately contained. A more detailed map is necessary, however, of where deposition would take place. The open water area with fringe marsh suggested for use by the New Hampshire Port Authority is unacceptable from our point of view. In addition to the wetlands, this area provides good flounder fishing and should not be filled.

We appreciate your keeping us informed on the progress of this study and we will provide additional input at future appropriate times.

Sincerely yours,

Gordon E. Beckett

Gordon E. Beckett
Supervisor

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
ECOLOGICAL SERVICES
P.O. Box 1518
Concord, New Hampshire 03301

MAR 29 1979

Division Engineer
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02154

Dear Sir:

This is our planning aid letter (PAL) based on the review of the plan of study (POS) for a channel improvement project for deep-draft navigation in Portsmouth Harbor and the Piscataqua River. It is submitted in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).

As stated in our planning aid letter of December 1, 1977, our major concerns are disposal of the dredged material and dredging schedules to minimize possible conflicts with spawning migrations of anadromous fish species. The POS does state that blasting should be scheduled to avoid conflict with yearly spawning periods. Presumably all the work can be done during a time period of low biological activity. Mid-November to mid-March would be the optimal work schedule from the biological point of view. Biological activity picks up in the spring as water temperatures rise and drops again in the fall. Smelt, alewives, blueback herring, and American shad have a spring spawning run. Work scheduled between March 15 and June 30 could interfere with these species spawning migrations. Coho salmon are passing through the project area during September, October, and into mid-November. During the warmer months the project area would support large numbers of planktonic life stages of fish and invertebrates. Lobster, perhaps the economically most important species in the estuary, would also be most active during the warmer months. Conducting the work from mid-November to mid-March would minimize the possibility of adverse biological impacts from the proposal.

We do recognize the preliminary nature of the study and specific disposal sites are still being explored. However, comments on dredge spoil disposal made in our PAL of December 1, 1977, are still valid. We understand that the solid fill fishing pier proposed by the Town of Kittery Port Authority will not accommodate the material to be dredged and would require additional dredging for access to the pier. This alternative would involve both dredging and filling of shallow water areas and appears to be more destructive of fish and wildlife resources than other potential spoil disposal methodologies.

All alternatives involve the removal of about 200,000 cubic yards of bedrock material. Disposal of this material at sea or in the estuary in or adjacent to areas of rocky bottom would provide additional habitat for the lobster. A search should be conducted for an acceptable open water disposal site for this material. The Pepperell Cove area has been suggested as one possible disposal site for the rocky material.

When an alternative is chosen, the 92,387 to 174,718 cubic yards of ordinary material should be sampled to determine grain size and chemical composition. Presumably, it will be clean sand and gravel which should also be put to productive use. It could be stockpiled at the New England Tank Farm Industries upland site and later be removed for some beneficial use. Disposal of clean material at sea would have only short-term effects and would also be an acceptable disposal technique.

Specific comments on POS:

Syllabus, next to last paragraph. The intangible environmental benefits referred to because of the reduced hazards to navigation and the potential for accidents are questionable. On page 34, second paragraph, last sentence, it is stated that the accident potential would increase somewhat, in proportion to the increase in size of the new vessels over present limits on size. It should be clearly demonstrated how the reduced potential for accidents resulting from fewer required trips outweighs the increase in accident potential from the larger vessels.

Page 5, COORDINATION, last paragraph. Under provisions of the Fish and Wildlife Coordination Act, correspondence on this project should also be maintained with the Maine Department of Marine Resources, the Maine Department of Inland Fisheries and Wildlife, and the New Hampshire Fish and Game Department.

Page 9, last paragraph. Information contained here is inaccurate. There is no commercial harvest of shellfish in New Hampshire. Legal aspects of harvest in Maine should also be addressed. Modiolus, the ribbed mussel, is not an oyster. Uca and Callinectes are generally distributed from Cape Cod southerly and are rarely, if ever, found in the project area.

Page 19, 1st paragraph, last 2 sentences. The proposed project of the Kittery Port Authority will require a separate Fish and Wildlife Coordination Act report for the Corps of Engineers study and for any resulting permit applications.

Page 36, paragraph 1. Effects of turbidity should include negative impacts on larval invertebrates and fish. Larval oysters are particularly vulnerable to turbidity and siltation. For example, low concentrations of silt prevent oyster spat from attaching to suitable substrate. Mechanical analysis of the ordinary material to be removed will provide an indication of potential impacts from turbidity and siltaton.

Page 37, Disposal Impacts. As specific disposal alternatives are being considered, we would appreciate having the opportunity to review them.

Page 39, last sentence. The National Marine Fisheries Service and the Maine Department of Marine Resources should be included in the monitoring team.

We appreciate your keeping us informed on the progress of this study and we will provide additional input at future appropriate times.

Sincerely yours,

Gordon E. Beckett

Gordon E. Beckett
Supervisor

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
ECOLOGICAL SERVICES
P.O. Box 1518
Concord, New Hampshire 03301

AUG 21 1980

Colonel William E. Hodgson
Deputy Division Engineer
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02154

Dear Colonel Hodgson:

This letter is intended to assist your planning efforts for navigation improvements in Portsmouth Harbor and the Piscataqua River, New Hampshire and supplements our letters of December 1, 1977, and March 29, 1979. It is submitted in accordance with the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).

Dredging should be scheduled between the middle of November and the middle of March to avoid adverse impacts upon anadromous fish and resident invertebrates as explained in our March 29, 1979, letter, unless it is found that shortnose sturgeon is present and would be adversely affected at this season.

We agree with the general conclusion reached at the July 7, 1980, meeting in Portsmouth concerning disposal options. As much spoil as possible should be used for enhancement of offshore shellfish resources. Disposal of rock material on flat, sandy bottom in coastal sites would create new habitat for lobsters and other benthic organisms. This could be a better use than to dump it on, or adjacent to, existing rocky habitat to enhance its value. Current estimates of spoil indicate that there will be about 307,000 cubic yards of rock and 228,000 cubic yards of coarse glacial till.

Glacial till should be considered as a useful resource that should not be discarded by dumping at the Isle of Shoals disposal site. There are frequent demands for fill material in urban areas. Your plan should include beneficial use of the glacial till spoil as an alternate to offshore disposal, or if no immediate use is found the material should be stockpiled for future use. The increasing demand for sand and gravel and the diminishing supply is the most important mineral problem in the area.[1]

[1]New England River Basins Commission. March 1980. Piscataqua and New Hampshire Coastal River Basins Overview, p. 137.

The material is expected to be free from contaminating substances. However, potential dredge sites should be investigated carefully so that the amount of silty material, if any, is known and tested for contaminants. There are two General Electric plants in the watershed, one at Dover and another at Somersworth. We have not been able to determine if these plants ever discharged PCB's or other contaminants that might show up in silty materials.

The New Hampshire Port Authority has plans to fill in the tidal basin to expand operations north of their present facilities. We will continue to oppose filling of tidal areas because they contribute to the biological production of the estuary and its habitat diversity. We believe that filling of the tidal area with spoil from project dredging would not be in compliance with Executive Order 11990 - Protection of Wetlands. Additional studies of the tidal area to determine any seasonal use by fish and waterfowl will be needed if the site is considered.

There will be a double loss if the material is used to fill the tidal area. The first is loss of habitat in the tidal area and the second is loss of potential habitat offshore. This is not sound environmental planning. Investigations needed to select locations for creation of benthic habitat include specific site selection, analysis of benthic organisms, and further coordination with State officials and local fishermen who might use the sites or might object to the sites because of interference with dragging. The effort to locate alternate sites in Maine waters needs to be initiated. The sites in New Hampshire waters which were discussed during the July 7th meeting, should be mapped and benthic surveys made to assure that significant benthic habitat is avoided.

There is a possibility that the endangered shortnose sturgeon inhabits the Piscataqua River. It has been found in the Merrimack River estuary about 20 miles south of this project area. Blasting of rock could have adverse impacts if the species is present. You should contact Mr. Douglas Beach, National Marine Fisheries Service, 7 Pleasant Street, Gloucester, Massachusetts 01930, regarding Section 7 consultation needs.

We recommend that spoiling in tidal areas not be considered, that offshore sites be located where rock spoil can be used for benthic habitat, and that finer grained materials be used for beneficial purposes.

Sincerely yours,

Vernon B. Lang

Vernon B. Lang
Assistant Supervisor

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
ECOLOGICAL SERVICES
P.O. Box 1518
Concord, New Hampshire 03301

Colonel William E. Hodgson
Deputy Division Engineer
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02154

JUN 12 1981

Dear Colonel Hodgson:

This letter is intended to assist in your planning for the Portsmouth Harbor-Piscataqua River, New Hampshire and Maine. It consists of comments on the Stage 2 documentation and a review and updating of the project status.

We feel that the document should include more details about fishery resources in Section II, page 21. We realize that this section is intended to be a brief description of the study area, but the material on page 21 fails to describe the habitat so that the reader comprehends that this estuary supports a wide variety of fish and shellfish. A section on wildlife resources, such as sea birds and harbor seals, should be inserted.

Planning constraints, listed on pages 51-52, include opposition to deepening the channel by the Maine Department of Environmental Protection, but omit the increased hazards from use by more ships in the 30,000 to 40,000 DWT range. We feel that this should be a planning constraint. Perhaps a limit to the size of ships that can use this river should be discussed. Such a discussion would be appropriate in view of the Corps' responsibility for safety. An oil spill in the river would seriously impact wildlife resources in Great Bay, Little Bay, and several rivers in both states.

We suggest that additional objectives should be included on page 54. These are creating new, offshore habitat for lobsters, fish, and benthic organisms with spoil material, and preserving estuarine or wetland habitat. The latter is suggested so that disposal in North Mill Pond or other such sites won't be implemented at a later date. We recognize that such disposal is not now a part of project planning.

The discussion concerning spoil disposition on pages 71-72 and page 4, Appendix I, needs to be updated. For example, it has been decided that disposal of rock on rocky shoals would be less desirable then placing it on a sand bottom to create new habitat. Therefore, the opportunity to create habitat should be emphasized.

We are concerned that reuse of the historical disposal site, three nautical miles east of the Isle of Shoals, might not be acceptable simply because of its proximity to the Isle of Shoals, which are registered as a National Natural Landmark. At this time, we have no reason to object to the use of this site. However,

if the material to be dredged is found to have higher amounts of silt than is indicated in the tests, there is a possibility that some could drift ashore under certain tidal conditions. For that reason, upland disposal would be preferable to ocean disposal.

The list of anadromous fish on page 18 should include Altantic salmon and American shad. Harbor seals have been seen in Great Bay, therefore, they pass through the project area. Paragraph 4.32 on page 19 should include this information.

The locations selected for offshore disposal of rock to create benthic habitat at the May 28, 1981, meeting in Portsmouth appear to be good choices for use. You should determine if Maine fishermen have any other choices for disposal of the material. We understand that some work on this has been done by State personnel.

In summary, we feel that your report should update the biological sections; that project planning constraints and objectives should be expanded; and the limitations of the river channel to accommodate larger ships should be discussed in greater detail.

We will prepare a Fish and Wildlife Coordination Act report when your selection of the plan to be recommended is completed.

Sincerely yours,

Gordon E. Beckett

Gordon E. Beckett
Supervisor

MAINE HISTORIC PRESERVATION COMMISSION
55 Capitol Street
Augusta, Maine 04333

Earle G. Shettleworth, Jr.
Director

Telephone:
207-289-2133

September 9, 1981

Mr. Joseph L. Ignazio
Chief, Planning Division
Department of the Army
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02254

Dear Mr. Ignazio:

As a follow-up to the telephone conversation today between Dr. Robert Bradley of my staff and John Wilson of yours, I can now give you some comments on the proposed improvement dredging project in the Piscataqua River (NEDPL-I).

Areas 1 and 3 are both sensitive for underwater archaeological sites of the 17th, 18th, and 19th centuries, and neither has been subjected to remote sensing survey to date. Area 1 is immediately adjacent to Badger's Island, the site of a colonial shipyard. Area 3 is at the entrance to the Pool, an important anchorage throughout the early colonial period. Close by is the suspected site of a 17th-century wreck.

I feel that these two areas should be scientifically surveyed by means of sonar, sub-bottom penetrator, and magnetometer by a team of experienced underwater archaeologists. Such work should take no less than seven nor more than ten days, including analysis and report preparation.

If you have further questions concerning this matter, please do not hesitate to let me know.

Sincerely,

Earle G. Shettleworth, Jr.
State Historic Preservation Officer

STATE OF MAINE
Department of Environmental Protection

MAIN OFFICE: RAY BUILDING, HOSPITAL STREET, AUGUSTA
MAIL ADDRESS: State House Station 17, Augusta, 04333

JOSEPH E. BRENNAN
GOVERNOR

HENRY E. WARREN
COMMISSIONER

March 23, 1982

Joseph L. Ignazio
Army Corps of Engineers
424 Trapelo Road
Waltham, MA 02254

Dear Mr. Ignazio:

We have read the draft report for the proposed navigation improvements to Portsmouth Harbor and Piscataqua River and have the following comments:

1. The Feasibility Report (Section 1) and the Environmental Assessment (Section 2) cover much of the same subject matter. For example, both sections discuss the present navigational problems, the area's hydrology and water quality, the project coordination and public participation, the area's historical and archeological features, and the dredge disposal options. Referencing a discussion as covered on page (x) in the other section would result in a more cohesive and readable document.

2. The Feasibility Report states that accident risks are increasing annually (p. 10, last para.). We understand that, without some action the present hazards would remain, but there is no discussion of, or rationale given for the accident risk increasing due to no action.

3. The Feasibility Report also states, in several places, that the two lift bridges pose substantial hazards to present navigation. Why encourage larger vessel use of the harbor if the present size vessels (up to 35,000 DWT) have extreme difficulties angling through the bridges? While you have adequately discussed the economic benefit of encouraging the larger vessels, you are not proposing to rectify this serious safety problem. By caring out the proposed dredging, you are lowering some navigational risks, encouraging larger ships, and thereby increasing another navigational risk, that of getting through the bridges. How many accidents involving the bridges have occured in the past? What size vessels were involved? How much oil, if any, has been spilled? Does Portsmouth have a fast response capability in case of a spill?

   To quote p. 13 "as more of the 40,000 DWT vessels are brought in, the potential for grounding or collision that results in a catastrophic oil spill will greatly increase." The document also states in several places that, due to local hydrology, an oil spill could not be contained and would have "disasterous" and "catastrophic" impacts on the local environment.

REGIONAL OFFICES
• Portland • • Bangor • • Presque Isle •

4. We support the U.S. Fish & Wildlife suggestion that, if carried forth, all dredging and blasting must be restricted to the four-month period from November to March.

5. We have minor comments on the report format.

   A. A table of contents, showing that the document contains a Feasibility Report, an Environmental Assessment, a Factual Determination and the various appendices should be placed in the front of the report.

   B. Both foldout maps should have the proposed dredge areas on them.

   C. There were many typographical errors we trust will be corrected.

In closing, the project would require a wetlands permit from the Board of Environmental Protection, as have other projects in, or directly affecting, Maine's coastal zone. As we approach the application stage, I hope we can get together with you and some of the other involved state agencies to discuss our thoughts on the project. We appreciate this early opportunity to comment upon the proposal.

Sincerely,

Teco Brown

TECO BROWN, Director
Division of Licensing & Review
Bureau of Land Quality Control

TB:AP/jg

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
ECOLOGICAL SERVICES
P.O. Box 1518
Concord, New Hampshire 03301

APR 19 1982

Colonel William E. Hodgson
Deputy Division Engineer
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02254

Dear Colonel Hodgson:

These are our comments on the January, 1982 draft of the Feasibility Report concerning improvements to the existing Federal deep-draft navigation project in Portsmouth Harbor and Piscataqua River, New Hampshire and Maine. Our report is submitted in accordance with the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S. C. 661 et seq.) and it supplements previous planning aid letters.[1]

The plan which you have selected (Plan A) to widen the Piscataqua River channel at three places by removing overburden and blasting rock ledge should have little adverse impact upon fish and wildlife resources if the work is done with appropriate scheduling as proposed in your report to work after mid-November and before mid-March. This will eliminate potential hazards to the many species residing in, or passing through the work site during the remainder of the year. Rainbow smelt, American lobster, cod, and Harbor seal, however, are among the species that could be found in the area during the selected work period. These species are vulnerable to underwater blasting explosions but your plan to use small repellant explosive charges or electrical impulses to scare them away from blasting sites should reduce mortalities.

Landing the spoil at the New England Tank Industries offloading site, then trucking it to the stockpile site, will have little adverse impact upon fish and wildlife resources. However, the material should not be used for fill in freshwater wetlands, tidal marshes, open water, or tidal flats by the New England Tank Industries or subsequent users.

We do not object to the proposed disposal method. However, disposal of rock at the sites selected for creation of lobster habitat, (Figure 4) could credit the project with enhancement of this resource. This alternate should be given preference if, for some reason, the broken rock cannot be used at the Tank Industries site.

Your plan is intended to increase safety and reduce the chance of oil spills from grounded ships but the report does not clearly state the amount of

1. June 12, 1981; August 21, 1980; March 29, 1979; December 1, 1977

reduction in the probability of a spill. Movement of ships in this channel is potentially hazardous to the environment of the Piscataqua River, Great and Little Bays (6,200 acres) and their tributaries because of the risk of oil spills that could result from collision or grounding. These areas include anadromous fish migrating routes and waterfowl feeding area. We agree with you that an oil spill could be catastophic. The strong currents could quickly spread oil upstream and downstream before effective containment is mobilized. For this reason we recommend that your report propose limits to ship traffic and ship size along with an evaluation of the probability of risk of an oil spill. Such a limitation in ship size and volume of traffic would make a significant contribution to your fourth opportunity statement - to preserve environmental quality in the river and tributary areas.

We appreciate the opportunity to report on this project and to review your draft and we plan to continue our coordination during further planning. Please advise us if there are any changes in plans so that we can submit a supplement to this report.

Sincerely yours,

Gordon E. Beckett

Gordon E. Beckett
Supervisor

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
J. F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203

April 30, 1982

Joseph Ignazio, Chief
Planning Division
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, MA 02254

Re: Portsmouth Harbor and Piscataqua River
Federal Navigation Project

Dear Mr. Ignazio:

We have reviewed the advance copy of the draft feasibility report, environmental assessment and 404 evaluation for the proposed navigation improvements to Portsmouth Harbor and the Piscataqua River. These are our preliminary comments for this improvement project.

We concur with your selection of Plan A as the plan which best solves the navigation problems at the Portsmouth Harbor/Piscataqua River project area. This plan involves: (1) widening the turning basin at Area 1 from 600 feet to 1,000 feet; (2) widening by 100 feet the northern limit of the channel adjacent to Badgers Island also in Area 1, and; (3) widening the southern limit of the channel at Goat Island from 400 feet to 550 feet in Area 3, as shown in Figure 5.

Approximately 228,000 cubic yards of sand and gravel and 305,000 cubic yards of rock will be removed by bucket or clamshell dredge and drilling and blasting operations during aproximately sixteen months of construction time. This material will be used for landfill purposes at the New England Tank Industries in a site adjacent to the river in Newington, New Hampshire. Ths site was previously used in the 1979 and 1980 maintenance dredging operations. This material is relatively clean, good fill and, according to page 25, will be used as fill or stock piled for future use.

The Feasibility Report (page 24) explains that the potential use of rock fill to create lobster habitat was considered; however, when local fisherman identified no significant need for this type of habitat creation, further consideration of this option was deferred in favor of the land disposal site. Beneficial uses of the rock material should be given further consideration. Habitat creation would be an accountable benefit for the project. Further documentation should be provided concerning the determination that there is no significant need for this type of habitat creation.

The U.S. Fish and Wildlife Service has recommended that dredging be scheduled between a four-month period from mid-November to mid-March to avoid adverse impacts to migrating fish species (anadromous fish) and resident invertebrates. Page 13 of the Environmental Assessment item 3.21 states, "to minimize the effects on fish spawning, dredging should be done after 30 September or in very early spring." Page 41 of the Feasibility Report states, Construction Schedule "two approaches are possible to minimize impacts: (1) restrict dredging to the four-month period from November to March as suggested by the U.S. Fish and Wildlife Service..." These two statements are not consistent with each other. The need to restrict dredging during certain portions of the year should be further investigated and substantiated, in order to maximize environmental protection without unduly restricting the dredging operation. Does the estimated project cost on page 3-14 (Appendix 3) accurately reflect the cost of the dredging operation if it requires 16 months of dredging which may take 4 years if dredging must be restricted to a 4 month period?

Further information should be provided concerning the use and record of success of procedures to minimize potential impacts from blasting. Contingency measures should be identified if adverse impacts, such as fish kills, are observed.

Appendix 6 shows the sediment laboratory test results for the October 5, 1977 and August 27, 1979 sampling in the harbor, as well as sediment gradation curves dated June 1979. A map should be provided to show where these samples were taken. In reviewing the sampling locations for the Piscataqua River published in Volume IV of the Environmental Atlas of New England Channel and Harbor Bottom Sediments (1980) MAP-26, we observed that only Area 1 has been sampled, PE1 and GE4 1979 Bulk Sediment. Area 3 has not had any sampling. Page 12 of the Feasibility Report indicates

that a ledge exists at Area 3. Is this area completely ledge or do areas exist with sand, gravels or silts? Additional sampling may be necessary at this location.

If you have any questions concerning our comments for this project, please call Ed Reiner at 223-5061.

Sincerely yours,

Allen J. Ikalainen

Allen J. Ikalainen
Chief, Special Permits Section

cc: USFWS, Concord, NH
NMFS, Gloucester, MA

NEW HAMPSHIRE DEPARTMENT of RESOURCES and ECONOMIC DEVELOPMENT

GEORGE GILMAN
COMMISSIONER

TELEPHONE 603 271 2411

May 17, 1982

The Honorable Gordon Humphrey
U. S. Senator
6205 Dirksen Senate Office Building
Washington, D. C. 20510

Dear Senator Humphrey:

As you know, the Department of Resources and Economic Development has responsibility, with the Port Authority, for promotion of the Port of Portsmouth. The Port Authority has taken the lead in this area and at this time is making a particular effort to generate Port export and import ocean commerce through the Port.

The success of this effort rests to some degree on the adequacy of the Harbor and the channel which of course dictate the type and size of the vessels the Port can accommodate. It is clear that without Harbor improvement work, which is the responsibility of the U. S. Corps of Engineers, the Port of Portsmouth will not reach its potential as a first class ocean Port supporting industry and economic activity in the Northern New England area.

In these circumstances, I urge most strongly that you push for appropriations to the amounts required for Port planning and engineering as well as construction which would bring the facility standards of the harbor up to a higher level and which would insure the transit of deeper draft vessels to the Piers and terminals in the Harbor.

It seems to me that Northern New England harbors, particularly Portsmouth, have waited unduly in Corps of Engineers projects relating to improvements of harbor channels and berthing areas. While I don't have precise detail I am aware that very extensive and tremendously costly rivers and harbors projects have been accomplished among the rivers of mid-America and in the rivers and harbors in the Southeast and Southwest.

I think it is time New Hampshire received support for improvements of its ocean Port potential and I ask you to make every effort to accomplish this in the current session of the Congress.

Sincerely,

George Gilman
Commissioner

cc: Port Authority
Ruth Kotsonis

P.O. BOX 856 CONCORD N.H. 03301

CHRISTIAN MUTUAL BUILDING

NEW HAMPSHIRE STATE PORT AUTHORITY

555 MARKET ST., BOX 506 PORTSMOUTH, N.H. 03801 TELEPHONE 436 8500

[illegible] May 20, 1982

The Honorable Gordon Humphrey
U. S. Senator
6105 Dirksen Senate Office Building
Washington, D.C. 20510

Dear Senator Humphrey:

The New Hampshire State Port Authority as an agency of State Government with the primary responsibility for the maintenance and improvement of rivers and harbors in New Hampshire is concerned that the on-going study by the Corps of Engineers of the proposed channel improvements in the Piscataqua River has not reached the stage where an appropriation has been requested for planning and engineering.

Plan A under consideration will have the greatest impact on the area since it involves the largest number of users. The enlargement of the turning basin opposite the Port Authority Terminal is necessary for several reasons:

1. It will permit the Port Authority to accommodate larger vessels on a more cost effective basis.

2. It will provide an emergency turning basin for vessels which are denied passage through the Interstate Bridge because of a possible malfunction in the lift span mechanism.

3. It will minimize the possibility of an accident involving a vessel and the Interstate Bridge

NOTE: Since the Interstate Bridge is the only rail connection between the Navy Yard and the rail system in the Northeast, the loss of this vital link would have a serious impact on the Yard.

The removal of ledge on the South side of the channel at Henderson Point will eliminate a serious navigational hazard at that point. This is particularly important at this time since the size of vessels using the river is increasing due to economies of scale.

Traditionally, New Hampshire has made only minimal demands on the Corps of Engineers for harbor improvements. The project now under consideration for improving the navigational deficiencies in the River is in keeping with out basic philosophy of requesting support only for that which is deemed to be essential for the economic viability of the area and the State. We urge you to make every effort to fund this project during the present session of Congress.

Sincerely,

George E. Smith, Jr., Director

jr:jb
Ruth Kotsonis, Sec.

STATE OF NEW HAMPSHIRE
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
JOHN O. MORTON BUILDING
CONCORD, N.H. 03301

JOHN A. CLEMENTS, P.E.
COMMISSIONER

May 21, 1982

Col. Ernest T. Edgar, III
Division Engineer
U.S. Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02254

Dear Colonel Edgar,

In a separate piece of correspondence sent to you today, I have covered the concerns of the Board of Directors of the Maine-New Hampshire Interstate Bridge Authority has regarding the delays in the Piscataqua River Harbor widening projects now being contemplated. The concerns of the Directors of the Authority are very real and urgent.

However, in this letter from me as Commissioner of the New Hampshire Department of Public Works and Highways, I wish to go further and comment on our role as the State of New Hampshire's principal engineering and construction agency. In that role we perform engineering and construction supervision for all State water facilities located on the Piscataqua. This includes but is not limited to the new fish pier facility at Pierce Island, several projects at the New Hampshire Port Authority, two bridges over the Piscataqua (the Memorial Bridge and the High Level I-95 Bridge) as well as our general concern for water, highway and rail transportation in the seacoast area. After a careful review by our personnel and meetings with Seacoast area maritime interests we would like to urge your continued support for placing these projects on your highest priority list. An oil spill within the confines of the Piscataqua River estuary could have catastrophic effects on commercial, environmental, aesthetic and defense assets of the area. As perhaps you know, the currents in the Piscataqua River are among the highest along the entire east coast. This required adept piloting by the Captains, crews and pilots of ships transiting the Piscataqua River to and from their destination. As I have said in my letter as Chairman of the Interstate Bridge Authority there is very little margin for error. The projects which have been suggested to the Corps would increase the margin of safety now available to a much more acceptable degree and have our wholehearted support.

Col. Ernest T. Edgar, III May 21, 1982

It does not seem to me in reviewing the 10 year investment by the Federal Government for water base transportation that the Northeast has faired adequately at all and has, in fact, exported more tax dollars per capita than it has ever received in Corps of Engineer improvement per capita. With this in mind, it would seem that New Hampshire should be on the list for this prime safety improvement before other Corps projects are undertaken elsewhere. I am in hopes that these well-documented letters of support which you will be receiving within the next few weeks will be helpful to you and Washington in arriving at a positive solution to our problem.

Sincerely,

John A. Clements, P.E.

JAC/1

cc: Frank Chadwick, Sprague Energy
Ruth Kotsonis, Dorchester Sea-3 Products
George Smith, N.H. Port Authority

GEORGE N. CAMPBELL, JR., VICE-CHAIRMAN
HAROLD J. SILVERMAN, CLERK

JOHN A. CLEMENTS, CHAIRMAN

ROGER W. STAPLES, TREASURER
ROBERT A. ALLARD, ASST. TREAS.

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ROBERT A. ALLARD, PORTSMOUTH
HAROLD J. SILVERMAN, PORTSMOUTH

MAINE-NEW HAMPSHIRE INTERSTATE BRIDGE AUTHORITY

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RITA A. PERRY, KITTERY POINT

P.O. BOX 747
PORTSMOUTH, N.H. 03801

MILDRED LONG, EXECUTIVE SECRETARY

May 21, 1982

Col. Ernest T. Edgar, III
Division Engineer
U.S. Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02254

Dear Colonel Edgar,

As you know, many State agencies and users of the Port of Portsmouth have been working to secure a dredging project to create a turning basin and widen the channel in the Piscataqua River.

You and your staff have been most helpful in moving the project to its present stage. However, as I understand it, the principal element holding this program back is lack of funding. By this letter and a copy to Senator Gordon Humphrey, I am hoping to add but one more voice to those in support of this project.

The Maine-New Hampshire Interstate Bridge Authority, as you know, is most concerned about the turning basin immediately downstream of our Bridge and opposite the New Hampshire Port Authority. Our principal concern for this area, as has been expressed in various reports, is that with the ever-increasing size of ships available to operators in Portsmouth the margin of safety when passing through our Bridge is becoming very critical. We have examined such solutions as fenders on our two tower piers but are advised by the Harbor Pilots that these would add to the risk rather than helping. Perhaps our greatest concern is the situation which eventually will occur when a ship has to turn between the bridges. Without an adequate turning radius being available either the Memorial Bridge or the Authority Bridge would be in immediate jeopardy, not to mention the possibility of a major spill.

We have been talking with the Commander of the Portsmouth Naval Shipyard and Boston & Maine officials recently about the criticality of

MAY 27 1982

Col. Ernest T. Edgar, III May 21, 1982

the B&M spur which runs from the Portsmouth Rail Yard to the Portsmouth Naval Shipyard. The Navy has recently authorized the B&M to expend $65,000 in rail spur improvements to guarantee a secure rail bed for shipment of heavy nuclear submarine components and nuclear fuels. In fact, officials in the Pentagon, concerned with military mobilization and access to defense facilities, have told me that access to the Portsmouth Naval Shipyard by rail is virtually priceless and they will devote whatever is needed to assure continued rail service to the Yard.

Since the Interstate Bridge carries the rail line on its lower deck any damage to its structure by shipping would automatically reflect on this rail capability. It is for this reason as Chairman of the Authority that we urge you and the Corps in Washington to place the Portsmouth River projects on your highest priority list for engineering and construction funding.

If there is anything further we can provide you or Senator Humphrey we would be glad to participate in such a session. As always, I appreciate your help in solving one of our more severe problems.

Very truly yours,

John A. Clements, P.E.
Chairman

JAC/1

cc: Senator Gordon Humphrey
Frank Chadwick, Sprague Energy
Ruth Kotsonis, Dorchester Sea-3 Products
George Smith, N.H. Ports Authority
Mildred Long, Me.-N.H. Interstate Bridge Authority

Greater Portsmouth Chamber of Commerce

May 28, 1982

The Honorable Gordon J. Humphrey
4203 Dirksen Senate Building
Washington, DC 20510

Re: Public Law 94-355 ("Portsmouth Harbor/Piscataqua River Improvement Project")

Dear Senator Humphrey:

The Greater Portsmouth Chamber of Commerce, and especially our Port Committee, would like to go on record as in favor of the project to widen the Piscataqua River Channel and the creation of a turning basin in said river. We believe that this project is critical for all users of the Port of Portsmouth.

The Piscataqua River impacts Southern Maine, New Hampshire and Northern Massachusetts. Businesses large and small rely on the safe, dependable flow of traffic up and down the Piscataqua River.

This river is being utilized to a greater extent each year and we believe that any delay will jeopardize the economic development of our region. This is particularly important due to current efforts by the Port Committee to greatly expand exportation and importation through the Port of Portsmouth.

We urge you to voice your support of this project and ask that you transmit our support to the appropriate parties.

Thank you for your attention to this matter.

Very truly yours,

David F. Choate, III
Executive Vice President
Philip Cava
Chairman, Port Committee

cc Ruth Kotsonis, Governmental Affairs Division

P.O. BOX 239 • PORTSMOUTH, N.H. 03801 • TEL: 603-436-1118

DEFENSE LOGISTICS AGENCY
DEFENSE FUEL SUPPLY CENTER
CAMERON STATION
ALEXANDRIA, VIRGINIA 22314

IN REPLY REFER TO DFSC-O

1 JUN 1982

SUBJECT: Portsmouth Harbor/Piscataqua River Improvements Package

TO: Colonel C. E. Edgar
Department of the Army
New England Division,
Corps of Engineers
424 Trapelo Road
Waltham, MA 02154

1. The Defense Fuel Supply Center (DFSC), a primary level field activity of the Defense Logistics Agency (DLA), supports the subject channel improvements project at the Portsmouth Harbor/Piscataqua River, New Hampshire.

2. DFSC presently is responsible for managing a strategically located JP4 fuel terminal and associated pier adjacent to the New England Tank Industries site. This terminal receives all its fuel by river traffic and this channel improvements project will enhance DFSC's transportation posture.

FOR THE COMMANDER:

JAMES E. BICKFORD
Colonel, USA
Director of Supply
Operations

cc:
DFR-NE
DFSC-G
Pease AFB
ATTN: MAJ McGann

MAINE HISTORIC PRESERVATION COMMISSION
55 Capitol Street
Augusta, Maine 04333

Earle G. Shettleworth, Jr.
Director

Telephone:
207-289-2133

June 25, 1982

Mr. Joseph L. Ignazio
Chief, Planning Division
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02254

Dear Mr. Ignazio:

Thank you for your letter of the 23rd concerning the proposed maintenance dredging of the Piscataqua River. Dr. Robert Bradley of my staff has discussed with me his conversation with John Wilson of your staff, relating to your intention to include underwater archaeological survey of areas 1 and 3 within the early stages of the project design phase. I concur with this timetable.

If you have further questions concerning this matter, please do not hesitate to let me or Dr. Bradley know.

Sincerely,

Earle G. Shettleworth, Jr.
State Historic Preservation Officer

cc: Dr. Robert Bradley

EGS/slm

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02254

REPLY TO
ATTENTION OF:
NEDPL-C

18 August 1982

PUBLIC NOTICE
OF
SECTION 404 EVALUATION/ENVIRONMENTAL ASSESSMENT
FOR
THE PORTSMOUTH HARBOR/PISCATAQUA RIVER NAVIGATION
PROJECT IN NEW HAMPSHIRE AND MAINE

The New England Division of the Corps of Engineers announces that the proposed navigation project has been evaluated in accordance with the provisions of Section 404(b) of the Clean Water Act (Public Law 92-500, as amended) for the dredging of material in the waters of the United States. Impacts of the project have been reviewed in a separate Environmental Assessment under the requirements of the National Environmental Policy Act of 1969. The 404 Evaluation and the Environmental Assessment are part of a comprehensive project report which studies the feasibility of modifying the existing Federal navigation project.

Study Authority

The proposed navigation project is being recommended under authority stemming from Congressional Resolution, adopted on 23 April 1970 by the Committee or Public Works of the U.S. Senate, to determine the advisability of modifications to the existing Federal subject for navigation.

Location.

Portsmouth Harbor, formed at the mouth of the Piscataqua River, is located 45 miles northeast of Boston, Mass. and 37 miles southwest of Portland, Maine. The river is about 13 miles long and forms a portion of the boundary of the States of Maine and New Hampshire. Communities located along the harbor and river include New Castle, Portsmouth, and Newington in New Hampshire and Kittery and Eliot in Maine.

Existing Conditions.

Harbor users and local officials expect Portsmouth Harbor to continue to play a significant role in the economy of the region by handling an increasing amount of commerce. Waterborne commerce in the harbor has increased from 1.8 million tons in 1969 to 3.3 million tons in 1978. The harbor also serves as the home of the Portsmouth Naval Ship Yard and the avenue of fuel deliveries to Pease Air Force Base.

Hazardous conditions in the river make it difficult for local users to realize the full potential of the existing navigation project. The harbor is one of the fastest flowing waterways of any commercial port in the northeastern United States. These currents, in combination with sharp bends, narrow lift bridges and inadequate turning basins, produce a condition where harbor users are being constantly stressed in finding ways to accommodate the larger size ships which are becoming more prevalent in the world fleet. The direct impact to users is that the harbor will be unable to remain competitive and that they cannot realize savings in waterborne transportation costs associated with larger size ships.

The conditions in the channel also represent a safety hazard for ships using the harbor. With petroleum representing 90 percent of the marine commerce in the port, an accident involving a petroleum carrier could result in an oil spill with catastrophic environmental and economic consequences.

Description of the Proposed Work.

The study considered a wide array of management measures to address the navigational problems of the harbor, including: the use of favorable tides, navigation aids, multiport operations, lightering, the use of other ports and improving navigational facilities. These measures were formulated into alternative plans which were evaluated in terms of efficiency, effectiveness, acceptability and completeness as well as economic and environmental response.

The selected plan includes the following major features:

- widening the 35-foot deep turning basin between the two vertical lift bridges from 600 feet to 1,000 feet;
- widening, by 100 feet, the northern limit of the channel adjacent to Badgers Island; and
- widening the southern limit of the channel at Goat Island from 400 feet to 550 feet.

The proposed plan would result in transportation savings by allowing users to bring in a larger number of vessels in the 40 to 45,000 DWT range--a size ship which presently has trouble navigating the Portsmouth Channel but which is becoming more prevalent in the world fleet.

The project first cost is estimated at $20,218,000 representing an annual cost of $1,582,000. The project would realize an estimated $2,066,000 in transportation savings annually resulting in net benefits of $484,000 and a benefit to cost ratio of 1.31 to 1.

Construction time for the project is estimated at 16 months. The project involves the removal of 228,000 cubic yards of sand and gravels and 305,000 cubic yards of rock. A bucket or clamshell dredge would be used to remove the overburden material. Rock removal would require drilling and blasting. Disposal of the dredged material and rock would be at a land site as provided by locals, adjacent to the river in Newington, New Hampshire.

Environmental Assessment

The scope of this deep draft navigation project and its environmental impacts have been summarized in the Environmental Assessment, which is included in the Project Feasibility Report. Project impacts are not expected to be significant and provisions have been identified to minimize impacts to mitigating and resident fish populations.

Section 404 Evaluation

The evaluation of the proposed project includes application of Environmental Protection Agency guidelines (40 CFR 230) promulgated under the authority of the Clean Water Act. The evaluation includes requirements to consider how the project would affect dredging and disposal sites, water quality and the aquatic ecosystem. It further requires that consideration be given to avoiding or minimizing the effects of discharging fill material before making a determination on the proposed action. As a result, this notice serves to inform all persons of the proposed project so that all potential problems, needs and desire of the community surface now to insure early consideration.

Public Response

Any person may submit their written comments on the 404 Evaluation, the Environmental Assessment, or on the Report as a whole document, within 30 days of the date of this notice. Any person may request in writing within 30 days of this notice that a public hearing be held to consider the effects of the proposed project on the water quality aspects considered under the Section 404 of the Clean Water Act. Requests for a public hearing should state the particular reasons for holding a hearing. It is essential that all significant issues surface now for timely consideration.

After considering all the comments received in response to this notice, the 404 Evaluation, Environmental Assessment or Report would be modified to reflect the significant concerns expressed in the comments. Any request for a public hearing will be granted unless the Division Engineer determines that the issues raised are not substantial or that there is no valid interest to be served by a hearing.

A mailing list for this notice has been developed. If you know of others with an interest in this project, please make this notice known to them. All written communications should be mailed to:

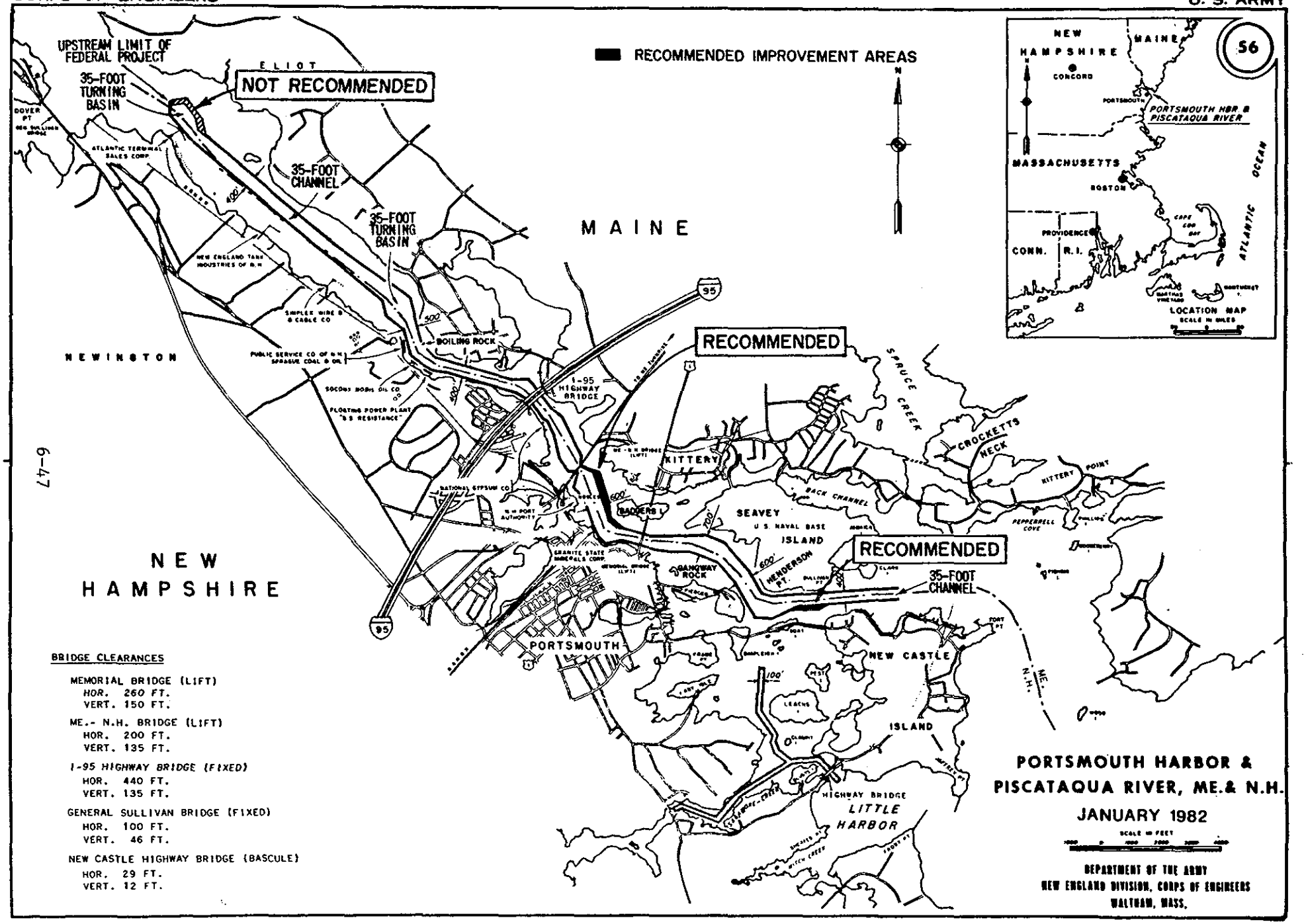
Division Engineer
New England Division
424 Trapelo Road
Waltham, MA 02254

2 August 1982
Date

C. E. EDGAR, III
Colonel, Corps of Engineers
Division Engineer

CORPS OF ENGINEERS

U. S. ARMY



DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02254

REPLY TO
ATTENTION OF:
NEDPL-C

AUG 20 1982

To Interested Parties:

Inclosed for your review are the draft feasibility report and the Public Notice of the Section 404 Evaluation concerning the advisability of modifying the existing Federal project for Portsmouth Harbor and the Piscataqua River in New Hampshire and Maine, in the interest of commercial navigation and related purposes. Included in the report are the Section 404(b) Evaluation and the Environmental Assessment with a tentative Finding of No Significant Impact.

This coordination is a requirement of the National Environmental Policy Act of 1969 and the Federal Water Pollution Control Act, as amended. It is our procedure to send the "404 Evaluation" to those agencies, groups, and members of the public who are known to us to have interests or responsibilities associated with the project.

Any comments you may have pertaining to the feasibility report, the 404 Evaluation and the Environmental Assessment should be sent within 30 days of the date of this letter to:

Division Engineer
New England Division
U.S. Army Corps of Engineers
424 Trapelo Road
Waltham, MA 02254

Sincerely,

for JOSEPH L. IGNAZIO
Chief, Planning Division

Incl
As stated

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02254

REPLY TO
ATTENTION OF:
NEDPL-C

AUG 20 1982

To Interested Parties:

Inclosed for your review is the Public Notice of the Section 404 Evaluation concerning the advisability of modifying the existing Federal project for Portsmouth Harbor and the Piscataqua River in New Hampshire and Maine, in the interest of commercial navigation and related purposes.

This coordination is a requirement of the National Environmental Policy Act of 1969 and the Federal Water Pollution Control Act, as amended. It is our procedure to send notice to those agencies, groups, and members of the public who are known to us to have interests or responsibilities associated with the project.

Any comments you may have pertaining to the proposed project should be sent within 30 days of the date of this letter to:

Division Engineer
New England Division
U.S. Army Corps of Engineers
424 Trapelo Road
Waltham, MA 02254

Sincerely,

for JOSEPH L. IGNAZIO
Chief, Planning Division

Incl
As stated

STATE OF NEW HAMPSHIRE
CONCORD 03301

HUGH J. GALLEN
GOVERNOR

September 2, 1982

Colonel C. E. Edgar, III
U.S. Army Corps of Engineers
New England Division
424 Trapelo Road
Waltham, Ma. 02254

Sir:

In response to the Corps of Engineers public notice for the Portsmouth Harbor and Piscataqua River Project, let me add my strong request that the proposed improvements be made as soon as possible.

As you know, this vital waterway is an important economic and national defense link for New Hampshire. Without the proposed dredging work, I am certain that there would be a decline in waterborne commerce to the Port, and I fear a possible environmental catastrophe if there were to be an oil spill caused by the current conditions.

I believe that this project has been thoroughly studied over a period of several years and deserves the full support of the State of New Hampshire, the Corps of Engineers, and other interested parties.

If I can provide any further information concerning this project, please contact my office. Thank you very much for your consideration.

Sincerely,

Hugh J. Gallen

Hugh J. Gallen

HJG/CS/lq

cc: Honorable Norman E. D'Amours, Member of Congress
Jay Edwards, Chairman, N.H. Port Authority

NORM D'AMOURS
1ST DISTRICT, NEW HAMPSHIRE

COMMITTEE ON
BANKING, FINANCE
AND URBAN AFFAIRS

MERCHANT MARINE AND
FISHERIES COMMITTEE
CHAIRMAN:
SUBCOMMITTEE ON OCEANOGRAPHY

WASHINGTON OFFICE:
2242 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, D.C. 20515
(202) 225-5456

Congress of the United States
House of Representatives
Washington, D.C. 20515

DISTRICT OFFICES:
MANCHESTER, NEW HAMPSHIRE 03105
720 NORRIS COTTON FEDERAL BUILDING
275 CHESTNUT STREET
(603) 668-6800
(603) 666-7526
TOLL FREE: 1-800-562-3802

PORTSMOUTH, NEW HAMPSHIRE 03801
425 AND 426 FEDERAL BUILDING
80 DANIEL STREET
(603) 431-8749
(603) 436-7720, EXT. 707

LACONIA, NEW HAMPSHIRE 03246
128 FEDERAL BUILDING
719 MAIN STREET
(603) 524-7185

September 7, 1982

Lt. Col. Arthur N. Rappaport
New England Division Acting Engineer
U.S. Army Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02254

Dear Lt. Col. Rappaport:

I am writing in reference to the proposed project to improve navigation in the Portsmouth Harbor and Piscataqua River area. A constituent, Mr. Wilfred LaBrie of Newington, New Hampshire, recently contacted my office on his own behalf and that of his neighbors to express his deep concern over the prospect of dredged materials being deposited at the New England Tank Industries which abuts Mr. LaBrie's property, a residential area.

While I realize that many of Mr. LaBrie's concerns are properly addressed at the local level, and have contacted the Newington Board of Selectmen in that regard, Mr. LaBrie has asked for your explanation as to why alternative disposal options were not selected. I would appreciate a direct response to Mr. LaBrie, and your cooperation with regard to any inquiries the Board of Selectmen may raise. Mr. LaBrie's address is: Patterson Lane, Newington, New Hampshire 03801; telephone: (603) 436-8537. It is my understanding, incidentally, that Mr. LaBrie has written to Marc J. Otis of the New England Division.

I have carefully reviewed the feasibility report for this project, and while I found it to be clear and comprehensive, in light of the distress Mr. LaBrie and his neighbors have expressed, I am not entirely satisfied that this segment of the public was afforded access in the planning effort and that all views were adequately considered. I would therefore appreciate your careful consideration of and response to my constituent's concerns.

Thank you in advance for your kind attention to this matter.

With best wishes, I am

Sincerely,

Norman E. D'Amours
Member of Congress

NED/sm

TELEPHONE (207) 439-1555 OR 439-1574

BARTON MACHINE, INC.

BADGER'S ISLAND

KITTERY, MAINE 03904

September 7, 1982

Department of the Army
New England Division
Corps of Engineers
424 Trapelo Road
Waltham, MA 02254

Attn: Joseph L. Ignazio

Gentlemen:

Ref: Section 404 Evaluation

As I have in the past, I express my concern regarding dredging and blasting in Area 1.

Any change in direction and flow of current in that area will drastically effect our operation as a marina.

Please contact me regarding this matter.

Sincerely,

Charles C. Patten

CCP/meo

NEW ENGLAND TANK INDUSTRIES OF NEW HAMPSHIRE, INC.
PATTERSON LANE
NEWINGTON, NEW HAMPSHIRE 03801

BUSINESS OFFICE
135 FIRST STREET
CAMBRIDGE, MASS. 02141

September 9, 1982

Colonel Carl B. Sciple
Army Corps of Engineers
Division Engineer
424 Trapelo Road
Waltham, MA 02254

RE: Portsmouth Harbor and Piscataqua River, Navigation Improvement Project

Dear Sir:

We have examined the recent feasibility study as put forth by your department, and yesterday my son, Charles, had the opportunity to discuss the land disposal plans as suggested by your representatives, Don Martin and Dennis Wascowitz, at the Portsmouth Harbor/Piscataqua River Improvement Safety Committee meeting at the Axel Johnson Conference Center in Newington, New Hampshire.

We wish to express support for this project. Safety is of paramount importance. If loss of life or prevention of pollution can be negated, a project of this type should be given every priority and accelerated. However, as a potential receiver of some or all the disposal spoils, we would like to point out a difficulty which may cause conflict.

Recent conversation with Corps representatives show that it is your intent to land the material on our lower land and leave the trucking, removal, and restoration of the area to us. Due to the high cost of equipment today, we have stopped providing that function. As is shown by the most recent dredging plans near Simplex Wire and Cable, we are leaving the complete function of landing, transportation, and clean up to the contractor performing the work. We can not assume that responsibility.

Our present plans for the spoils are as follows:

The Town of Newington Planning Board has requested that we build dikes enclosing our area so that abuttors will not have to suffer the view of a tank farm operation. It is our intent to enclose all fields and open areas with dikes to meet this goal. All additional material will be leveled and humped in the upper field to maintain a rolling field look. This should meet Town of Newington requirements as we are currently aware of them.

We are very pleased that this project is moving ahead, but wished to clarify our position as "the land disposal site", and must require disposal placement in the upper area to be set forth in the final dredging specifications.

Sincerely,

Eliot W. Denault, Jr., Pres.
cc: Ms. Ruth Kotsonis

August 9, 1982

Mr. Don Martin
U.S. Army Corps of Engineers
Navigation Department
424 Trapelo Road
Waltham, Massachusetts 02154

Dear Don:

It is my understanding that you held a meeting on September 8 at the New Hampshire Port Authority to discuss the proposed Portsmouth Harbor and Piscataqua River Improvement Project.

I regret that I was unable to attend. Non-attendance by State agencies should not be interpreted as a lack of interest in this project. The State of New Hampshire is very concerned that this project move forward. Unfortunately the Office of State Planning was given insufficient notification to attend or to inform others of the meeting.

We only recently received a copy of your draft report which is now under review by the New Hampshire Coastal Program. Once state agencies have had sufficient time to review the report, we would like to hold a New Hampshire meeting with the Corps of Engineers on this project. I will be in touch and appreciate your trying to keep us informed about meetings you hold concerning Corps projects in the coast.

Sincerely,

Tina Bernd-Cohen

Tina Bernd-Cohen
Coastal Program Manager

TB-C:jyb

DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

Commanding Officer
USCG Marine Safety Office
P.O. Box 108
Portland, ME 04112
Tel: (207) 780-3251

16600
9 September 1982

From: Commanding Officer, CG Marine Safety Office Portland, ME
To: Division Engineer, U.S. Army Corps of Engineers, Waltham, MA

Subj: Portsmouth Harbor/Piscataqua River Navigation Project; evaluation of

Ref: (a) Draft of Feasability Report for Navigation Improvement dtd July 1982

1. Reference (a) has been reviewed as requested.

2. Based solely upon the Coast Guard's Port Safety responsibilities and without regard to economics, we consider Plan B most desirable since it makes the most significant contribution to vessel safety and hence to reducing the potential for oil spills.

R. P. PENSOM

SPEED LIMIT 55
It's a law we can live with.

TELEPHONE (207) 439-1555 OR 439-1574

BARTON MACHINE, INC.

BADGER'S ISLAND

KITTERY, MAINE 03904

September 10, 1982

Department of the Army
New England Division
Corps of Engineers
424 Trapelo Road
Waltham, MA 02254

Attn: Joseph L. Ignazio

Gentlemen:

Ref: Section 404 Evaluation

As I have in the past, I express my concern regarding dredging and blasting in Area 1.

Any change in direction and flow of current in that area will drastically effect our operation as a marina.

Please contact me regarding this matter.

Sincerely,

Charles C. Patten

CCP/meo

Received: Joseph L. Ignazio
JOSEPH L. IGNAZIO
CHIEF, PLANNING DIVISION

Date: 14 September 1982

The Town of Newington

New Hampshire

Incorporated 1764

OFFICE OF
PLANNING BOARD

September 13, 1982

Division Engineer
New England Division
U.S. Army Corps of Engineers
424 Trapelo Road
Waltham, MA 02254

Dear Sir:

The Newington Planning Board heartily endorses the Piscataqua River and Portsmouth Harbor Corps of Engineer projects to straighten and widen the main ship channel in the three areas detailed in NEDPL-C letter of August 20, 1982 and a separate project to dredge the berth at the Simplex Wire & Cable Company pier.

However, the continuing practice of disposing of dredged material on the Newington shore, particularly at the Fuel Storage Corporation site, has long been a matter of concern to this Board and to adjacent residential property owners.

While added costs for tug and barge time are recognized, it is felt that this material could be better used for public benefit at publicly owned lands at downstream loactions.

It is therefore requested that a public hearing be held at the Newington Town Hall at a date and time of your convenience.

Very truly yours,

John F. Rowe

John F. Rowe
Chairman

cc: Fuel Storage Corp.
N. H. State Port Authority
City Manager, Portsmouth
Portsmouth Harbor Improvement Committee

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 509TH COMBAT SUPPORT GROUP (SAC)
PEASE AIR FORCE BASE, NEW HAMPSHIRE 03801

14 SEP 1982

REPLY TO ATTN OF: DE

SUBJECT: Draft Feasibility Report for Navigation Improvement for the Portsmouth Harbor and Piscataqua River

TO: N.E. Division Corps of Engineers

1. The U.S. Air Force offers the following comments in response to the subject document. The proposed land disposal site in Newington, New Hampshire, is immediately adjacent to land which the Air Force is in the process of purchasing (Atch 1). This land has storage tanks which contain jet fuel used at Pease Air Force Base. In addition, an underground pipeline for jet fuel is buried adjacent to the disposal site. We want to be assured that dredge disposal operations not adversely impact the off-loading and transportation of jet fuel to the base. If the buried fuel lines are to be crossed by vehicular traffic, precautions should be taken to avoid subsurface damage to the lines.

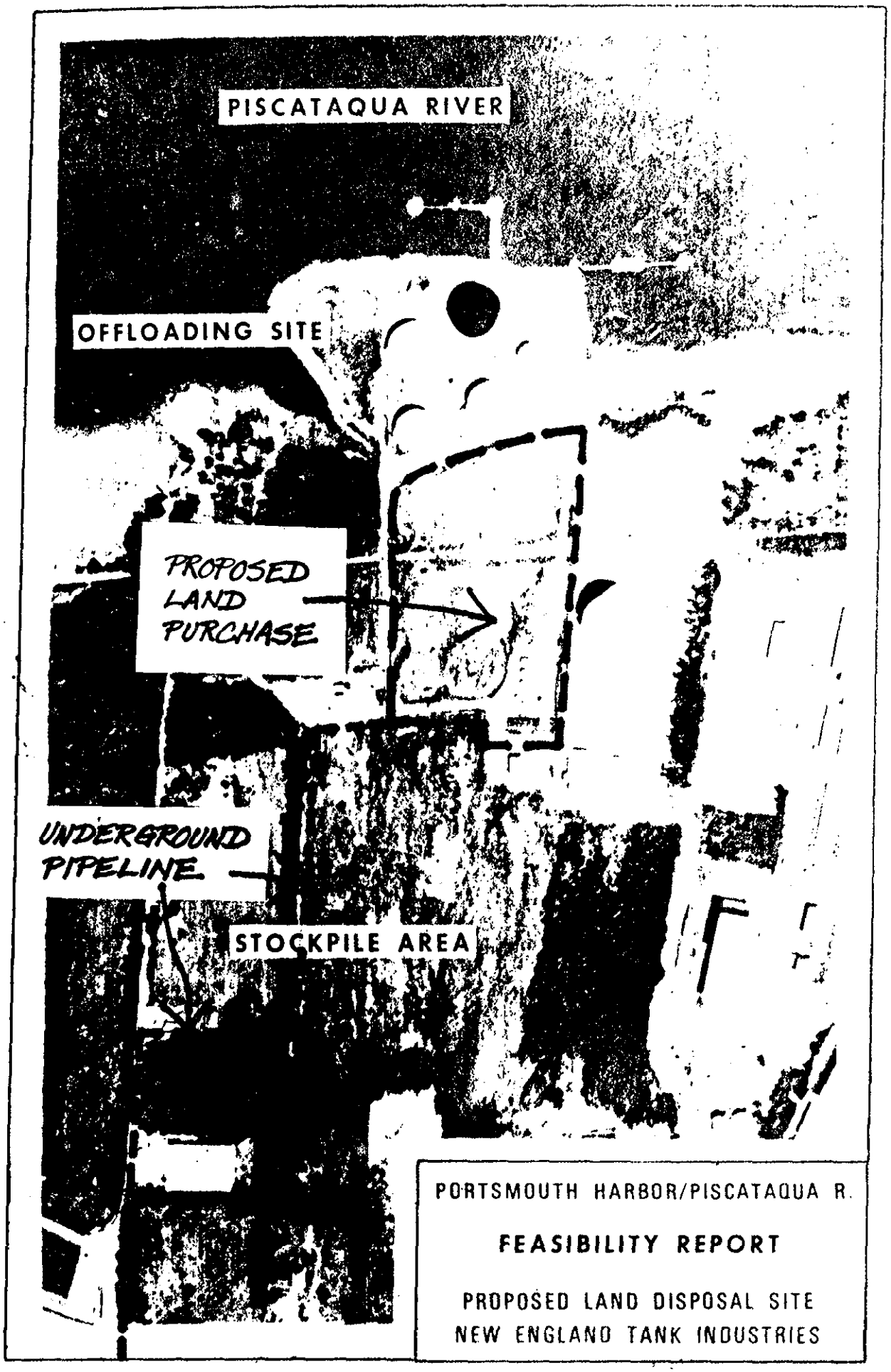
2. Any questions concerning these comments should be directed to 509 CSG/DEEV.

FOR THE COMMANDER

JOHN B. OLANSEN, Lt Col, USAF
Base Civil Engineer

1 Atch
Feasibility Report
Site Plan

35th United States AIR FORCE ANNIVERSARY
READY THEN READY NOW



PORTSMOUTH HARBOR/PISCATAQUA R.

FEASIBILITY REPORT

PROPOSED LAND DISPOSAL SITE
NEW ENGLAND TANK INDUSTRIES

FIGURE 3

ATCH 1

City of Portsmouth, New Hampshire 03801

CITY HALL . . . 126 DANIEL STREET

September 14, 1982

C.E. Edgar, III
Colonel, Corps of Engineers
Division Engineer
New England Division
424 Trapelo Road
Waltham, MASS. 02254

Dear Colonel Edgar:

This is to advise you that the City Council of the City of Portsmouth at its meeting of September 13, 1982 after due deliberation does hereby wholeheartedly and without qualification support the proposed navigational project for the Portsmouth Harbor/Piscataqua River in New Hampshire and Maine. The City Council urges your favorable consideration of such projects in order to eliminate the very hazardous conditions which presently exist in the River and to allow the River to continue to receive the necessary petroleum products to support the local and regional economy.

This River is a vital port for the northeast coast and as such certainly deserves the attention of the Corps in order to ensure that it will continue to serve this necessary function in a safe and competitive manner.

If there is anything further that the City Council can do in support of this application, please let us know.

Sincerely,

Calvin A. Canney
City Manager

cc: Congressional Delegation
Ruth Katsanos, Sea III

"City of the Open Door"

Hearing

D. J. Franklin (et al)
(Mendum Cove Abuttors)
26 Mendum Avenue
Kittery, Maine 03904
September 15, 1982

Col. C. E. Edgar 111
Army Corp of Engineers
New England Division Engineer
424 Trapelo Road
Waltham, Mass. 02254

Dear Sir,

As a longtime pleasure boater on the Piscataqua River, I have only supportive comments on the proposed dredging of the Kittery, Me./ Portsmouth, N.H. shipping channel and extension of the turn-around area between the Memorial and Interstate Bridges.

As one of the 15 property owners abutting Mendum Cove, Kittery, Me. (a tidewater cove directly adjacent to the downstream side of the Interstate Bridge and contiguous to the extended turn-around basin) I am concerned about the insidiously decreasing usability of Mendum Cove because of effects of previous dredgings (specifically the small boat access channel under the North end of the Interstate Bridge). Since that access channel was dredged the North side of the channel which is directly in front of Mendum Cove has gradually raised itself fully three feet above the natural bottom of the cove causing those of us who use the cove regularly to cautiously zig-zag to enter or exit. It is becoming more hazardous because of build up of mussel beds and debris behind this unnatural barrier.

Our concern of course is, is this same situation apt to occur on the Northerly side of the proposed dredging of the turn-around basin which is also contiguous to Mendum Cove, and thereby add to our problem and ultimately eliminate boaters use of Mendum Cove.

Since dredging equipment will be so tantalyzingly close to Mendum Cove and very little additional physical or financial impact would be encountered (no blasting) we would like to request that you reopen the entrance to the Cove.

Your cooperation in the matter is earnestly solicited.

E. F. McLean
20 Mendum Ave

D. J. Franklin
D. J. Franklin
Rob B. Tuttle
22 MENDUM AVE.
K. C. Edwards
12 Mendum Ave
Leland Riley
13 Bridge St.
Leroy W. Shelton
10 Mendum Ave

STATE OF NEW HAMPSHIRE

FISH AND GAME DEPARTMENT

CHARLES E. BARRY
EXECUTIVE DIRECTOR

Box 2003
34 Bridge Street
Concord, N. H. 03301
(603) 271-3421

September 15, 1982

Division Engineer
New England Division
U.S. Army Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02254

Dear Sir:

The New Hampshire Fish and Game Department has reviewed the feasibility report for the navigation improvement project for Portsmouth Harbor and the Piscataqua River. Portsmouth Harbor is the only deep water port in New Hampshire and is important to the economy of the region. The report documents a substantial need for navigational improvement. With numerous vessels in the petroleum industry using the port facilities along the river, these navigational improvements may lessen the possibility of the hydrocarbon contamination to the river and Great Bay estuarine system.

Maintenance dredging in the past has not altered the overall fisheries or benthic communities. The floral and faunal communities which may possibly be lost due to dredging in this area should be able to recolonize or otherwise use the dredged sites.

Our primary concern with the project is minimizing any affects on the anadromous fish species which must pass this area during spawning runs. Careful consideration should be made to ensure minimal impact and interference on the various anadromous fish species of the area which have been subject to extensive restoration efforts or are commercially or recreationally important to the state.

Our department supports the use of the upland disposal site at New England Tank Industries as opposed to offshore or other water related disposal sites for the bulk of material. Some consideration may be given for such material as fractured ledge to be used in areas which will enhance lobster habitat. One area suggested was Gunboat

Shoals for it would not affect navigation because it is already marked by a navigational bouy and the material would provide additional cover for lobsters.

Any rocky material to be dumped on flat sandy areas should be located within two miles of shore. Currently, state law prohibits the use of mobile fishing gear within this area. If such a disposal site were to be located beyond the two mile zone the site may be located on traditional fishing grounds and interfere with mobile gear used by New Hampshire's commercial fishermen.

Sincerely yours,

Charles E. Barry

Charles E. Barry
Executive Director

CEB/nkc

WILLIAM L. PINGREE, D.M.D., Prof. Ass'n.
LAFAYETTE PROFESSIONAL PARK
230 LAFAYETTE ROAD
PORTSMOUTH, NEW HAMPSHIRE 03801

ORTHODONTICS

TELEPHONE 431-7616

16 September 1982

Colonel Carl E. Sciple
U.S. Army Corps of Engineers
New England Division
424 Trapelo Road
Waltham, Massachusetts 02154

Dear Colonel Sciple:

It is my understanding that the narrowness of the Piscataqua River channel between New Hampshire and Maine at Portsmouth, N.H., limits shipping in that area to relatively small vessels. Since vessels of this size are not being constructed any more, the average age of vessels using the Piscataqua is becomming disproportionately high, which in turn increases disproportionately the potential for mechanical failure and mishap with serious environmental consequenses.

It is my concern for potential environmental disaster that leads me to strongly support any efforts that would facilitate upgrading the Piscataqua channel to accommodate more modern and safe shipping.

Sincerely,

William L. Pingree, D.M.D.

WLP/seb

The Dolphin Striker & Spring Hill Tavern

September 16, 1982

Colonel Carl Sciple
U.S.S. Army Corps of Engineers
New England Division
Waltham, MA 02154

Dear Colonel Sciple;

As a businessman and a citizen of Portsmouth, N.H., I would like to go on record as being enthusiastically in support of the project that the Portsmouth Harbor/Piscataqua River Improvement Safety Committee has been vigorously promoting for the past six years. I have just finished reading the Corps preliminary report on the project and feel the solutions offered therein adequately address the safety hazards that currently exist in the Portsmouth Harbor area.

My reasons for supporting this project are as follows: Older ships are being pulled out of service and are being replaced by more modern vessels which are of a larger type. If, due to navigation hazards, we are not able to receive these new vessels in the Port of Portsmouth, our future economic growth would be adversely affected. If these same new vessels have to be diverted to another port, the cost of further transportation would ultimately be added to the cost of the product. It is safe to say that, in part, our committee goal is to see that the Port of Portsmouth reaches its potential as a first class ocean port supporting industry and economic activity in northern New England. This goal cannot be achieved without the completion of the proposed project. The New Hampshire State Port Authority is hindered, if not specifically restricted, in the type of commodity and/or cargo that can be received or shipped from the dock because of river restrictions. Specifically, the problem for this facility is a lack of a turning basin adjacent to the State Pier. In light of the above facts, the New Hampshire State Legislature, in 1979, gave its support to this project by passing resolution HCR12.

15 Bow Street Portsmouth, New Hampshire 03801 (603) 431-5222

I have spent a good part of my life on or near the Piscataqua River. Our harbor pilots, Captain Richard Holt and Captain Shirley Holt, are both personal friends. I have made numerous trips with both these men on incoming and outgoing vessels, including the largest ships ever to enter the port. Consequently, I feel I am well aware of the problems faced by ships navigating the harbor and to some extent, well qualified to address these problems.

Most respectfully yours,

Peter P. Rice/ President

Dolphin Striker, INC.

PORTSMOUTH NAVIGATION DIVISION

— OF —

CENTRAL WHARF TOWBOAT COMPANY, INC.

P. O. BOX 472

PORTSMOUTH, N. H. 03801

TELEPHONE
603 — 436-1209

September 17, 1982

Colonel Carl B. Sciple
U. S. Army Corps of Engineers
New England Division
424 Trapelo Rd.
Waltham, MA 02154

Dear Sir:

We urge and support the earliest possible implementation of the proposed channel improvements in the Piscataqua River serving the Port of Portsmouth, NH and the Newington, NH area.

As a supplier of tugboat services, we would point out that the current and anticipated sizes of vessels transitting these areas with the present channel restraints pose severe navigational and safety hazards for the vessels and the area in general.

Respectfully yours,

Portsmouth Navigation Division of
Central Wharf Towboat Co., Inc.

Frederick S. Boyce

FREDERICK S. BOYCE
Vice President & General Manager

the OAR HOUSE
PO Box 484
55 ceres street, portsmouth, nh 03801
436-4025

September 17, 1982

Colonel Carl B. Sciple
U.S. Army Corps of Engineers
New England Division
424 Trapelo Road
Waltham, Mass. 02154

Dear Colonel Sciple

SUBJECT: Portsmouth Harbor Improvement

I am writing to support any further efforts to update the dredging of the Piscataqua River at Portsmouth Harbor, N. H.

It has become quite apparent that the increased traffic in Portsmouth Harbor is due to increased use of an improvements in land facilities. It stands to reason that with the constant updating of shipping facilities there must be a like update and improvement in harbor facilities. Ships are increasing in size and therefore require maximum use of depth of water as well as width in channels.

In your deliberations with the Improvement Safety Committee, Capt. Dick Holt, Chairman, I urge your complete support in our efforts to keep Portsmouth a modern harbor facility.

Very truly yours,

Richard Gallant

Richard Gallant

cc: Ruth Kotsonis

RG/bh

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02254

REPLY TO
ATTENTION OF:

NEDPL-C

17 September 1982

Honorable Norman E. D'Amours
House of Representatives
Washington, DC 20515

Dear Mr. D'Amours:

Reference is made to your letter of 7 September 1982 regarding the navigation improvement study for Portsmouth Harbor/Piscataqua River, Portsmouth, New Hampshire.

In your letter you discussed the concern of your constituent, Mr. Wilfred LaBrie of Newington, New Hampshire, over the prospect of dredged materials from the proposed project being deposited at the New England Tank Industries property which abuts Mr. LaBrie's property. You may anticipate receiving a copy of my direct response to Mr. LaBrie concerning this matter which will be provided as requested. It will be incorporated into the present phase of the study in which we address all comments and concerns resulting from public review of the draft Feasibility Report.

We concur that full coordination with Mr. LaBrie and his Newington neighbors was not realized when this disposal option was identified last year. However, the planning process has not been completed as broad public review of the draft Feasibility Report is presently underway.

It appears that Mr. LaBrie has taken the opportunity offered by the public review process to voice his concerns. It is also noted that by letter of 13 September 1982 the Newington Planning Board has invited the Corps of Engineers to discuss this matter further. The final Feasibility Report will not be published until all comments and concerns have been addressed, and all issues resolved.

17 September 1982

Should you have any questions, please feel free to contact me at (617) 647-8220. Mr. Martin, Chief, Coastal Development Branch, is coordinating the investigation. Should your staff desire additional information, he can be reached at (617) 647-8528.

Sincerely,

CARL B. SCIPLE
Colonel, Corps of Engineers
Division Engineer

Copy Furnished:

Honorable Norman E. D'Amours
Representative in Congress
720 Norris Cotton Building
275 Chestnut Street
Manchester, NH 03105

CABLE "SPRAGUE" PORTSMOUTH, N.H.

Sprague Steamship Agency

Division of C. H. Sprague and Son Co.
ONE PARADE MALL, PORTSMOUTH, N.H. 03801 TEL. (603) 431-1000

September 17, 1982

Colonel Carl B. Sciple
U.S. Army Corps of Engineers
New England Division
424 Trapelo Road
Waltham, MA 02154

Dear Colonel Sciple:

Sprague Steamship Agency supports strongly the proposed dredging of Portsmouth Harbor.

As Agents representing various Owners/Charterers of ships coming to Portsmouth, we hear time and time again the concerns of these people with respect to the safe navigation in Portsmouth. There are many more operators who do not call Portsmouth, because of the current restrictions in size.

Because of the cost of fuel to transport goods, ships are becoming increasingly larger in order to transport more of these goods in one voyage. If Portsmouth cannot accommodate these larger vessels, as they are being built, and the smaller older vessels are taken out of service, the Port of Portsmouth and the entire area will suffer great economical loss.

There is currently a study being done by the N.H. State Port Authority and local businesses to increase the activity and products handled at the State pier by expanding the size of the pier. Without deeper water and a larger turning basin off the pier, there is no point in expanding the pier to accommodate larger vessels.

Without the river improvements, the Port of Portsmouth will not be considered a growing and viable port and will therefore not attract any new industry to the area, which in turn would have a grave impact on the economy of the area.

Very truly yours,

SPRAGUE STEAMSHIP AGENCY

Edmund A. Merriam III
Branch Manager

EAM:ejd

VIKING CRUISES

September 19, 1982

Colonel Carl B. Sciple
U. S. Army Corps of Engineers
New England Division
424 Trapelo Road
Waltham, MA 02154

Dear Colonel Sciple:

This letter is intended to inform you that we at Viking Cruises (Viking Sun) in Portsmouth, New Hampshire, request and hope the Army Corps of Engineers will continue their efforts to improve and insure the safe navigation of Portsmouth Harbor and the Piscataqua River via the proposed dredging. It also should be noted this much needed dredging will not only assure safe navigation for the large vessels, but also guarantee that the Port of Portsmouth will continue to be a major shipping port and to contribute economically to our region and state.

Along this same line of thought, I would also like to bring to your attention the growing need to improve the channels of the Cocheco, Lamprey and Oyster Rivers for the increasing number of commercial and recreational boaters who use, or would like to use, those waterways.

Thank you for your attention to this matter.

Sincerely,

Bob Whittaker
President

BW/jhw

CC: Hon. Gordon Humphreys
Hon. Warren Rudman
Hon. Norman D'Amours
Hon. Judd Gregg

VIKING OF YARMOUTH, INC. P.O. Box 311, Portsmouth, New Hampshire 03801
BUSINESS OFFICE AND CHARTER INFORMATION (603) 431-4620 RESERVATION INFORMATION (603) 431-5500

M/V Viking Queen — M/V Viking Sun

United States Department of the Interior

FISH AND WILDLIFE SERVICE
ECOLOGICAL SERVICES
P.O. BOX 1518
CONCORD, NEW HAMPSHIRE 03301

SEP 20 1982

Colonel Carl B. Sciple
Division Engineer
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02254

Dear Colonel Sciple:

Mr. Ignazio's letter of August 20, 1982, requested our comments on the draft Feasibility Report, Environmental Assessment and Section 404 Evaluation concerning proposed navigation improvements in Portsmouth Harbor and the Piscataqua River, New Hampshire and Maine. Our comments are provided under authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.) and the National Environmental Policy Act (PL 91-190).

Our comments on the combined document are as follows:

We do not object to the tentatively selected plan for disposal of dredged material and rock at the land disposal site owned by New England Tank Industries. However, disposal of rock at the sites selected for creation of lobster habitat, as discussed in the Feasibility Report and Environmental Assessment, could credit the project with enhancement of this resource. We believe that such material can and should be used to benefit the natural environment. Therefore, we recommend you utilize all suitable rock for creation and/or improvement of lobster habitat.

The tentatively selected plan proposes a continuous construction schedule over a 16-month period. While the Feasibility Report, Environmental Assessment, and Section 404 Evaluation recognizes the environmental concerns, these documents conclude that project impacts are not expected to be significant. However, we do not agree with your conclusions. We still have concerns with the proposed construction schedule and its potential adverse impacts upon fisheries resources.

We do not believe that the Feasibility Report or Environmental Assessment has adequately demonstrated that the project cannot be constructed during our recommended time frame of mid-November to mid-March. We recommend that a number of construction scenarios be thoroughly evaluated including (1) the feasibility of constructing the project in one operation from mid-November to mid-March, (2) construction of the project during mid-November to mid-March over more than one season, and; (3) construction over a 16-month period as tentatively planned.

The environmental impacts of blasting and measures to minimize these impacts are discussed in the Feasibility Report (pg. 26 thru 42) and the Environmental Assessment (pg. 11). We concur with the precautionary measures that will be used

during blasting operations; however, it is unclear just what "scheduling of blasting to avoid peak periods of fish migration and spawning" means, since an actual time frame is not specified. We recommend that all blasting be conducted during the period from mid-November to mid-March. In addition, we recommend that your report include provisions for monitoring the dredging and blasting operations and that contingency measures should be identified if significant adverse impacts are observed. The details of such a monitoring program would have to be coordinated with the concerned state fish and wildlife agencies and this Service.

We appreciate the opportunity to provide comments on this project, and we plan to continue our coordination during further planning.

Sincerely yours,

Gordon E. Beckett

Gordon E. Beckett
Supervisor

NEW HAMPSHIRE STATE PORT AUTHORITY

555 MARKET ST., BOX 506 PORTSMOUTH, N.H. 03801 TELEPHONE 436-8500

LIVE FREE OR DIE

September 20, 1982

Colonel Carl B. Sciple
U.S. Army Corps of Engineers
New England Division
424 Trapelo Road
Waltham, Massachusetts 02154

Dear Col. Sciple:

The Port of Portsmouth is experienceing a renaissance in shipping due to a concerted effort on the part of users and interested citizenry. As a result of this effort, the Port Authority terminal has had ships at berth approximately forty-three percent of the available time. If we are to sustain this growth pattern, it is essential that we improve the channel and the turning basin between the Memorial and Interstate Bridges.

Since the trend in shipping is towards larger, more cost effective vessels, it is most important for a viable port facility to be able to offer a safe berth with an adequate turning basin. Turn around time is very important to a vessel of this type. Many of these vessels are multi-purpose, making it possible for them to make more than one call in a particular port. While the cargo at any one facility may not be sufficient to warrant a call, a combined cargo could very well make it profitable to call at a port such as Portsmouth. This factor offers an entirely new dimension to the possibilities of sustaining the growth pattern which is presently being experienced at the Port Authority terminal.

While the corps is concerned primarily with the economic viability of a particular project on a cost benefit ratio greater than one, it should also consider the economic impact of a possible accident involving a ship caught between the two lift bridges over the Piscataqua. This would be a disaster of such magnitude that it would be difficult to evaluate, particularly if it involved a tanker.

The Port Authority supports the project now being considered by the Corps. and urges it do everything possible to initiate the engineering phase of construction at the earliest possible time.

Sincerely,

George E. Smith, Jr., Director

GESjr:jb

TELEPHONE 603-431-6626

GEOFFREY E. CLARK, M. D.
152 MIDDLE STREET
PORTSMOUTH, NEW HAMPSHIRE
03801

September 20, 1982

Colonel Sciple
U.S. Army Corps. of Engineers
New England Division
424 Trapelo Road
Waltham, MA 02154

Dear Colonel Sciple:

I strongly urge the Corps. of Engineers to approve the proposed dredging projects in the Piscataqua River because of my concerns for both the safety and the economic viability of the Port of Portsmouth. Since moving here ten years ago, I have noted the marked increase in the amount of traffic on the river and the advent of LPG tankers. I was very concerned to learn that the only places that an ocean going vessel can be turned are at the head of the river, near the oil terminal, or at the mouth of the harbor. I am sure you know far better than I the catastrophe which would occur should there be an accident involving an LPG tanker or the devastation to the coast line which would result from a major oil spill. For safety reasons alone, I believe it is imperative that the proposed widening of the channel and turning basin between the two lift bridges is imperative.

I was also disturbed to learn that the depth of the channel is insufficient to allow many fully laden vessels to enter the harbor. I understand that newer vessels will be effectively barred from using our port unless the proposed improvements are made. The increased traffic in the Port of Portsmouth has been a major factor in the economic rebirth of this area and it would be tragic if these economic advantages were lost.

Hoping that you will give this worthwhile project your favorable consideration, I am,

Sincerely yours,

Geoffrey E. Clark, MD

Geoffrey E. Clark, MD

GEC/ecl

EXPORT MANAGEMENT COMPANY INC.

Located on the Northeast Atlantic Seaboard

P.O. BOX 45 ELIOT, MAINE 03903 U.S.A. TELEPHONE 207 439-3564

Colonel Carl B. Sciple
U.S. Army Corps of Engineers
New England Division
424 Trapelo Rd.
Waltham, MA 02154

SEP 2 0 1982

Dear Col. Sciple:

First please allow me to introduce myself. I am Kristi Perrow, Vice President of Export Management Co., Inc. I am also a member of the Port Committee of the Greater Portsmouth Chamber of Commerce. My home is on five and one half acres of land which abutts the Piscataqua River. Due to the nature of my business (exporting) and the location of my dwelling, I feel obliged to write to you on the subject of the proposed river dredging.

For the past year I have worked almost exclusively as Director/Editor for a publication called the Port of Portsmouth Handbook to be published in October of 1982. During this time I had the opportunity to discuss commerce with literally hundreds of potential Port of Portsmouth importers and exporters. The general consensus of opinion by most business people involved in maritime industry is that the Port is desperately in need of another berth for the purpose of increased trade. This is, in fact, the goal of the Port Commitee, a group formed to promote and facilitate the needs of the Port and its users. Presently the small feeder ship "Yankee Clipper" calls regularly on Thursdays. This is a container vessel from Hapag Lloyd, a conference line. If our river were widened and could accomodate larger vessels, we could attract non-conference lines. This in turn would generate more traffic at our port beause of more competitive rates and be in line with Mass Port which now receives most of the business from Maine, New Hampshire and Vermont. The proximity to these areas from our Port could save hundreds of dollars in overland freight costs, making cargo cost less to export. On the whole , this ripple effect could, in fact, help decrease the trade imbalance. These larger container vessels are not likely to be attracted to our area unless the waters are more navigable.

The "Spoils" from the project seem to be of interest to many. The most logical approach would be to save two million of the four and one half million dollars projected cost for filling in the 10 acres needed next to the Port itself. This would provide added space where the scrap piles could be stored eliminating the unsightly entrance to

SEP 2 0 1982

the city via the pier for tourist ships such as the American Cruise Line. This fact is what they say keeps them from making a regular call on Portsmouth. Their visits could generate enormous revenue for the city.

Last and most important is the subject of safety. It seems evident that eventually with these swift currents and the difficult manuvers the tow boats must make, a disaster is impending. Only last June 21, 1981 I watched as our own Viking Sun, a local tourist ship lost power and was pushed by the currents into the middle bridge. As I cross the I-95 bridge daily from Portsmouth to my home, I am reminded of the tragic accident not long ago on the Skyline Bridge in Florida which toppled into the river when a ship collided with it and killed unsuspecting motorists on their way home. I am enclosing two photos I took of that bridge as a reminder of what did and can happen to a bridge often thought too big to budge.

To expedite the dredging would save time, money and perhaps lives. Another seven years of waiting can again double the cost of such a project. I sincerely hope you will arrive at a conclusion that supports these facts in the very near future.

Regards,

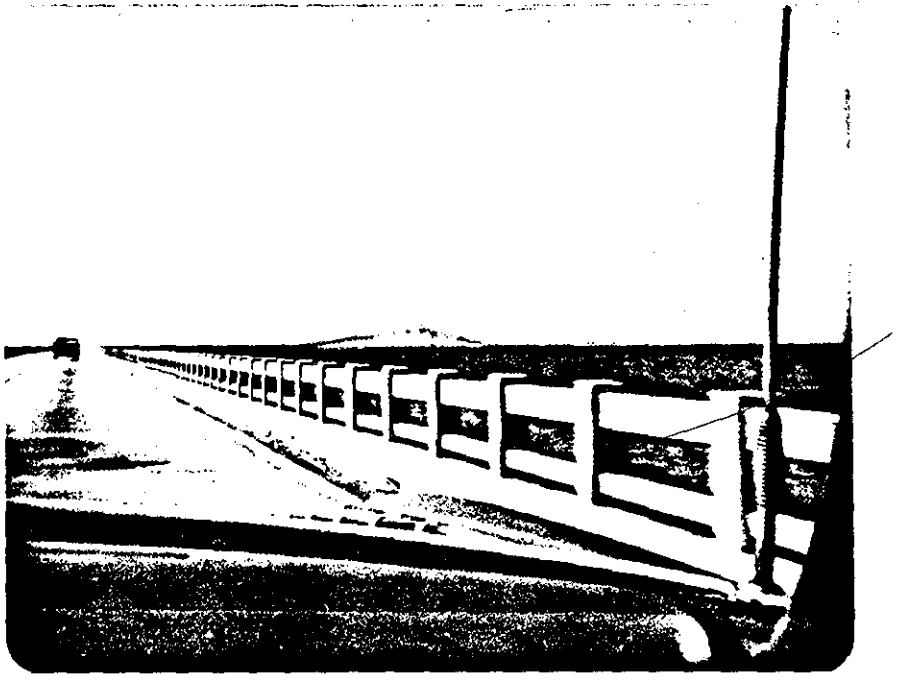
Kristi Perrow

Kristi Perrow, Vice. President

Note: A correction should be made on the A.C. of E. Map of the proposed dredging project and surrounding area. On "The Town of Kittery Port Authority", you have spelled it Kittey.

Letter of Export Mat Company

SEP 2 0 1982



T W M

TOTAL WASTE MANAGEMENT

SUITE 25 — PARADE MALL • PORTSMOUTH, NEW HAMPSHIRE 03801 • 603 431-2420

September 20, 1982

Colonel Carl B. Sciple
U.S. Army Corps. of Engineers
New England Division
424 Trapelo Rd.
Waltham, Ma. 02154

Dear Colonel Sciple:

We have been closely following the work of your group, along with the Portsmouth Harbor/Piscataqua River Improvement Safety Committee. If we are to remain a viable economic port, dredging must continue along with constant upgrading of Port facilities. We have to be able to bring in larger modern vessels, fully loaded, if costs are to be kept down.

This river is extremely important to most of our major industries here, as well as the military for bringing in fuel. They can only grow if the river is kept navigable.

We want to congratulate you on your fine work in the past, and certainly hope the results of your joint efforts will be approved and continued upgrading will be strongly recommended.

Thank you for your continuing support.

Sincerely,

Warren Kinsman

Warren Kinsman
Glenwood Rd.
Hampton Falls, N.H. 03844

D. A. Littlefield

Donald Littlefield
Abbey Rd.
Cape Neddick, Me. 03902

David T. Brewster
155 Pinehurst Road
Portsmouth, New Hampshire 03801

Sept. 20, 1982

Colonel Carl B. Sciple
U. S. Army Corps of Engineers
New England Division
424 Trapelo Road
Waltham, Ma. 02154

Dear Sir:

Portsmouth, N. H. is an exciting city and seaport. As in any seaport, water commerce is vital.

As so many people are, I too am concerned for the future if our port is not made ready to receive, safely, the larger vessels coming on line today.

What a shame to turn away vessels for the want of some much needed dredging and widening.

I sincerely hope that the Corps of Engineers will act favorably towards this dredging. Your actions may well affect the health of the Port of Portsmouth for years to come.

Sincerely,

David T. Brewster

David T. Brewster, Retired
Secretary of the Port of Portsmouth, N. H.

GRANITE STATE MINERALS Inc.

227 MARKET STREET
PORTSMOUTH, NEW HAMPSHIRE
TELEPHONE 436-8505

September 20, 1982

Colonel Carl Sciple
U. S. Army Corps of Engineers
New England Division
424 Trapello Road
Waltham, Massachusetts 02154

Re: Portsmouth Harbor River Improvements

Dear Colonel Sciple:

I take this opportunity to request the Corps of Engineers and our esteemed representatives in the Congress and Senate to favorably consider the dredging improvements on the Piscataqua River.

The dredging at Henderson Point in the area opposite the N. H. Port Authority should be considered essential for the safety of vessels that we are presently receiving.

Your cooperation in this matter would be greatly appreciated.

Very truly yours,

David F. Mahoney
President

DFM:pjb
cc: Senator Warren Rudman
Senator Gordon Humphrey
Congressman Norman D'Amours

NEW HAMPSHIRE DEPARTMENT of RESOURCES and ECONOMIC DEVELOPMENT

GEORGE GILMAN
COMMISSIONER

TELEPHONE 603 271-2411

September 21, 1982

Colonel Carl B. Sciple
U. S. Army Corps of Engineers
New England Division
424 Trapelo Road
Waltham, Massachusetts 02154

Dear Colonel Sciple:

My attention has been called to Corps of Engineers' consideration of request of the Portsmouth Harbor/Piscataqua River Improvement Safety Committee calling for improvements to Portsmouth Harbor channel and turning basin areas. I must stress the Department's interest in and support of overdue improvements at that major waterway which serves the State and a very substantial New England area by stimulating ocean commerce.

Clearly, in the judgment of this Department, improvements to the channel and the Harbor are overdue. New England, and particularly Northern New England, and in fact New Hampshire have too long been omitted in consideration of major Federal Harbor and waterways improvement projects. I believe statistically it can be shown that hundreds of millions of dollars have been spent in other regions serving other states' Ports and Harbors and little has been done in the Northern New England Ports, and particularly in New Hampshire.

I am not unmindful of the competition for limited Federal dollars in this area but it seems to this Department that the improvement project in Portsmouth Harbor and on the Piscataqua River meets a criteria of need, equity, regional allocation of projects, safety, and most importantly can have favorable cost-benefit ratio.

Sincerely,

George Gilman
Commissioner

GG:c

P.O. BOX 856 . . . CONCORD, N.H. 03301

105 LOUDON ROAD

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION I

J. F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203

September 21, 1982

Colonel Carl B. Sciple
Corps of Engineers
Division Engineer
New England Division
424 Trapelo Road
Waltham, MA 02254

Re: NEDPL-C
Portsmouth Harbor and Piscataqua River
Federal Navigation Project

Dear Colonel Sciple:

We have reviewed the Draft Feasibility Report for Navigation Improvement and Environmental Assessment for Portsmouth Harbor and the Piscataqua River. We have no additional comments to make at this time. We trust our previous comments and concerns of April 30, 1982 will be addressed in your final report.

Sincerely,

Clyde F. Shufelt

Clyde F. Shufelt, Chief
Municipal Permits Section

cc: US FWS, Concord, NH
NMFS, Gloucester, MA

RPM + ASSOCIATES

The Financial Management
Services Company.

281 Beech Ridge Road
York, Maine 03909
(207) 439-1476

September 22, 1982

Colonel Carl B. Sciple
U.S. Army Corps of Engineers
New England Division
424 Trapelo Road
Waltham, MA 02154

Dear Colonel Sciple,

As an active business member and resident of the Greater Portsmouth Seacoast area, I wish to express my strong support of the Section 404 Evaluation/Environmental Assessment for the Portsmouth Harbor/Piscataqua River Navigation Project in New Hampshire and Maine.

The improvement and expansion of safely navigable waters within the Portsmouth Harbor and Piscataqua River is vital to the continuing economic growth of New Hampshire's only seaport.

The prospects of a larger, more efficient world fleet being used by commercial carriers, and the potential of Portsmouth becoming a "free" port, pose enormous opportunity for increased harbor shipping traffic and economic benefit.

The rewards of this project will dwarf its costs, in terms of economic enhancement for the Seacoast; improved support of the Portsmouth Naval Shipyard and Pease Air Force Base; and minimization of navigational hazards, thereby reducing both life and property casualty risks.

Sincerely,

Ronald P. Martel

Ronald P. Martel

RPM/amk

SEP 28 1982

ST. ALBANS, VERMONT
BURLINGTON, VERMONT
HIGHGATE SPRINGS, VT.
ALEXANDRIA BAY, N. Y.
CHAMPLAIN, N. Y.
FORT COVINGTON, N. Y.
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ROUSES POINT, N. Y.
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HOULTON, MAINE
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A. N. DERINGER, INC.

U. S. CUSTOMS BROKERS

ONE MIDDLE ST.
PORTSMOUTH, N. H. 03801
603-431-2540

9/23/82

Colonel Carl B. Sciple
U.S. Army Corps of Engineers
New England Division
424 Trapelo Road
Waltham, Ma. 02154

Dear Colonel Sciple:

Reference is made to the recent study regarding Portsmouth Harbor and Piscataqua River channel improvements.

Our company is involved in international traffic. We are U.S. Custom Brokers and Foreign Freight Forwarders, and depend on the ports accessibility for our livelihood.

The channel needs to be improved to insure the safe navigation of the river. The Northern New England area depends on this project to maintain its economic stability, and hopefully enhance our growth.

We hereby give our support for this long needed improvement and hope that this project proceeds expeditiously.

Sincerely,

William H. Carey

William H. Carey

PORTLAND OFFICE
PEABODY & LANE, LTD.
34 WHARF STREET
P.O. BOX 4539
PORTLAND, ME 04112
TELEPHONE
207-773-0396
TELEX
950027
710-221-6349
ANSWERBACK:
SHIPAGENT
CABLE ADDRESS
PEALANE

Peabody & Lane, Inc.
Steamship Agents
77 North Washington Street
Boston, Mass. 02114

TELEPHONE
617-725-1900
TELEX
940262
710-321-0286
CABLE ADDRESS
PEALANE

September 24, 1982

Colonel Carl Sciple
U. S. Army Corps of Engineers
New England Division
424 Trapello Road
Waltham, MA 02154

Dear Colonel Sciple:

The Portsmouth Harbor/Piscatqua River Improvement Safety Committee has kindly allowed us a copy of your report of August 18th.

We are writing in support of the need for safety reasons and for competitive reasons of the improvements suggested in your report which would result in definite savings in waterborne transportation costs associated with the ships we represent as agents.

Thanking you, we remain,

Very truly yours,

PEABODY & LANE, INC.

Arthur Lane

AL:jac

cc: Portsmouth Harbor/Piscatqua River
Improvement Safety Committee

WILLIAM W. SEAWARD, JR.
CONSULTANT
P.O. BOX 386
KITTERY, MAINE 03904

TELEPHONE 207-439-3584

September 27, 1982

Colonel Carl B. Sciple
U.S. Army Corps of Engineers
New England Division
424 Trapelo Road
Waltham, Mass. 02154

Dear Colonel Sciple:

I would like to go on record as favoring the widening and dredging of the Piscataqua River between the Memorial and Interstate Bridges.

One day this summer the entire channel was taken up swinging a large freighter. It seemed as though the bow nearly sat on Badger Island.

Yesterday with movements of freighters and tankers the river carried alot of activity. The large vessels have to move with the stack tides. Any deepening and or widening of the channel will assist us in the Portsmouth-Kittery area to sell our port to the rest of the world and enable larger ships to utilize this port in a productive safe manner.

Sincerely

William W Seaward Jr.

WINEBAUM NEWS INC.
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145 Heritage Avenue Portsmouth, NH 03801 603-431-2020

September 28, 1982

Colonel Carl B. Sciple
US Army Corps of Engineers
New England Division
424 Trapelo Road
Waltham, MA 02154

Dear Colonel Sciple:

I would like to take this opportunity to express my strongest support of the proposed project for improvements to the Piscataqua River.

The continued economic vitality and growth of Portsmouth, NH and its environs are of paramount importance to me as a merchant doing business in the area. With this in mind I believe that any failure to take every possible step to modernize the Port poses a direct threat not only to the economic infrastructure of the area but to the business which I conduct with local commerce and industry as well as with the crews of the ships which serve them.

Since the seventeenth century Portsmouth has been dependent on the sea for its prosperity. It would truly be tragic if suitable steps are not taken to keep abreast of current developments in maritime technology. The new vessels coming out of the shipyards are larger than those which they are intended to replace. If the proposed improvements to the channel are not undertaken these new ships will be prevented from using the Port's facilities.

I should also point out that as a yachtsman I am not overly enthused about sharing an already difficult channel with an obsolescent ship with its increased susceptibility to breakdown. Such an occurrence might also result in the interruption of other shipping as well as the suspension of the vehicular traffic that uses any of the three bridges between Maine and New Hampshire.

In short, the future of the entire Seacoast area will be greatly influenced by the decision which you reach on the River improvements as proposed by the Portsmouth Harbor Piscataqua River Improvement Safety Committee and supported

by the N.H. State Legislature (HCR #12,1979).

Sincerely yours,

Alexander S. Neilson

AN/sh
cc: Ruth Kotsonis
144 Washington Street
Portsmouth, NH 03801

STATE OF MAINE
Department of Environmental Protection

MAIN OFFICE: RAY BUILDING, HOSPITAL STREET, AUGUSTA
MAIL ADDRESS: State House Station 17, Augusta, 04333

JOSEPH E. BRENNAN
GOVERNOR

HENRY E. WARREN
COMMISSIONER

September 28, 1982

Joseph L. Ignazio, Chief, Planning Division
Army Corps of Engineers
424 Trapelo Road
Waltham, MA 02254

Dear Mr. Ignazio:

The staff of the Department of Environmental Protection have reviewed the draft Portsmouth Harbor & Piscataqua River Feasibility Report and have the following concerns and questions.

1. Sediment Testing: No sampling is shown in Area 3 and very limited sampling has been done in Area 1. Due to industrial and commercial activities in the project area the Department recommends additional sediment sampling and analysis. Our current guidelines, developed mainly from Corps work done in Long Island Sound, are attached. We would like to see a minimum of four samples per area, or one sample per acre. Sample testing should include bulk sediment analysis for metals, oil and grease, volatile solids and PCB's as well as individual grain size analysis. Core samples do not appear necessary unless there are areas where sediment has been accumulating.

   A description of the sampling and analysis techniques would also be helpful.

2. Fishery Concerns:

   A. There are several lobster pounds in Maine that are close to the project area. We see no mention of these nor the potential impacts of the dredging and spoils dewatering on them. An assessment of suspended and water soluable materials that might be released, as well as turbidity levels and expected plume behavior, should be made.

   B. We would appreciate any data or references which would provide more insight into blasting techniques and the use and effectiveness of warning charges. Also, you have determined that blast rock is too small to be used for lobster habitat; (p. 8, Envir. Assessment). What is the rock size that you expect? We would like to see the rock material put to use if possible.

REGIONAL OFFICES
• Portland • • Bangor • • Presque Isle •

C. It is unclear what "scheduling of blasting to avoid peak periods of fish migration and spawning" means; the time frames are not specified. We would like to see the proposed schedule although we continue to recommend that all blasting be done from November to March. In addition, monitoring and contingency plans should be included in the final report.

D. We understand an attempt was made to get input from N.H. fishermen; was any such attempt made to alert and involve Maine fishermen?

3. Lastly we remain concerned about encouraging larger vessels into the port if you are not going to correct the problems presented by the bridges. The Department would like to see the historical spill and collision data involving ships and the bridges so that we may assess the risks.

We appreciate the opportunity to comment on this project and look forward to our continued coordination during future planning.

Sincerely,

Ann Pistell

Ann Pistell
Federal Consistency Coordinator

AP/gc

cc: Fred Benson
John DelVecchio, SPO
Walter Foster, DMR

Sec. 1. SOLID WASTE SUBJECT TO THE REQUIREMENTS OF THIS CHAPTER

A. The following solid waste is subject to the requirements of this chapter:

Materials from any single project or development that are to be removed from the bottoms of waterways for deposition or disposal at another location above the mean high water line that amount to a total accumulation of more than 100 cubic yards and that a sieve analysis demonstrates that the spoils contain fifteen percent (15%) or more fines.

B. Exemptions. The following categories of dredge spoils are exempted from the requirements of this chapter.

1. Inert Dredge Spoils. Dredge spoils from any single project or development when a sieve analysis demonstrates that the spoils contain less than fifteen percent (15%) fines.

2. 100 Cubic Yards or Less. Dredge spoils that amount to a total accumulation of 100 cubic yards or less.

NOTE: Dredge spoils described in Paragraphs 1 and 2, above, may be considered as "inert fill" and disposed accordingly; see Chapter 405, "Disposal of Inert Fill".

3. Dewatered Dredge Spoils. If accepted at a licensed landfill for municipal solid waste, dredge spoils that are dewatered of all free draining water at the dredge site.

4. Class I Material. Dredge spoils which are placed in the category of Class I (uncontaminated) material as a result of analyses for % silt/ clay, % volatile solids, % oil and grease, and concentrations of heavy metals (see Sec. 2 C, below). This material may after dewatering be disposed of as inert fill, or for use in construction projects.

5. Ocean Disposal. Disposal of sediment into ocean waters will require approval under Title 38 M.R.S.A. 413 in lieu of this section or Sec. 103 of the Clean Water Act, as applicable.

Sec. 2. REQUIRED INFORMATION

The following information must be submitted as a minimum with an application for upland disposal of dredge spoils.

A. Grain Size Analysis. A minimum of four samples per site, or one sample per acre (not to exceed 20) shall be analyzed, including one core sample to 2 feet below project depth.* Samples may be grab samples (if site is under water) or scooped samples. The core must be described visually in terms of its vertical variability in texture. If there is significant variability in the core sample, additional cores may be required. A map shall be submitted showing the location of all samples and cores.

The samples shall be analyzed to determine the percentages of gravel, sand, silt and clay contained in the sediment.

*For maintenance work within 10 years of an original dredging project, grain-size analyses of surface sediments only are required. For repeated maintenance dredging thereafter, further sampling will not be required unless there is some evidence of contamination since the last dredging project at the site.

For new projects, the core sample need not exceed the bottom limit of dredging if glacial sediments are encountered at or above the dredging limit.

B. Summary of Researched Data. A summary of available information, including the following:

a) sources of sedimentation;
b) industrial or municipal discharges in the project area, past and present;
c) chemical spills;
d) indirect sources of pollutants to the sediment;
e) existing sediment analyses from nearby areas.

This evaluation will be used to determine whether further testing is required. If the evaluation indicates that heavy metal or organic contaminants may be a problem, a bulk sediment analysis will be required on all or selected sediment samples.

NOTE: It will greatly facilitate the interpretation of the results of chemical testing if the samples on which grain-size analysis is performed are subsampled, at the time of the original collection, for chemical analysis. These subsamples should be kept frozen until a determination of the need for chemical testing has been made.

Sec. 3. ANALYSIS OF DREDGE SPOILS

A bulk chemical analysis of sediments shall include any or all of the following variables:

- percent oil and grease (hexane extractable);
- percent volatile solids (weight loss on ignition -- NED method);
- analysis on a dry weight basis (mg/kg = ppm) of the following constituents:

Mercury	Hg
Lead	Pb
Cadmium	Cd
Chromium	Cr
Copper	Cu
Nickel	Ni
Arsenic	As
PCB'S	Polychlorinated Biphenols

Other organic compounds might e specifically sought if the preliminary evaluation indicated they are to be expected (from a documented chemical spill, for example). If high levels of any constituent are found, a toxic extraction (EP toxicity) test may be required.

The results of bulk sediment chemical analyses will be evaluated with reference to the following standards, and used to classify sediments according to the following scheme. Dredged material will be classified into three classes - I, II and III - on the basis of oil and grease, volatile solids and percent silt/ clay contents. These classifications will be modified in use by heavy metal contents. The levels of constituents listed here have been modified from the New England River Basin Commission Interim Plan by reference to the Corps of Engineers Environmental Atlas of New England Channel and Harbor Bottom Sediments, Vol. IV.: Federal Projects within the Gulf of Maine.

TABLE I-1. Preliminary Classification of Dredged Material for Maine

Dredge spoils shall be classified according to the following guidelines:

Constituent	Class		
	Class I	Class II	Class III
Percent Oil and Grease	0.25	0.25- 1.2	1.2
Percent Volatile Solids	4.5	4.5 - 15.3	15.3
Percent Silt/Clay	60	60 - 90	90

In evaluating a particular sediment, these parameters are ranked in descending order, so that oil and grease content is considered more important than volatile solids and that more important than silt/clay content. For example, a sediment classified as Class I for oil and grease, Class II for volatile solids, and Class III for silt/clay, would be classified Class II. A sediment which was Class I for oil and grease, volatile solids and contained no metals, but was Class III for percent silt/clay, might well be considered for disposal as Class I material. Limits for metals and organo-halogens are given in Table I-2.

Class I material is coarse-grained sediment. It is acceptable for beach nourishment where noted: fines should be less than 5%, coarse material (gravel) should not exceed 5% -- depending on the character of the beach to be nourished. Otherwise, the material is acceptable for open ocean dumping or upland disposal as inert fill. This material may also be used to cap lower class material at open water dumpsites, and may be used for construction projects after dewatering.

Class II material is fine-grained sediment with moderate solids content. Class II material may be used for capping material (open water sites), ocean disposal and landfill cover.

Class III material is fine-grained sediment with low solids content, containing a high level of two or more contaminants. Class III material should be capped in open water sites with Class II or I material; or, it may be treated as sludge for solid landfill under Chapter 402 solid waste disposal guidelines.

TABLE I-2. Preliminary limits for heavy metals and organo-halogens under the proposed dredged material classification scheme.

Constituent	Class limits (ppm, dry weight)		
	low (Class I)	moderate (Class II)	high (Class III)
Mercury	0.5	0.5 - 3.0	3.0
Lead	83	83 - 285	285
Arsenic	7	7 - 22	22
Cadmium	3	3 - 15.5	15.5
Chromium	112	112 - 513	563
Copper	83	83 - 342	342
Nickel	36	36 - 92	92
PCB			2.7

SEP 29 1982

140 Ocean Boulevard
Seabrook Beach, NH 03874

United States Army Corps of Engineers
New England Division
424 Trapelo Road
Waltham, MA 02154

Att: Colonel Carl B. Sciple

Re: Portsmouth, NH Harbor/
Piscataqua River dredging
project.

Gentlemen:

Please record me as being in favor of immediate action being taken to improve the above mentioned area. Present conditions are such that a definite safety hazard exists, particularly between the Interstate and Memorial bridges. A deeper channel and a turning basin are urgently required.

For your information, I am currently employed in a shoreside position in the maritime industry, and am licensed as Master, Steam and Motor Vessels, Any Gross Tons Upon Oceans.

Cordially,

George W. Duffy

George W. Duffy

33 BROAD ST., BOSTON, MASS. 02109 (617) 523-4900

Boston Overseas
INCORPORATED

September 29, 1982

Colonel Carl Sciple
U.S. Army Corp. of Engineers
New England Division
424 Trapelo Road
Waltham, MA 02154

Re: The Portsmouth Harbor/Piscathqua River Navigation Project
(Evaluation 404)

Dear Colonel Sciple:

As Steamship Agents representing Liner Shipping interests who are regularly using the Port of Portsmouth, we have read the Public Notice issued by your office dated August 18, 1982.

We can herewith advise you on behalf of our Principals that we are in full accord and support of those recommendations concerning improvements to the turning basin and the widening of the channels mentioned in the Notice. We are particularly in favor of those improvements which would improve the depth of water in the Area I, as shown on the selected plan.

With every hope that this proposal will move forward toward fruition, we remain,

Very truly yours,

John T. Hudson
Operations Manager

JTH:sc

cc: Ruth Kotsonis, Exec. Secretary, Portsmouth Harbor/Piscatagua River Improvement
Safety Committee, Portsmouth, New Hampshire
G. W. Duffy - Bosoverseas

BOSTON AND MAINE CORPORATION, DEBTOR
IRON HORSE PARK
NORTH BILLERICA, MASSACHUSETTS 01862-1692
617/663-6996

ROBERT W. MESERVE
BENJAMIN H. LACY
TRUSTEES

ALAN G. DUSTIN
PRESIDENT AND CHIEF EXECUTIVE OFFICER

September 30, 1982

Colonel Carl Sciple
U. S. Army Corps of Engineers
New England Division
424 Trapello Road
Waltham, Massachusetts 02154

Dear Colonel Sciple:

Boston and Maine supports the Portsmouth Harbor/Piscatqua River Improvement Project. We feel that the improvements to the harbor system will certainly provide benefits to the industries in western Maine and the seacost area of New Hampshire.

Sincerely,

Alan G. Dustin

cc: S. Ruth Kotsonis

SPENCER APOLLONIO, COMMISSIONER

AREA CODE (207)
289-2291

STATE OF MAINE
DEPARTMENT OF MARINE RESOURCES
STATE HOUSE — STATION 21
AUGUSTA, MAINE 04333

1 October 1982

Mr. Joseph L. Ignazio, Chief, Planning Division
Army Corps of Engineers
424 Trapelo Road
Waltham, MA 02254

Dear Mr. Ignazio:

We have reviewed the Feasibility Report for Navigational Improvements and Environmental Assessment for Portsmouth Harbor and Piscataqua River.

We must comment on several of the aspects of the report and public review of the proposed project that we believe deserve further attention.

SectionI Purpose and Need for Action. Paragraph 1.3 Dredging Schedule and III. Environmental Consequences, Paragraph 3.13 and 3.14: Local lobstermen have told our area biologist that the Piscataqua near Sections 1 and 3 are very productive lobster fishing grounds. The report had noted the anadromous species that are apt to be present in the project area at certain times of the year.

We have not been assured from the presentation that the proposed blasting and dredging will not be detrimental to these commercially significant species. We would like to have references to studies that have documented the effects of the proposed blasting methods to aquatic fauna, particularly in the estuarine environment. It would be desirable to have the NMFS incorporated in monitoring transient fauna to help schedule blasting and dredging.

Section IV Affected Environment, Paragraph 4.35: The lobster and crab resources are noted in several sections of the report and Figure 2, of the report represents one assessment of the lobster concentration areas, principally outside, east, of New Castle Island. Our area biologist reports that lobster and crabs are present in significant abundance and are fished commercially, north of the General Sullivan Bridge (Area 2).

Section IV Paragraph 4.07 (And Environmental Consequences, Paragraph 3.05 and 3.07) Additionally, there are at least four lobster merchants on the Maine side of the river who pound or maintain lobsters by pumping water from the Piscataqua River near the project area. They and their stocks should be considered and provisions made to prevent damage to their equipment and stock due to suspended solids and solubles.

Section V Coordination and Public Relations: The report overview (page 8) notes that there are approximately 500 licensed lobster fishermen in the area. Our records show that in 1981, the numbers of licensed lobstermen in the Maine riparian communities were: Kittery Point, 99; Kittery, 157; Eliot, 83; South Berwick, 11; Berwick, 8; North Berwick, 13. We know of no effort by the Corps of Engineers or other agency to make direct contact with these 371 fishermen who stand to be directly affected by the proposed project.

We have no record of this agency being involved in project review meetings prior to this date.

We do, however, appreciate being able to review the project report and look forward to our customary good communications prior to Corps of Engineers' projects.

Sincerely,

WALTER S. FOSTER
Marine Resources Scientist

WSF/dh

DEPARTMENT OF THE NAVY
NORTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
PHILADELPHIA, PENNSYLVANIA 19112

Autovon 443
215-755-4807

Code 202E:KC:js
11010

5 - OCT 1982

From: Commanding Officer, Northern Division, Naval Facilities Engineering Command
To: Division Engineer, New England Division, U. S. Army Corps of Engineers

Subj: Feasibility Report for Improvements to the Existing Federal Deep-Draft Navigation Project in Portsmouth Harbor and Piscataqua River

Ref: (a) New England Division, Corps of Engineers ltr NEDPL-C of 20 August 1982

Encl: (1) Commander, Portsmouth Naval Shipyard ltr 400:DJB:rjp 11460 Ser 500/153 of 28 May 1982

1. Subject document transmitted by reference (a), has been reviewed and found not to accurately reflect the views and position of the Navy. The current position of the Navy, as reported by the Commander, Portsmouth Naval Shipyard, is stated in enclosure (1). You will note that the Navy's support of the subject project is somewhat different from that stated in the 4 October 1977 letter (included in the subject report). It is clear that the Shipyard will only benefit indirectly from safer conditions produced by Area 3 navigational improvements. This indirect benefit will be shared with commercial firms along the waterfront and other vessels negotiating the channel at Henderson Pt.

2. Accordingly, it is requested that the following sections of the report be changed to reflect the evaluation provided by enclosure (1).

1. Presentation and Evaluation of Detailed Plans - Plan A - Views of Federal Agencies (pp. 27-28)
2. Appendix 2, Cost Apportionment
   1) Page 1; paragraph 5
   2) Page 2; paragraph 1, Scenario 2, Scenario 4
   3) Page 3; paragraph 2, Scenario summary (Scenario 5 - Area 3)

J A Rispoli

J. A. RISPOLI
By direction

Copy to:
COMNAVSHIPYD PTSMH

DEPARTMENT OF THE NAVY
PORTSMOUTH NAVAL SHIPYARD
PORTSMOUTH, N.H. 03801

F.Y.I.

IN REPLY REFER TO
400:DJB:rjp
11460
Ser 400/153
28 MAY 1982

From: Commander, Portsmouth Naval Shipyard
To: Commanding Officer, Northern Division, Naval Facilities Engineering Command

Subj: Feasibility Report for Improvements to the Existing Federal Deep-Draft Navigation Project; comments on

Ref: (a) Phonecon btwn Captain R. J. McHugh, CEC, USN (CO, NORTHNAVFACNEGCOM) and Captain D. J. Briselden (NAVSHIPYD PTSMH (400)) on 24 May 1982

Encl: (1) Excerpts of a draft feasibility report for improvements to the Portsmouth Harbor

1. Enclosure (1) is forwarded along with Shipyard comments to serve as a basis for reply to a Congressional inquiry from Senator Gordon J. Humphrey's office concerning the proposed improvements to Portsmouth Harbor.

2. The essence of the proposed improvements include widening of the turning basin between the first and second bridge, widening of the channel adjacent to Badgers Island, and widening of the channel opposite Goat Island. Several years ago, a dredging projcct was completed for NAVSHIPYD PTSMH which provided all of the necessary improvements to support NAVSHIPYD PTSMH, including the overhaul of SSN 688 Class submarines. At this time, there is no known additional requirement that the Shipyard would actively sponsor. The three proposed improvements to the Portsmouth Harbor would have an indirect benefit to the Shipyard in that it would provide safer commercial operations and thus prevent the possibility of interruption to commercial supplies through Portsmouth Harbor. The proposed projects are, however, not of immediate requirement to the Shipyard and any Navy endorsement should be on the basis that programming of the proposed projects would not interfere with the established Military construction priority list.

J. F. YURSO

PORTSMOUTH HARBOR / PISCATAQUA RIVER
IMPROVEMENT SAFETY COMMITTEE

Sponsored by
THE PROPELLER CLUB OF THE UNITED STATES
Port of Portsmouth #156

Correspondence: R. Kotsonis, 144 Washington St., Portsmouth, N. H. 03801

October 5, 1982

Colonel Carl Sciple
U.S. Army Corps of Engineers
N.E. Division
424 Trapello Rd.
Waltham, MA 02154

Dear Colonel Sciple:

It is imperative that the proposed work for the Portsmouth Harbor and Piscataqua River in New Hampshire be performed.

Geographically speaking, New Hampshire's Atlantic coastline could be most aptly described as the place where the state dips it's big toe into the Atlantic. It's New Hampshire's only lifeline to the sea and waterborne trade....some of which is unique to New England.

The Ports of Portsmouth/Newington are receiving more and more tonnage of energy related supplies each year and the trend is to larger, more technically designed and economical ships. In order for New Hampshire to continue to serve New England with a comparably priced energy supply, we must be able to receive the newer ships fully laden. These supplies are the sustenance of our industries, businesses, utilities, municipalities, farms and residences. Our livelihood in the Northeast is dependent on this trade.

We are blessed with an accessable channel 12 months of the year because of a swift current but unfortunately, contending with this current and having most of the berths above the two lift bridges, the margin of safety is minimal and of great concern. The consequences of a vessel unable to abort should either of the lift bridges fail to open should be of concern to the U.S Government as well, whereas jet fuel is waterborne to Pease Air Force Base, (a rapid deployment base), and supplies are railroaded over the second lift bridge to Portsmouth Naval Shipyard.

For better understanding of the complexities of this unusual river, I have enclosed exerpts from: "The Piscataqua Operation", written by Captain Richard Holt of Portsmouth Navigation Company.

Very truly yours,

L. Ruth Kotsonis

L. Ruth Kotsonis
Exec. Secretary

Chm: Capt. R. Holt
(603) 436-1209

Exec. Secy: Ruth Kotsonis
(603) 436-6225

Colonel Sciple
10/5/1982

EXERPTS FROM

"THE PISCATAQUA OPERATION"
Captain Richard Holt

"The maximum tide range is from about a +11 ft. high to a -2 ft. low, with variations due to moon, wind, and other factors. The current averages about 4 to 5 knots with extremes of 7 knots at various times, directly proportionate with the range for the day. The slack water lasts only minutes and usually the current immediately goes from one direction to another. With deep draft vessels, we try to arrive at all berths at the slack water.

The slack water is the time we begin with and work backwards to a pick-up time for the vessel allowing transit time from entrance. The time frame is so critical that if a ship arrives even 30 minutes later than our pickup time, we refuse to board the vessel until the next acceptable time. Ships in excess of 27 ft. draft are only safely navigated at the end of the flood, meaning we go in with considerable current running to arrive at the pre-determined slack for berthing.

EXAMPLE AT ONE PARTICULAR BERTH: At about 45 minutes before docking, we plan to be at Henderson's Point, the first bad turn, using speeds of slow and dead slow on the vessel as necessary to steer. The ship must go extremely slow on all turns because tugboats are not effective on a fast moving ship. The tugs are placed to facilitate sharp right turns as with the Piscataqua. As we near Henderson's Point, we call on the radio for the Memorial and Interstate Bridges to go up. We are still a long way off but we are coming in with current and if either bridge cannot lift, we must know it by the time we pass the "Point" as this allows time and room to turn around and go out. If we get to the point approaching the Memorial Bridge,(1st lift bridge) and the Interstate Bridge,(2nd lift bridge) develops a problem, we are in serious trouble as there is not room to turn a ships this size between the two bridges.* After clearing the Memorial Bridge, we have a very sharp right turn, the worst in the channel, and if we have to back the ship to stop, as she is turning right, we cannot prevent her from turning around, as we still have flood current, a right turn, and backing the ship. Therefore, we probably would have the vessel hung up fore and aft across the river. Assuming the bridges open all right, we pass the Memorial Bridge about 30 minutes before docking time. After negotiating Badger's Island turn, which is particularly bad, the ship must stop the sharp swing to right and come left to go through the Interstate Bridge, which is a hazard in itself due to it's angle across the river. At this point, we are about 20 minutes from the dock and the current is slowing down gradually. The tugs come alongside immediately and position themselves for docking. The current begins to ebb just as we go alongside the dock and within 20 minutes, it is a strong ebb of 3 to 4 knots. The tugs are required to hold the ship until all lines are secure.

At present, a 700 ft. ship making the right turn on Henderson's Point** is in danger of her stern swinging very close to Goat Island Ledge."

* Work Area # 1
** Work Area # 3

Dorchester Sea-3 Products, Inc.

Subsidiary of Dorchester Gas Corp.

October 13, 1982

Colonel Carl Sciple
U.S. Army Corps of Engineers
New England Division
424 Trapello Rd.
Waltham, MA 02145

Dear Colonel Sciple:

We own and operate a 19 million gallon cryogenic storage terminal and associated facilities on the Piscataqua River (Portsmouth, NH), for importing fully refrigerated oceanborne propane (LPG). We can receive ships up to 59,000 CBM, load out or receive barges, and have facilities for receiving or shipping propane tank cars and tank trucks.

We have the capacity for serving over 1/3 of New England's annual demand for propane. Since commencing operations in 1975, we have served a large segment of this demand from gas utility companies, industry, commerce, and a large section of the area's homeowners.

In the blizzard of 1977, our facilities were responsible for keeping a significant portion of New England's homes and businesses working and warm, and much of our propane was redirected outside of New England to New York, New Jersey and Pennsylvania for use by industries and utilities where schools and businesses were closing for lack of gas supplies.

Our imported supplies originated in North Africa, the British Isles, the Arabian Gulf and Central and South America. Over the years we have seen the costs of shipping these supplies into our terminal become more and more critical to the net product prices New Englanders can afford to pay. This frequently is a function of the ship size and it's ability to have a safe passage or berth in the river.

The Piscataqua channel project is important to us and all other operators on the river to assure that market sized ships can safely transverse the river under all conditions.

Marketing & Administration
144 Washington Street
Portsmouth, N.H. 03801
Telephone 603-436-6225

Telex: 953103

LPG Terminal
Avery Road
Newington, N.H. 03801
Telephone 603-431-5990

OCT 19 1982

Portsmouth is gaining in stature as a very significant port for goods, services and energy imports to the Northeast. We believe much of its potential is restricted only by its safe navigation limitations. We strongly urge that the necessary steps be concluded to clear the channel of these limitations.

Very truly yours,

Lawrence Heffron
Senior Vice President

LH:lrk

Greater Portsmouth
CHAMBER OF COMMERCE

October 20, 1982

Colonel Carl Sciple
U.S. Army Corps of Engineers
New England Division
424 Trapello Rd.
Waltham, MA 02154

Dear Colonel Sciple:

We would be pleased if your schedule would permit you or your representative to speak at our December breakfast meeting of The Greater Portsmouth Chamber of Commerce on either Wednesday, December 8th or Thursday, December 9th, whichever date is convenient for you.

The Chamber breakfasts are held in a local restaurant and very well attended, beginning at 7:30 AM and concluding at 9:00 AM. A restaurant will be selected and directions mailed upon acceptance of either date mentioned above.

The membership is concerned with the proposed Portsmouth Harbor/ Piscataqua River project which is the topic of the breakfast meeting.

We have asked, and he has accepted, Captain Richard Holt of the Portsmouth Navigation Co. to address the group first, describing the problems of bringing a vessel up river and why the project is so necessary. We would appreciate your explanation of the role of the U.S. Army Corps of Engineers, the necessary steps required before the project can be undertaken and the status of the project to date.

We are hopeful that we will receive an affirmative reply.

Very truly yours,

David Choate

David Choate
Executive Director

500 Market Street • P.O. Box 239 • Portsmouth, New Hampshire 03801 • (603) 436-1118

NEDPL-I 27 October 1982

Mr. Walter S. Foster
Department of Marine Resources
State House - Station 21
Augusta, ME 04333

Dear Mr. Foster:

Thank you for your letter of 1 October and review comments regarding the Feasibility Report for Navigational Improvements and Environmental Assessment for Portsmouth Harbor and Piscataqua River.

In response to your questions and concerns raised about potential impacts of the project on lobster and finfish resources, we plan to hold an information workshop specifically with commercial fishery interest. We would appreciate your assistance in providing appropriate names and organizing such a meeting. Please let us know who in your agency we should contact in this regard.

Before it was determined that the dredged materials would be placed upland at the New England Task Industries, this office had planned to hold workshops with commercial fishing interests from both states in an effort to identify possible ocean disposal sites. As indicated in the environmental assessment, we did hold one meeting with New Hampshire State Fish and Game Department and local fishery interests. However, with the identification of the upland disposal site, our plans for further workshops were dropped. Please be informed, however, that Mr. Brad Sterl, your regional marine resources representative, did attend an early meeting (1980) at the N.H. Port Authority to discuss project plans and especially ocean disposal impacts, site selection, and use of the rock material as possible lobster habitat.

With respect to the impacts of the proposed blasting, it is our intention to utilize those available measures which would reduce casualties to the aquatic fauna. Such measures include use of preliminary minor charges and inserting the explosive charges within drilled holes well below the surface. As much of this blasting as can be programmed will take place during the winter months; however, for purposes of economy, the construction will be accomplished during a continuous 16-month period.

NEDPL-I 27 October 1982
Mr. Walter S. Foster

Blasting and removal of the rock will result in the alteration of the existing habitat in the proposed dredged areas. Hard fractured rocks will still characterize the bottom and sides of the channel.

There is a paucity of literature which addresses subaqueous rock drilling and blasting and its effect on aquatic organisms. A few experiments and observations have been made for open water and their references and results are included in Attachment 1. Findings for open water blasting are not directly applicable to blasting rock where charges are inserted into drill holes in the bottom, but they are included for your information.

Should you have any questions or desire further information regarding the project, please contact Mr. Gib Chase (617) 647-8236 Environmental Resources Specialist or Mr. Donald W. Martin, Chief, Coastal Development Branch, (617) 647-8528.

Sincerely,

Incl
As stated

JOSEPH L. IGNAZIO
Chief, Planning Division

ATTACHMENT 1

IMPACTS OF BLASTING ON AQUATIC FAUNA

In general, it has been reported that the effects to fish from open water explosions is not proportionately related to the size of the charge (Coker and Hollis, 1950). It is apparent and conceivable that the effects of many small blasts would be similar to the effects of a few large detonations. The factors that were found to be important in the damage to fish were the rate of speed of the pressure pulse generated by the explosion and the peak pressure. For dynamite types of explosives abrupt shock waves attain nearly instantaneous maximum intensities and would have lethal threshold peak pressures of 40 to 70 pounds per square inch (Hubbs and Rechnitzer, 1952; U.S. Corps of Engineers - N.Y. District.

The propagation of the primary shock wave, negative pressure waves and secondary, or reflective, waves is a complicated phenomena that is highly dependent of the bottom characteristics and topography. Hubbs and Rechnitzer found that the peak pressure dissipated expontentially with distance away from the blast. In addition, the detonation of a small charge of dynamite does not necessarily result in lower fish kills in proportion to the weight of the charge. The peak pressure does not follow a linear relationship to the weight of the charge, but varies to the one-third power of the charge size. This information supports the findings that fish kills outside the immediate blast area are normally restricted to a few hundred feet (Alpin, 1947; Chesapeake Biological Laboratory, 1948; Gowanlick and McDougall, 1945; Coker and Hollis, 1950). Coker and Hollis reported fish kills for large explosions to be generally within 300 feet, but, recorded some mortality up to 600 feet from the blast.

The only applicable and significant finding on the blasting of large quantities of rock has been reported on by Thompson (1958). In a single detonation (many times larger than we would use in Portsmouth) nearly three million pounds of explosive was employed to clear rock. It was concluded that the fish kill was generally confined to within one half mile of the blast.

It should be noted that the number of fish killed during an explosion and reported on by trained observers, generally ranged in the ten's to hundred's of fish. Rarely was there fish mortality above a thousand and never was the kill considered massive or significant to the survival of the population.

Damage to individual fish caused by explosions are mainly internal. Fish with swim or air bladders are the most vulnerable to injury. Often the strong and rapid compression and negative pressure forces cause the air bladders to rupture. Blood clots, gill damage, and injury to the abdominal cavity and organs are also common damages. (Coker and Hollis, 1950; Fitch and Young, 1949; Alpin, 1947; Chesapeake Biological Laboratory, 1948). Susceptibility of fish with air bladders also varies according to the physiological structure of the fish (Fitch and Yound, 1948).

Most significantly, it was found that the number of fish killed was not proportional to the size of the charge. For the most part, the kill is governed by the quantities of fish present at the time of the blast. During an explosion relatively fewer fish are killed than would otherwise be expected and is probably due to the relatively small area affected by the explosions.

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Bokuniewicz, H., J.A. Gerbert, R.B. Gordon, P. Kaminsky, C.C. Pilbeam and M.W. Reed. 1974. Environmental Consequences of Dredge Spoil Disposal in Long Island Sound, Phase III, Nov. 73-Nov. 74. Unpublished report to U.S. Army Corps of Engineers from Dept. of Geology, Yale Univ., New Haven, Conn.

Chesapeake Biological Laboratory, 1948. Effects of Underwater Explosions on Oysters, Crabs, and Fish. CBL Publication No. 70:1-43.

Coker, C.M., and E.H. Hollis, 1950. Fish Mortality Caused by a Series of Heavy Explosions in Chesapeake Bay. Journal of Wildlife Management, 14 (4): 435-444.

Fitch, J.E. and P.H. Young, 1948. Use and Effect of Explosives in California Fish and Game, 34 (2): 53-70.

Gowanloch, J.N. and J.E. McDougall, 1945. Effects from the Detonation of Explosives on Certain Marine Life. Oil, 4 (12): 13-16.

Hubbs, C.L. and A.B. Rechnitzer, 1952. Report on Experiments Designed to Determine Effect of Underwater Explosions on Fish Life California Fish and Game 38 (3): 333-366.

Rogers, B. 1969 Tolerance Levels of Four Species of Estuarine Fishes to Suspended Mineral Solids. M.S. Thesis, Univ. of Rhode Island, Kingston, R.I. 60 pp.

Saila, S.B. T.T. Polgar and B.A. Rogers, 1968. Results of Studies Related to Dredged Sediment Dumping on Rhode Island Sound. Proc. Ann. Northeastern Reg. Anti-pollution Conf., 22 July 1968, pp. 71-80.

Saila, S.B., S.D. Pratt, and T.T. Polgar, 1972. Dredge Spoil Disposal in Rhode Island Sound. Univ. of Rhode Island, Marine Technical Report No. 2, 28 pp.

Snerk, J.A., Jr., and L.E. Cronin, (1970). The effects of Suspended and Deposited Sediments on Estuarine Organisms: An Annotated Bibliography of Selected References. Chesapeake Biological Laboratory, NRI Ref. No. 70-19, 61 pp.

Thompson, J.A. 1958 Biological Effects of the Ripple Rock Explosion Progress Report of Pacific Coast Station, Fisheries Research Board of Canada 111: 3-8.

U.S. Corps of Engineers - New York District, April 1976. Environmental Assessment of Underwater Explosions - Navigation Project, East River, New York --Spur Channel to Astoria Waterfront. Unpublished report to N.Y. Corps of Engineers prepared by the Mitre Corporation.

OCT 29 1982

NEDPL-C

Chairman, Board of Selectmen
Newington Town Hall
Newington, NH 03801

Dear Sir:

This letter concerns the Portsmouth Harbor and Piscataqua River Draft Feasibility Report for Navigation Improvements, which is currently in the public review phase. The draft report recommends safety-related improvements between the New Hampshire-Maine Interstate Bridge Authority structure and Badgers Island, and further seaward in the vicinity of Henderson Point at Goat Island. The draft report further recommends placement of all dredged material at the New England Tank Industries of New Hampshire, Inc. property in Newington.

At a 7 October 1982 meeting at the Newington Town Hall, members of my staff were informed that although the Planning Board approved of the project they disapproved of the use of the tentatively selected land fill site in Newington. I have inclosed a copy of my letter of this date to the Planning Board for your use.

To assist this office in restudying availability of disposal options, could your office forward those town bylaws and state statutes which apply to land disposal at the tentatively selected site and otherwise in Newington? This list as with all project correspondence will become part of the public record and will be printed in our report.

In addition, it's unclear whether the Planning Board position reflects the town's official stand on this matter. I would appreciate a letter from the Board of Selectmen stating their position.

OCT 29 1982

NEDPL-C
Chairman, Board of Selectmen

Should you have any questions, please do not hesitate to call me at (617) 647-8220. Mr. Martin, Chief of the Coastal Development Branch, is coordinating the study. He can be reached at (617) 647-8528.

Sincerely,

Incl
As stated

CARL B. SCIPLE
Colonel, Corps of Engineers
Division Engineer

OCT 29 1982

NEDPL-C

Mr. John S. Rowe, Chairman
Planning Board
Town Hall
Newington, NH 03801

Dear Mr. Rowe:

This letter concerns the Portsmouth Harbor and Piscataqua River Draft Feasibility Report for Navigation Improvements which is currently under extended public review. Mr. Donald Martin of my staff informed me of attending your 7 October 1982 meeting of the Planning Board. We appreciate opportunities such as this meeting to exchange information and obtain public viewpoints. I also wish to thank you for your kind consideration in rearranging the agenda of your meeting in order that my representative could head back to the Waltham area at an early hour.

I understand that the Planning Board is in unanimous support of the safety-related features as recommended in the draft. I further understand that the Board does not support the selected disposal method which proposes placing the dredged material at a land site currently owned by the New England Tank Industries of New Hampshire, Inc. located in Newington. Your use of the public review period to express your concern is appreciated.

To assist us in determining a final disposal site, I have today sent a letter to the Chairman of the Newington Board of Selectmen requesting the town's official position regarding the proposed navigation project and disposal site. We are reconsidering disposal of dredged material from improvement dredging.

The decision I make regarding a disposal selection in the final report must fully represent the public interest. In important projects like Portsmouth Harbor which support the economic vitality of its service area, it is probable that all interests will not be entirely satisfied with my recommendation.

NEDPL-C

OCT 29 1982

Mr. John S. Rowe, Chairman

At the meeting of the 7th I understand that you suggested use of New Hampshire Port Authority wetlands for disposal of the dredged materials. Because of the wetland status of these sites, I cannot recommend their use for disposal.

Should you have any questions, please do not hesitate to call me at (617) 647-8220. Mr. Martin, Chief of the Coastal Development Branch, is coordinating the study. He can be reached at (617) 647-8528.

Sincerely,

CARL B. SCIPLE
Colonel, Corps of Engineers
Division Engineer

Copy furnished:
Newington, NH
Board of Selectmen

A SPRAGUE ENERGY COMPANY
C. H. SPRAGUE & SON CO.
One Parade Mall, Portsmouth, N.H. 03801 Tel. (603) 431-1000

WESLEY E. HALLOWELL, P. E.
OPERATIONS MANAGER-TERMINALS

November 2, 1982

Colonel Carl B. Sciple
U.S. Army Corps of Engineers
New England Division
424 Trapelo Road
Waltham, Massachusetts 02154

Dear Colonel Sciple:

I understand my initial letter in support of the Piscataqua River dredging proposal did not reach you, so I am writing again to reiterate this company's support for the much needed dredging operations now under consideration.

As a major user of the channel and a recipient of numerous large vessel petroleum cargos, we are vitally interested in the port capabilities and the safety of vessels delivering oil to our terminals. There has been a continuous movement over the last few years to larger vessels, as the traditional class of supplying carriers become older and are pulled from service. The inability to safely and adequately handle these larger vessels will put us, and ultimately the New England consumer at the end of the petroleum "pipeline" in a very serious situation.

This project has an "immediacy" to it that I cannot overemphasize. We need this dredging and we need it now!

C. H. Sprague & Son Company fully supports the Piscataqua River dredging project and stands ready to assist in any fashion to see it's successful completion.

If we can be of any help to you or your staff, please do not hesitate to call.

Sincerely,

C. H. SPRAGUE & SON CO.

Wesley E. Hallowell

Wesley E. Hallowell, P.E.
Operations Manager

NOV 4 1982

6-117

WEH/js
cc-R. Kotsonis - PH/PRISC

The Town of Newington

New Hampshire

Incorporated 1764

OFFICE OF
PLANNING BOARD

November 15, 1982

Chairman & Board
of Selectmen

Gentlemen:

This refers to the U.S. Army Corps of Engineers letters of even date, October 29, 1982, to the Boards of Selectmen and Planning.

The Planning Board is pleased to note that disposition of dredged material at New England Tank Industries is being reconsidered.

The letter to your Board states that it is unclear whether the position of the Planning Board reflects the Town's official stand in the matter.

Chapter 31 of the revised statutes, as amended by the 1981 legislature requires that Planning Board notify abutters and hold public hearings before acting or recommending any course of action with respect to land subdivision or industrial sites. Chapter 149 details requirements for an applicant to dredge or receive dredge material. While actions of the Corps of Engineers in State waters is beyond the purview of the local Planning Board, matters effecting on shore industrial sites are not.

The main purpose of this Board's letter of September 13, to the Division Engineer was to request a public hearing in order that the position of the town could indeed be made a matter of record.

Respectfully

John F. Rowe
Chairman

cy: Division Engineer,
(NEDPL-C)

SPENCER APOLLONIO, COMMISSIONER

AREA CODE (207)
289-2291

STATE OF MAINE
DEPARTMENT OF MARINE RESOURCES
STATE HOUSE — STATION 21
AUGUSTA, MAINE 04333

16 November 1982

Mr. Joseph L. Ignazio
Chief, Planning Division
New England Division
Army Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02254

ATTENTION: NEDPL-I

Dear Mr. Ignazio:

Thank you for your letter of October 27 relative to the Portsmouth Harbor, Piscataqua River Navigational Improvements.

We will be happy to cooperate with you in preparing for an information workshop addressing the concerns of the commercial fisheries. Toward that end I am sending you with this letter the names and addresses of York County Lobster and Crab License holders. The names of those whose mailing addresses are on the Piscataqua River, from Kittery Point to North Berwick are marked. Another contact for this with the lobstermen who fish this area is Mr. Steven Taylor, Secretary of the Southern Maine Lobstermen's Association. I believe his address is: Badgers Island, Kittery, Maine 03904.

In making further contacts and organizing the workshop, please contact Bradford Sterl, Area Biologist, Department of Marine Resources, Dixon Run, Ogunquit, Maine 03907. His telephone number is 207-646-3322. He will contact the DMR Marine Patrol Officer in the area, Mr. Jonathan Wright, P.O. Box 11, Eliot, Maine 03903. His telephone number is 207-439-2117.

I will appreciate being informed as to further plans and meetings relative to the proposed harbor improvements.

Sincerely,

WALTER S. FOSTER
Marine Resources Scientist

WSF/dh

Enclosures

NEDPL-I 15 November 1982

Ms. Ann Pistell
Federal Consistency Coordinator
Department of Environmental Protection
State House Station 17
Augusta, Maine 04333

Dear Ms. Pistell:

Thank you for your letter of 28 September 1982 which comments on the Draft Feasibility Report concerning the proposed navigation improvements at Portsmouth Harbor and Piscataqua River, New Hampshire-Maine. I understand many of your questions regarding the project were discussed with members of my staff at a meeting held 8 September at the New Hampshire Port Authority offices in Portsmouth.

With regards to sediment testing it is felt that further sampling and chemical analysis is not necessary because of the coarse nature of the material. Sampling was not performed at Area 3 because the material which requires excavation consists entirely of rock and must be blasted. The three samples from Area 1 we feel are sufficient to characterize the sediments. The sediment at this site is composed of coarse sands, gravel, and rock. The high velocity flow channel in these areas have swept the bottom clean of fine sediments and thus accumulations of the fine material which would normally contain the heavy metal, PCB and other contaminants.

We are planning to meet with Maine's commercial fishermen and lobster pound owners in the project area and have asked the Maine Department of Marine Resources to aid us in setting up such a meeting. However, the coarse nature of the material to be dredged leads us to expect little turbidity. Based on dispersion studies conducted by the University of New Hampshire (UNH-SG-167) any suspended material would be concentrated on longitudinal flow in the central channel while allowing limited lateral flow and dispersion into near shore areas. The water and any contaminants are mixed and flushed rapidly through the system and results of the bulk analysis from Area 1 revealed no abnormally high concentrations of metal, oil, grease or other parameter tested.

The rock material will be less than an ideal size for adult lobster habitat, but could benefit juvenile size lobsters. The New Hampshire Fish and Game Department has recommended disposal of the rock at Gunboat Shoals to provide additional shelter for lobsters. In our feasibility report we proposed placing all of the material upland at the New England Tank Industries site. In response to comments received we are now reviewing that proposal.

With respect to the impacts of the proposed blasting, it is our intention to utilize those available measures which would reduce casualties to the aquatic fauna. Such measures include use of preliminary minor charges and inserting the explosive charges within drilled holes well below the surface. As much of this blasting as can be programmed will take place during the winter months; however, for purposes of economy, the construction will be accomplished during a continuous 16-month period. Blasting and removal of the rock will result in the alteration of the existing habitat in the proposed dredged areas. Hard fractured rocks will still characterize the bottom and sides of the channel.

Please be informed that the proposed plans are not designed to encourage the use by larger vessels but rather is aimed at providing additional safety and maneuvering room for existing ships utilizing the project. The Coast Guard is responsible for determining the maximum limits of vessels utilizing the Port facilities, this is done bearing the project dimensions fully in mind. They have indicated that they would maintain the size restrictions currently imposed for safety purposes.

Should you have any questions or desire further information regarding the project, please contact Mr. Gib Chase (617) 647-8236 Environmental Resources Specialist or Mr. Donald Martin, Chief, Coastal Development Branch, (617) 647-8548.

Sincerely,

JOSEPH L. IGNAZIO
Chief, Planning Division

DISPOSITION FORM

For use of this form, see AR 340-15; the proponent agency is TAGO.

REFERENCE OR OFFICE SYMBOL	SUBJECT
NEDPL-C	Portsmouth Harbor and Piscataqua River, NH-ME

TO ~~Division Engineer~~ Good! 21 Dec
THRU: Channels

FROM Chief, Coastal Development Br.

DATE 14 December 1982
Mr. Martin/528/cer

CMT 1

1. On 9 December 1982 the New England Division participated in a regular monthly breakfast meeting of the Greater Portsmouth Chamber of Commerce. The subject of the meeting was as above, and the principal speakers were Col. Carl B. Sciple, NED's Commander, and Capt. Richard Holt, of the Portsmouth Pilots.

2. After a delicious breakfast, Col. Sciple spoke before the 125-person gathering. He spoke about the historical and current role of the Corps of Engineers, the status of the Portsmouth Harbor Improvement Project and the necessary steps needed to achieve implementation. The Colonel accepted several questions from the floor, and at 0830 hours left to meet other commitments. Capt. Holt spoke of difficulties attending navigation, and following the formal presentations, the undersigned answered questions posed by the assembled. There were no tough questions; nothing new was asked; and no questions remained to be answered by mail and/or telephone.

3. When the meeting was adjourned at 0900, I remained and answered several more questions in a less formal atmosphere. Subsequently, more coffee was brought to the room, and Mrs. Kotsonis with Messrs. Mark Aldrich, Fred Kocher, Fred Boyce (Portsmouth Navigation), Capt. Holt and the undersigned held a post mortem on the meeting.

4. The consensus was that the entire group was highly positive on the project and that many were willing to work toward its fruition.

5. Later that same day Mrs. Kotsonis called me at Waltham to say that a new, possible land disposal site had surfaced and that I should anticipate a telephone call to that effect. Indeed, around 1530 hours, I had a call from a Mr. Ferris Bavicchi representing Iafolla Industries of Portsmouth - a sand and gravel, quarrying and rock-crushing outfit. They indicated an interest in accepting the dredged material and wished to know more about the entire idea.

DMartin
DONALD W. MARTIN
Chief, Coastal Development Branch

cc:
CDB (2)
Plng. Div. Files

DA FORM AUG 80 2496 PREVIOUS EDITIONS WILL BE USED

December 27, 1982

Planning Division
Impact Analysis Branch

Dear Sir:

We are taking this opportunity to notify you of an informal informational meeting to be held at 7:30 p.m. on January 12, 1983 at the Kittery Town Hall. The purpose of this meeting is to discuss possible environmental impacts or effects of dredging and disposal sites for the material from the proposed navigation improvements to Portsmouth Harbor and the Piscataqua River. Your participation and input at this meeting will be important to the development of an environmental assessment report.

For further information contact Mr. Brad Sterl, Area Biologist, Department of Marine Resources (207) 646-3322 or Mr. Gib Chase, Environmental Resources Specialist, Army Corps of Engineers (617) 647-8236.

Sincerely,

Carl B. Sciple
Colonel, Corps of Engineers
Division Engineer

DISPOSITION FORM

For use of this form, see AR 340-15; the proponent agency is TAGO.

REFERENCE OR OFFICE SYMBOL	SUBJECT
NEDPL-I	Portsmouth Harbor Navigation Study

TO	FROM	DATE	CMT 1
Chief, Planning Div. THRU: Chief, Impact Analysis Br.	Mr. Gilbert Chase	18 January 1983 Mr. Chase/mm/236	

1. An informational meeting was held with Maine commercial fishing interest, at the Kittery, Maine Town Hall, Wednesday, January 12, 1983. The meeting was called in response to requests from the State of Maine DEP and Department of Marine Resources as part of Corps of Engineers public review and input of the Draft Feasibility Report and Environmental Assessment issued July 1982. A letter was sent to over 300 fishermen in the Kittery-York area. The names and addresses of the fishermen were provided by the Maine Department of Marine Resources. A total of twenty-one people attended (see the attached sign-in sheet).

2. I opened the meeting by explaining the background behind the meeting and project environmental assessment. Dennis Waskiewicz, past project manager, described the study, problems and objectives as well as the project currently proposed. Copies of the Fact Sheet and Public Notice of the 404 Evaluation were distributed to the attendees.

Lobster Migrations

3. The primary concern of the fishermen centered around potential impacts to lobster populations. Mr. Seward initiated the discussion by emphasizing their concern about the effects of the operation on the purported large numbers of lobsters that migrate into the river system during the period from April to September. The fishermen are worried that any construction activities during this period would destroy large numbers of lobsters. If this happened it would have a severe impact on the resident lobster population and catch rates.

4. The fishermen would like to see a window from May to November 30th. It was also requested that a DMR tagging program be initiated to document the migratory movements of numbers of lobsters. Brad Sterl, DMR Area Biologist, described two blasting projects that they had experienced with Maine. These were the ocean outfall in Wells and the project at Prouts Neck, Scarboro. At Prouts Neck a large migration of lobsters was identified and a restricted permit was issued for no blasting from the second week in June to the first week in October. Sterl mentioned that Maine has done no tagging south of Kennebunk. He indicated that the State of New Hampshire had done some tagging about five years ago in the Piscataqua but this data was never published.

Ice Flows

5. A second concern raised, was that of the transport and subsequent impact of ice flows on marine structures in the back channel of Badgers Island due to the channel widening at Area I. At present ice moves in the back channel when the tide is at peak flood to one-half. Below that, the entrance to the channel is guarded by the shallow shoals. There is concern that if those shallow areas are removed more ice would flow into the back channel. If this is the case could ice protection be provided? Some effort should be made on impact to examine the hydraulic characteristics of the channel in order to predict or determine whether this concern is real or not.

Lobster Pounds

6. A third area of concern is that there are several lobster pounds located in the immediate vicinity of Area I. The owner's feel that the dredging and blasting could produce turbidities which would have adverse impacts to the lobsters in the holding cars. Betty Crawford mentioned that a combination of turbidity and warm water (50°F) has resulted in past lobster fatalities in her tanks when the Navy was completing its dredging. These lobster pounds require a continuous supply of cool, clean salt water. We informed the people that we could arrange for a pump and hose system to provide the clean, cool water necessary. The intake location of the Crawford Lobster Pound also needs to be determined to ensure that the blasting will not cause damage.

7. Blasting - During the Navy's project, the blasting was felt by nearby residents, but no damage was indicated. However, the effects of blasting on pier structures, migratory fish and lobsters is another fear or concern. It may therefore be useful to check with the Navy to find out their blasting procedures.

8. There were additional questions regarding larger size ships being used at Portsmouth. The benefits to "big business" and the possibility of the project facilitating use by Trident Subs. Our report has not identified the significance of lobstering to the region or the potential adverse economic impacts resulting from the project. This data occurs primarily because we have no information on lobster migrations or catch statistics. Although I feel that adverse impacts will not be experienced, it may be to our benefit to verify the impacts or lack thereof on the local fishery especially the seasonal income derived from such activities.

9. Dredged Material Disposal - A selection of a disposal site is still not resolved. It may be that another public review will be required if a new disposal area is identified. It was the consensus of the group that disposal of the dredged material and rock off the Maine coast for habitat creation was not needed nor desired. There was concern also, about the dredge and disposal barges fouling lobster trap lines and gear. I informed the group that such should not be set within or near the two project areas during operations.

NEDPL-I
SUBJECT: Portsmouth Harbor Navigation Study

10. At the close of the meeting and during post-meeting discussion one resident (a non-fisherman) said there was negligible lobstering in Area I except in the cove adjacent to the bridge. The water was too shallow and the currents too swift.

One lobsterman who fishes near the head of the channel could identify no adverse impacts during the most recent maintenance dredging in 1980.

There seemed to be a consensus that bringing in ships was very tricky and channel improvements would help better this situation.

GILBERT L. CHASE

Enclosure
Attendance Sheet

cc: Mr. Chase
Mr. Waskiewicz-CDB
Plng Div File

Portsmouth Navigation Project
Meeting 12 Jan 1983
Kittery, ME

Name	Address
H.E. Seaward	91 Whipple Rd., Kittery
Marty Morrison	Badgers Island · Kittery
Scott Lamont	Crockett Neck Rd, Kittery Point, Me.
Donald E. Lamont	" " " " " "
Lawrence Estes	7 Rice Ave Kittery
Robert W. Hansen	Juniper Point, Kittery
Robert P. Levesque	Juniper Point, Kittery
Milton E. Hall	51 Bowen Rd., Kittery, Me.
Linda Hall	" "
Guy Petty	Crockett Neck Rd Kit. Pt.
Nelia Sargent	15 Old Armory Way Kittery.
James H. Sanders	30 Walden St. Ports. N.H.
Betty Crawford	Bedrock Lobster Pound Kittery Me.
Danny Riley	17 Grover Ave Eliot, ME
Martin H. Gagni ✓	25 Cromwell St Kittery, ME
Ron Marsh	P.O. Box 481 Kittery Me
John Bowden	PO Box 112 Kittery Me.
Steve Taylor	10 Island Ave Kittery
Neal Hersey	25 Hampton Rd Exeter N.H.
David C. Roselanskas ✓	Pepperell Rd Kittery Pt., Me.
Brad Sterl	DMR, Ogunquit, ME.

Gib Chase and Dennis Waskiewicz, Corps Engr. Waltham

Don Martin
114 S

January 18, 1983

Colonel Carl B. Sciple
U.S. Army Corps of Engineers
New England Division
424 Trapelo Road
Waltham, MA 02154

Dear Colonel Sciple:

As a yacht yard owner in the greater Portsmouth Harbor area as well as a member of the Propeller Club of Portsmouth, NH this letter is to inform you of our support for the dredging of the Piscataqua River.

It is vitally important that this project be initiated in order to continue to accommodate vessels presently using the port and to accept larger ships which are presently under construction--longer in length and deeper in draft.

As New Hampshire's only commercial port and situated at the crossroads to three states, Portsmouth Harbor is a necessity to the growth and development of New Hampshire's economy.

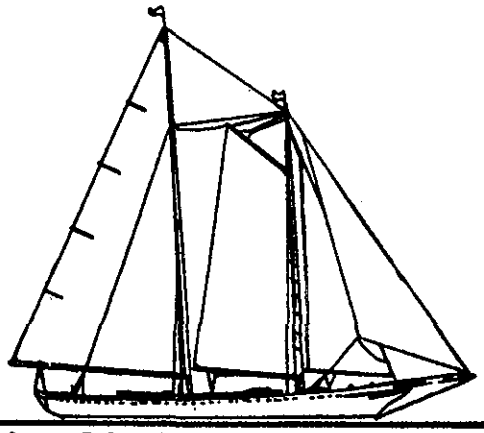
Sincerely,

DION'S YACHT YARD, INC.

Elmer L. J. Dion

Elmer L. J. Dion
President

ELJD/dcm



Elmer L. J. Dion, President
Dion's Yacht Yard, Inc. 48 Bowen Road, Kittery, Maine 03904 207-439-9582

Town of Newington, New Hampshire

DEPARTMENT
of the
PLANNING BOARD

January 27, 1983

Division Engineer
New England Division
U.S. Army Corps of Engineers
424 Trapelo Road
Waltham, Ma. 02254

Dear Sir:

Reference is made to this boards letter September 13, 1982 heartily endorsing dredging projects planned for ship channel safety improvements to the head of navigation and for clearing the berth at the Simplex Wire & Cable Company. Concern was expressed, however, over the continuing practice of dumping dredge material at the Fuel Storage Corporation site. The letter requested a public hearing which has never been granted.

The Board was pleased to note in your letter of October 29, 1982, that the disposal of dredged material was being reconsidered, but that the wetlands status of the area adjacent to the Port Authority could not be considered. While disposal sites beyond town limits certainly are not within the purview of this Board, we have been advised that the Wetlands Board issued a permit on February 15, 1977, to fill 11.5 acres at that site.

Your letter of the same date to the Board of Selectmen, questioning whether the position of the Planning Board reflected the official stand of the Town resulted in a duly warned Special Town Meeting held December 15, 1982, at which the warrant article posed the question "Are you in favor of stockpiling dredge material from the Piscataqua River on land of Fuel Storage Corporation".Ballots cast were 81; Yes-2; No 79. Presumably this action has the force and effect of law. It is unfortunate that your office has not received earlier notification.

McFarland Engineers, Inc., planning a third berth dredging project for the Defense Fuel Support Point, where again disposal is intended at the Fuel Storage Corporation site, has been notified of these matters.

Very truly yours

John F. Rowe

John F. Rowe

cc:N.H. Wetlands Brd.
N.H. State Port Authority
Simplex Wire & Cable
Fuel Storage Corp.

6-129

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02254

REPLY TO
ATTENTION OF:

February 3, 1983

Navigation Branch, Operations Division

Board of Selectmen
Planning Board
Town of Newington

Gentlemen:

This letter concerns the Navy's dredging of an area adjacent to the Simplex Wire and Cable Company with disposal of the dredged material on Fuel Storage Corporation property as well as several other issues involving our offices.

Any work done in navigable waters or wetlands is subject to regulation whether the work is done by a private applicant or by a Government agency, including the Corps. The applicable regulations require that we evaluate a large number of factors which ultimately leads to a decision as to whether the work is in the public interest. The Navy applied for and received both a Corps and a State permit. Disposal of this dredged material on Fuel Storage property is in accordance with existing regulations and we do not believe that it will adversely affect abutting properties. The objections to this project as expressed to my staff are not specific in nature and are not sufficient cause to revoke this permit.

In our view, in accepting the landowner's offer to utilize the site for storage of the material, the Government would be subject to whatever terms are imposed by the landowner. The landowner, in turn, is subject to whatever laws are applicable to his use of the land. The Government is without authority to control land use or to exercise any rights superior to those of the Town with regard to land use. Fuel Storage plans to use this material to construct a berm around portions of their property to fullfill a commitment they made to the town. This intent can be confirmed with Fuel Storage. If by receiving this fill and performing this work the landowner violates a Newington land use regulation, we would either alter or invalidate the permit for the work as proposed and the matter would be subject to resolution between the Town and Fuel Storage. We have performed work similar to this as recently as 1980 and therefore issued the permit based on our knowledge of the situation and in the belief that the property owner had the right to place the material on his property.

The proposal for safety improvements to Portsmouth Harbor entails removing and disposing of an estimated 500,000 cubic yards of material. This is an authorized Corps of Engineers study. We are evaluating a variety of disposal possibilities, including use of the Fuel Storage Corporation site. The Newington Planning Board's September 13, 1982 letter prompted representatives of this office to meet with the Board in October to obtain views on the Fuel Storage Corporation option. The information provided is among the factors being considered in developing a proposal for this work. We will seek your review and comment on the final proposal.

An additional item which deserves mention is the Corps of Engineers responsibility for recurring maintenance of the existing Portsmouth Harbor Federal navigation channel. Our last work on this project, performed in 1980, involved placing dredged material on Fuel Storage Corporation property. It may interest you to know that we have initiated coordination with Federal agencies on a proposal to place material from future channel dredging operations in deeper areas of the river itself. Early comments have been in opposition to this idea on the basis that it constitutes a loss of useful material. Recognizing your concerns, as well as the potential advantages of opening this work to other types of dredging plant, we are continuing to pursue the option of in-river disposal. I welcome your advice and comments on this regard.

J.C. WONG
Acting Chief, Operations Division

CHRONOLOGY OF ACTIVITY: NEW ENGLAND DIVISION

AND TOWN OF NEWINGTON, NH

3 February 1983

Dredging adjacent to the Simplex Wire and Cable Company, Piscataqua River, Newington, NH.

1. What follows is a chronological listing of events relating to this project with explanations where necessary.

Aug. 4, 1981 - The Naval Facilities Engineering Command requests that the New England Division perform the engineering work associated with the subject dredging.

Aug. 20, 1981 - The Navy is informed that we will perform the work.

Aug. 18, 1982 - The abutting landowners are notified of the proposed project in accordance with the requirements of the New Hampshire Wetlands Board permit process.

Aug. 19, 1982 - The New Hampshire Wetlands Board permit is filed with the Newington Town Clerk.

Aug. 20, 1982 - We were contacted by an abutting landowner who requested that a public meeting be held.

Aug. 24, 1982 - The Navy's application for a State Wetlands Board permit was submitted.

Aug. 26, 1982 - In our reply to the abutting property owners request for a public hearing we stated that there would be no impact on his property but that we would like to discuss any specific problems that he anticipated. The project would be subject to further review during the permitting process and we did not see any need to have a Public Hearing.

Sept. 13, 1982 - We were contacted by Mr. John Rowe of the Newington Planning Board who requested a Public Hearing to discuss the use of the Fuel Storage disposal site for material removed during the Simplex Dredging and the proposed improvement of the Federal channel in the river.

Sept. 20, 1982 - The Naval Facilities Engineering Command submitted an application for a Corps of Engineers permit.

Sept. 23, 1982 - We issued a permit to the Navy. This permit was issued without a Public review period due to the nature of the dredging (essentially maintenance), the fact that the disposal site was an upland area that had previously received dredged material.

Oct. 9, 1982 - Members of my Planning Division attended a meeting of the Town Planning Board in response to Mr. Rowe's letter of September 13. The discussion pertained to the proposed improvement of the Federal channel. The longstanding local displeasure with the actions of Fuel Storage Corp. over the past 15-20 years were outlined. It was apparent that strong personal animosities exist between the owner of the disposal site and a number of his neighbors. Some specific problems such as odor, height of stockpile and drainage problems associated with placing 500,000 cubic yards of material from the improvement project were discussed. Our representatives came back from the meeting with the impression that they would have to reevaluate their plans in regard to the improvement project but that there was no problem with the work at Simplex.

Oct. 12, 1982 - The Navy receive their permit from the New Hampshire Wetlands Board.

Oct. 29, 1982 - I wrote to the Board of Selectmen and the Planning Board as a followup to the 9 October meeting to determine if the Planning Board's position was the Town's position in regard to the Improvement Project.

Nov. 22, 1982 - We put out an Invitation for Bids on this work.

Dec. 15, 1982 - In reaction to the 29 October correspondence, the Planning Board held a special town meeting and had a vote on a referendum question which read "Are you in favor of stockpiling dredged material on land of Fuel Storage Corporation?". Results: 79 opposed, 2 in favor.

Dec. 22, 1982 - Bid opening on subject work.

Jan. 12, 1983 - Contract award for $660,800. GOV'T ESTIMATE - $1,125,600.

Jan. 27, 1983 - My staff was contacted by Mr. Rowe of the Planning Board who stated his objection to the disposal plan for the Simplex job and threatened to take legal action to stop this project.

Feb. 3, 1983 - Meeting with Board of Selectmen and Planning Board at which a February 3, 1983 letter was presented and discussed. Although it was emphasized that other alternatives are being explored for improvement work and future maintenance, the fact that Simplex material would be placed on Fuel Storage property was unacceptable to Mr. Rowe. He indicated that town ordinance and the town vote were an adequate basis for prohibiting the disposal operations and that he would initiate legal actions. This opinion is not shared by the Board of Selectmen, and was not confirmed by the Town Counsel who was present. He also indicated that he would initiate congressional contact.

STATE OF NEW HAMPSHIRE
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
JOHN O. MORTON BUILDING
CONCORD, N.H. 03301

JOHN A. CLEMENTS, P.E.
COMMISSIONER

February 3, 1983.

Selectman Paul L. deRochemont
C/O Town Office
Newington, New Hampshire

Dear Paul:

Re: Piscataqua River Dredging Project
Corps of Engineers

This letter will advise of recent discussions held with Governor Sununu in regards to the proposed Corps of Engineers Piscutaqua River Dredging Project.

The Governor had authorized my advising the Newington Board of Selectmen of his strong support of legislation which would provide for future disposal of dredged material in the immediate area of the New Hampshire State Port Authority in order to provide additional hardstand area.

In 1980 this Department administered a consulting engineering agreement for the Port Authority which was a site evaluation and design study for filling the 10 acre tidal mud flat area bounded by the Cutts Avenue Relocation, the Market Street Connector and the Boston and Maine Railroad embankment in Portsmouth.

Conceptual approval of this proposal was obtained from the NH Dredge and Fill Board (now the Wetlands Board) at that time.

I have further been requested to approach the Corps of Engineers to determine their interest in this potential disposal site and to explore their level of participation in the engineering design work required to develop a containment structure and spoil placement plan.

We believe such a project provides the Port Authority with a much needed expanded capacity while solving the expensive and difficult problem faced by the Corps of disposing of larger quantities of dredged material.

I would be happy to review this subject with the Board at their convenience.

Very truly yours,

John A. Clements, P.E.

cc: Public Works Division

STATE OF NEW HAMPSHIRE
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
JOHN O. MORTON BUILDING
CONCORD, N.H. 03301

Public Works Division, Room #5
Hazen Drive, Box 483
Telephone 603-271-3516

JOHN A. CLEMENTS, P.E.
COMMISSIONER

February 15, 1983

Mr. Donald Martin
U. S. Army Corps of Engineers
New England Division
424 Trapelo Road
Waltham, MA 02154

Dear Mr. Martin:

Re: NH State Port Authority
Portsmouth Harbor Dredging
Portsmouth, New Hampshire

This will confirm a meeting scheduled for 10:00 A.M., February 24, 1983 at the John O. Morton Office Building, Hazen Drive, Concord, New Hampshire for the purpose of reviewing the referenced projects.

The NH State Port Authority have a major construction proposal now under consideration by the General Court under the 1983 Proposed Capital Improvement Program with a major Piscataqua River Dredging project now getting on line.

A general review of the possible complementary aspects of the 2 major projects seem advisable at this time.

The meeting will be held in the Public Works Conference Room.

Very truly yours,

Robert B Dowst

Robert B Dowst, P.E.
Assistant Chief Engineer-Public Works

RBD:d

cc: John A. Clements, P.E., Commissioner
Walter F. Mead, Assistant Commissioner

April 21, 1983

Conservation Commission
City Hall
126 Daniel Street
Portsmouth, N.H. 03801

Mr. Dennis Waskiewicz
Project Manager, Piscataqua Harbor Project
U.S. Army Corps of Engineers
New England Division
Waltham, Massachusetts 02154

Dear Mr. Waskiewicz:

The Portsmouth Conservation Commission would like to express our concerns regarding the possible dredging of the Portsmouth Harbor and Piscataqua River. After careful review of your Environmental Assessment for this project, we have identified three potential problem areas which should be addressed before any activity takes place.

First, the site for the disposal of the spoil was originally in Newington, N.H., however it has recently been learned the town has rejected that location. We are concerned as to the sites now being considered for receiving this material. One of the sites previously under consideration was a wetland area adjacent to the New Hampshire Port Authority. As stated in your Environmental Assessment, this wetland would not be a suitable site and should not be given any further consideration in looking for a new disposal site.

The second area of concern is related to the potential impacts from dredging to fish movement in the river. The U.S. Fish and Wildlife Service and the State of Maine have already expressed concerns regarding the timing of the dredging related to anadromous fish movement. It is our opinion that these potential effects could be mitigated by establishing a monitoring program in the river during migration periods, and halting dredging activity in time of peak activity. This alternative would permit an economically feasible dredging program and lessen environmental impacts.

Our final comment is in regard to the actual blasting activity. During previous blasting projects in Portsmouth Harbor, some Portsmouth residents have experienced damage to their homes due to the vibration of the explosion through the connecting ledge. Extreme care should be taken to control the amount of the charge to eliminate this type of potential damage.

We are hopeful that these comments will be helpful to you in the developing of your projects. If we can be of further help, please feel free to contact us.

Sincerely,

Clotilde M. Straus

Clotilde M. Straus, Chairman

United States Department of the Interior

FISH AND WILDLIFE SERVICE
ECOLOGICAL SERVICES
P.O. BOX 1518
CONCORD, NEW HAMPSHIRE 03301

AUG 8 1983

Colonel Carl B. Sciple
Division Engineer
New England Division
U.S. Army Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02254

Dear Colonel Sciple:

This letter is intended to supplement our September 20, 1982, report regarding the proposed navigation improvements in Portsmouth Harbor and the Piscataqua River, New Hampshire and Maine. It is submitted in accordance with the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).

We recently learned that the proposed disposal location for Piscataqua River dredge material has been changed from the New England Tank Farm upland site to the Boston Foul Area in Massachusetts Bay. Based on our understanding of the nature of the dredge materials, we cannot concur with your proposal to designate the Foul Area as the disposal site. The proposed dredge material consists of approximately 305,000 cubic yards of rock and 228,000 cubic yards of glacial till (mixed clays, sands and gravels). We have consistently recommended that the dredge material from this project be used for beneficial uses. The 305,000 cubic yards of rock material should be used for beneficial uses, such as creating reef habitat for fish and lobsters. Several alternate disposal sites for the ledge material have been previously identified off the New Hampshire coast. Additional disposal locations could be identified by expanding the study area to include Maine and Massachusetts waters.

The proposed 228,000 cubic yards of glacial till would serve no beneficial use as fish or invertebrate habitat that we are currently aware of in the project area. It could potentially be used for beach nourishment purposes along the Maine, New Hampshire or Massachusetts coast. The New England Division has had numerous beach erosion studies and requests for assistance along this section of coastline which would make these potential disposal locations easy to identify. The previously identified upland disposal location at the New England Tank Farm is an environmentally acceptable disposal area. Other upland sites in the Portsmouth area may also be environmentally acceptable.

Since the Corps has been provided Continuation of Planning and Engineering (CP&E) study funds for this project, we believe the dredge material disposal issue should be restudied in FY-84 and subsequent years, if necessary, until the issue is resolved in a satisfactory manner.

Sincerely yours,

Gordon E. Beckett

Gordon E. Beckett
Supervisor
New England Field Office

SIMPLEX
WIRE AND CABLE COMPANY

a subsidiary of tyco laboratories, inc.

October 4, 1983

Colonel Carl B. Sciple
U.S. Army Corps of Engineers
New England Division
424 Trapello Road
Waltham, Massachusetts 02154

Ref: Piscataqua River Project

Dear Colonel Sciple:

We heartily support this proposed project.

Since we are both exporters and importers, any river improvements which would eventually have a cost benefit are of considerable interest to us both currently and in the future. Certainly, one of the end benefits of this project will be economic.

The ability to bring larger ships into the Piscataqua will undoubtedly be beneficial to us as well as to the entire area.

Pat Genestreti
Purchasing Manager

PG/sls

P.O. Box 479, Portsmouth, New Hampshire 03801-0479 603-436-6100

A SPRAGUE ENERGY COMPANY
C. H. SPRAGUE & SON CO.
One Parade Mall, Portsmouth, N.H. 03801 Tel. (603) 431-1000

ANDREW W. CHRISTO
VICE PRESIDENT
TRANSPORTATION AND SUPPLY

October 27, 1983

Colonel Carl B. Sciple
U.S. Army Corps of Engineers
New England Division
424 Trapello Road
Waltham, MA 02154

Dear Colonel Sciple:

C. H. Sprague & Son Company, the oldest and largest independent supplier of petroleum products in New England, owns and operates seven deep water terminals, two of which are located in Portsmouth and Newington, New Hampshire on the Piscataqua River.

In recent years, in an effort to combat increasing freight costs, the petroleum industry has retired many of the older medium range (i.e. 35,000 DWT) tankers and constructed vessels of larger tonnage.

Because New England is located at the end of the energy "pipe line," the cost of transportation plays a key role in the vitality of the region's economy.

Sprague enthusiastically supports and endorses the proposed project to upgrade the Piscataqua River to safely accommodate larger vessels. The ability of Sprague to utilize vessels in the 55,000 to 60,000 DWT class could result in an annual transportation savings of up to 1.1 million dollars.

Very truly yours,

C. H. SPRAGUE & SON COMPANY

A. W. Christo, Vice President
Transportation & Supply

Wesley E. Hallowell, Vice President
Operations

AWC:la

FUELS AND RAW MATERIALS FOR INDUSTRY SINCE EIGHTEEN-SEVENTY

PORTSMOUTH PILOTS
P.O. Box 72
Portsmouth, N. H. 03801

Tel. 436-1209
436-1097
436-7317

October 27, 1983

Colonel Carl Sciple
Division Engineer
New England Division
Corps of Engineers
424 Trapelo Road
Waltham, MA 02254

ATTN: Impact Analysis Branch

Dear Colonel:

I wish to address my comments to the need for area 1, Piscataqua River Improvement Project.

First of all, I must say that for about the last 7 years during my involvement in this project, the Corps of Engineers has been receptive, interested, courteous, patient and made competent, professional people available to our Committee at all times. We owe you many thanks no matter what the final decision is on our project.

I have been piloting the Piscataqua River since 1961. Business then was meager, but a few optimistic people had built a few tank farms and new piers. The federal channel, as we know it now, came in about 1966 and many companies began to increase business in Portsmouth and Newington. We could now safely handle 25,000 to 30,000 dead weight ships with a draft of 36 feet. Our port has steadily grown, the channel now services 8 piers (35 ft. or over) being used by some 18 different companies. The investments in this port are gratifying showing confidence in labor, services, and an ability to safely move their ships. We are at a very critical point now in port life. The economics of the maritime world have dictated that vessel sizes and carrying capacity have grown. With time, the 25,000 DWT to 30,000 DWT tankers are being replaced with the 40,000 DWT and 50,000 DWT. We now handle these ships, the largest being 707 feet long, 107 foot beam. The limit now seems to be the vertical height of the bridges. Our channel must be able to accommodate these vessels or our users will go somewhere else. Now we come to the present problems, the most glaring one is "area 1". The transit of Memorial Bridge, Badgers Island Point, and Interstate Bridge is without question the most difficult area. Currently there is about a 600 foot wide area of safe water between the bridges. I will list reasons for cutting off Badgers Island Point and widening the area adjacent to 1,000 feet.

1. Ships over 600 feet can't be turned in between the bridges. If there is a bridge failure or the ship has a mechanical problem, we may hit the bridge or be aground on both ends across the channel. Presently, we require bridges to open well ahead to make sure they have no problem (sometimes 15 to 20 minutes durations). Fully loaded ships must come with the current, with a right turn at Badgers Island Point and if you had to back the ships engines, the tugs cannot prevent the ship from turning around. With an area 1,000 feet across, turning for any reason could be safely done.

2. By cutting off Badgers Island Point and making a 1,000 foot basin, I believe the current direction would change to allow a better approach angle with the Interstate Bridge when coming in loaded, not requiring vessels sterns to be near the New Hampshire side of the channel. Outbound ships, usually light draft, when coming through Interstate Bridge with Easterly wind could now hold toward the Maine side and take advantage of the extra room and allow the ship to go slower. With a cross wind and narrow area, you sometimes must go faster than you want to stop sideways drift. Coming out through the Interstate Bridge the ship has to release the tugs due to a width restriction. With ships at the State Pier, or Granite State Minerals Pier, and a cross wind, East or West, one could be much more flexible with speed if there was more room.

3. Vessels of light draft or part load can come in against current. The removal of Badgers Island Point and widening area 1 would allow an earlier alignment with the opening and a better approach angle.

4. Area 1 does not allow vessel passing as we can in most areas of the channel. This causes delays occasionally. With the improvements, some vessels could pass safely. This is very important as our volume increases to allow certain vessels to go out when another comes in, as we have only four periods of proper current a day for larger vessel movement.

5. We have a Federally used channel. That is, the U. S. Air Force brings in fuel for Pease Air Force Base and Simplex loads Navy Cable Ships. It is conceivable that an accident in this area could prohibit all vessel transits. It is also possible to have a bridge accident, particulary the Interstate. This could do two things, stop all marine traffic if the bridge were out of commission and stop rail service to the Portsmouth Naval Shipyard.

6. We now have great difficulty and have time loses for ships at the New Hampshire State Pier and Granite State Minerals while trying to turn their ships around in the existing area between the bridges. More volume and larger ships are in the picture for these berths if we can turn them around. It is not feasible to go above or below the bridges to do this.

Every year there are fewer ships in the world of the size to call at our Port. We must improve our channel to operate safely and competitively. Despite poor world economic conditions, the diversity of this port and continued expansion of pier use has allowed us a constant growth of business. The existing terminals could deepen their draft alongside to 39 feet without deepening the channel we have now. Future maintenance, if we get the improvements, should not be any different than now, which is very little. I look to much more expansion of this port and increased channel use. We certainly have exceeded any forecasts from Federal and State levels. The improvements requested are not a whim and were needed many years ago - it would be a project worth every penny. Even though our government is giving every request for funds heavy scrutiny, I trust our needs are just as genuine and worthy now as they were seven years ago at the inception of our requests.

Respectfully,

Richard C. Holt

Capt. Richard C. Holt

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02254

REPLY TO
ATTENTION OF

October 28, 1983

Planning Division
Impact Analysis Branch

Dear Interested Parties:

The enclosed Addendum supplements information presented in the April 1983 Feasibility Report on Improvements to the Existing Federal Navigation Project in Portsmouth Harbor and Piscataqua River, New Hampshire and Maine.

The April 4, 1983 Public Notice which accompanied the release of the Feasibility Report indicated that a disposal site for material to be removed had not been identified. Further investigation has determined that disposal at the New Hampshire Port Authority is the plan which maximizes National Economic Development (NED). This alternative is the NED plan and it is the recommended plan.

The enclosed Addendum addresses the impacts of the recommended plan. Comments on New England Division's recommended plan for improving Portsmouth Harbor should be sent within 30 days of the date of this letter to:

Division Engineer
New England Division
Corps of Engineers
424 Trapelo Road
Waltham, MA 02254
ATTN: Impact Analysis Branch

Sincerely,

Carl B. Sciple
Colonel, Corps of Engineers
Division Engineer

Enclosure

GRANITE STATE MINERALS *Inc.*

GSM

227 MARKET STREET
PORTSMOUTH, NEW HAMPSHIRE
TELEPHONE 436-8505

October 31, 1983

Colonel Carl B. Sciple
Department of the Army
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, MA 02254

Dear Sir:

I'm taking this opportunity to support the proposed improvements in Portsmouth's Piscataqua River. We feel these improvements will be a benefit to the Port of Portsmouth as well as to Granite State Minerals.

With the anticipated harbor improvements, large vessels will be afforded the opportunity to come to our dock starboard side to, whereas in the past, vessels drawing 38 feet have been required to moor port side to and have required off loading to achieve a shallower draft so that pilots may safely turn the vessel. With the proposed improvements, larger vessels will navigate the Piscataqua River with increased safety.

Thank you for your attention to this matter.

Sincerely,

David F. Mahoney

David F. Mahoney

Dorchester Sea-3 Products, Inc.

Subsidiary of Dorchester Gas Corp.

November 3, 1983

Colonel Carl Sciple
U.S. Army Corps of Engineers
New England Division
424 Trapello Rd.
Waltham, MA 02154

Dear Colonel Sciple:

In conjunction with the proposed Piscataqua River project in Portsmouth, New Hampshire, we have been asked to provide specific information regarding the operations of LPG ships serving our terminal located on the river in Newington.

Before describing our company's shipping operation, I think it appropriate to describe our supply contracting parameters. When we contract for a ship to call at our terminal, we are very particular about the matter of "safe berth" and "safe port". From a nautical point of view, a berth is considered "safe" if a ship can reach it safely and during her stay at the dock, she can always lie safely afloat.

Dorchester Sea-3 Products, Inc. provides a safe berth from the ship channel to the dock and then at the dock serving it's terminal for ships in the major marketing classes up to 59,000 CBM capacity.

Reaching our terminal safely is quite another matter and because of obstructions in the lower river at Goat Island, we cannot offer safe passage to our terminal for many of the larger market ships serving our industry. When we transmit our agreement (from the Pilots and the U.S.C.G. to our shipping operators) to accept the remainder of the larger market ships, we all are concerned with the narrow margin of safety the pilots and ship's masters have to navigate the difficult turns. We are also concerned when the ships pass through the first bridge and may be unable to get through the second bridge. There is no space to turn and reverse their course in such event before current conditions would create a severe risk for the ship. Because of all these factors, we are currently limited in our acceptance of many of the larger market size ships since we cannot give them "safe berth" in the full meaning.

Perhaps some information about our business will explain how one of the many river oriented businesses rely on safe river passage. We

Marketing & Administration
144 Washington Street
Portsmouth, N.H. 03801
Telephone 603-436-6225

Telex: 953103

LPG Terminal
Avery Road
Newington, N.H. 03801
Telephone 603-431-5990

operate a very large (19,000,000 gallon) cryogenic propane storage and distribution terminal which serves New England industries, utilities, consumers and domestic distributors with truck or rail deliveries. Under certain world market conditions and only during the off-peak...non-winter season, we also export propane by ship. Ships capable of carrying cryogenic propane are specially designed for these operations and range in sizes from 30,000 CBM to 59,000 CBM. Availability of ships and specific volume cargoes in the open world market place determine the size of ships handled by our storage facilities. These ships generally have four separate tanks and frequently have to call at several storage facilities in different ports to complete loading or unloading. If our terminal is the first port, obviously we need to provide full, normal working draft and maneuverability to give "safe berth". If we are a second port of discharge, the ship will come in partial ballast and can adjust it's draft accordingly. Arrangements to acquire propane for our customers by our suppliers generally include a combination of the right size ship, at the right price and time, with the lowest combination of product and shipping costs. Frequently the origins are half way around the world in the Arabian Gulf and usually the ships in this service are the largest market size ships our terminal can handle. Because of the present river obstructions and restrictions, we cannot give many of them "safe berth".

It is not a given that improved conditions for positioning ships, as at Goat Island, or turning ships in an emergency, as between the Memorial lift Bridge and the Interstate lift Bridge, or the fully designed depth as at Simplex, will necessarily mean we will always bring in the largest ships or the largest cargoes on those ships but it is a fact that without adequate maneuverability, safety or draft, our options....and I presume those of many other businesses along the river...for optomizing ships and supply market opportunities are severely limited, frequently to the more expensive option. These expenses are either reflected in the New Engalnd pricing or may prohibit our acceptance of such supplies suitable to meet the New England market prices.

In summary, it is our belief that the "Portsmouth Harbor-Piscataqua River, NH & ME Project" to improve the river conditions and provide "safe berth" and "safe port" to any and all ships otherwise capable of transitting the river should be commenced and completed at the earliest practical date to keep Portsmouth in the marketplace.

Very truly yours,

Lawrence Heffron

LH:lrk

Gold Bond Building Products

A National Gypsum Division

November 8, 1983

Colonel Carl B. Sciple
U.S. Army Corps of Engineers
New England Division
424 Trapello Road
Waltham, MA 02154

Dear Colonel Sciple:

Our company has been actively following the proposal to widen and generally improve the Piscataqua River channel, and we strongly urge its adoption. We annually import over 175000 tons of crude gypsum rock at our Portsmouth, N.H. facility on our own self unloading bulk carriers and are encouraged by the prospects of a safer channel.

Coincidentally, we are at present considering the construction of a larger, 40,000 dwt self unloading vessel for use at our East Coast seaboard plants but have had some reservations about the navigation abilities of such a vessel in the Piscataqua River prior to learning of the channel project.

I can assure your office, that if this proposal is implemented our Portsmouth plant will realize a cost saving on transportation expenses resulting from the importation by this larger vessel.

Please place Gold Bond Building Products on the list of those companies in favor of the proposal. Feel free to contact this office for further information.

Richard B. Mooshie

Richard B. Mooshie
General Distribution Manager

Executive Offices • 2001 Rexford Road • Charlotte, NC 28211 • 704 365-0950

Northeast Petroleum
Charter

Northeast Petroleum Corporation
295 Eastern Avenue
Chelsea, Massachusetts 02150
Telephone 617-884-7570 Telex 94-9409

November 9, 1983

U.S. Army Corps of Engineers
424 Trapello Road
Waltham, MA 02254

Attn: Colonel Carl B. Sciple

Gentlemen:

Re: Portsmouth Harbor
Piscataqua River
Proposed Improvements Project

Please be advised that Northeast Petroleum Corporation strongly supports proposed improvements in the Portsmouth, NH location of area No. 1 dredging project.

We in the petroleum industry have witnessed the rapid replacement of small, "handy" size tankers to larger, more cost efficient vessels up to 50,000 DWT tons with 40 foot draft. In order to utilize these larger vessels to the maximum extent possible, every effort should be made to ensure that our port facilities are adequate and ready without delay.

Thank you very much for your attention to this important matter. If I can be of any assistance, please call.

Very truly yours,

Henry J. Armstrong
Manager of Distribution

HJA:jsb

NEW HAMPSHIRE DEPARTMENT of RESOURCES and ECONOMIC DEVELOPMENT

GEORGE GILMAN
COMMISSIONER

TELEPHONE 603 271-2411

November 14, 1983

Colonel Carl B. Sciple
U. S. Army Corps of Engineers
New England Division
424 Trapelo Road
Waltham, Massachusetts 02154

Dear Colonel Sciple:

My attention has again been called to efforts by the Corps of Engineers and users of the Portsmouth Harbor/Piscataqua River to finalize Federal funding for improvements to the Portsmouth Harbor Channel and turning basin areas.

Please note the unequivocal support for this effort by the State of New Hampshire, and particularly this Department which is responsible for stimulating business in the Port of Portsmouth and support of ocean commerce.

I would therefore like to note for the record the State's support of this project; and since we believe it is long overdue, we hope that it will be given priority by the Chief, U. S. Corps of Engineers and by the Congress.

If we can be of further assistance in this effort, please contact us.

Sincerely,

George Gilman
Commissioner

GG:c

P.O. BOX 856 . . . CONCORD, N.H. 03301

105 LOUDON ROAD

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02254

REPLY TO
ATTENTION OF

November 18, 1983

Planning Division
Impact Analysis Branch

Mr. Henry Warren, Commissioner
Maine Dept. of Environmental Protection
State House
Augusta, Maine 04333

Dear Mr. Warren:

This office has recently completed a navigation improvement study at Portsmouth Harbor - Piscataqua River, New Hampshire and Maine. Our studies have determined that the proposed navigation improvements are economically justified and environmentally acceptable.

The plan of the proposed improvement project consists of removal of ledge and unconsolidated materials in the vicinity of Henderson Point (Area 3) to provide a channel width of 550 feet and widening the existing turning basin directly opposite from the New Hampshire State Port Authority (Area 1) to 1,000 feet. As with Area 3 this will require the removal of ledge rock and ordinary material. The total estimated amount of sediment to be blasted and dredged to accomplish the intended navigation is 533,000 cubic yards. The proposed disposal area would be at Cutts Cove, within the New Hampshire Port Authority Property.

Enclosed for your review is a copy of the final Feasibility Report including the revised Environmental Assessment and Addendum and 404 Evaluation. Based on the report findings, our determination will be that of no significant impacts.

I have also enclosed an application for a Coastal Zone Consistency Determination for the proposed project. Please note that I have used the Draft Application form to submit these requests as the finalized versions have not yet been made available to us.

The enclosed information is to assist you to accomplish your issuance of the consistency determination. Should you have any questions, please feel free to call me at (617) 647-8220, or the Environmental Project Manager Mr. Gilbert Chase at (617) 647-8236.

Sincerely,

Carl B. Sciple
Colonel, Corps of Engineers
Division Engineer

Enclosures

cc: Mr. Chase, Mr. Belmer, Mr. Pronovost,
Mr. McLoughlin, Plng Div File, Reading File,
Executive Office

November 21, 1983

Mr. Chase/mm/236

Planning Division
Impact Analysis Branch

Mr. Richard Barringer
Director
State Planning Office
184 State Street
State House Station 38
Augusta, Maine 04330

Dear Mr. Barringer:

In accordance with Section 307 of the Coastal Zone Management Act of 1972, I have reviewed the eleven core laws of the State of Maine's Coastal Program as they pertain to our proposed navigation project at Portsmouth Harbor - Piscataqua River, New Hampshire and Maine. From this review, I have determined that this project is consistent with the intent and specifics of Maine's Coastal Program. I ask that you review this project and concur with my determinations.

I have attached a copy of the Final Feasibility Report, the Environmental Assessment and 404 Evaluation. Should you have any questions, please contact me at (617) 647-8220 or the environmental project manager, Mr. Gilbert Chase, at (617) 647-8236.

Sincerely,

Carl B. Sciple
Colonel, Corps of Engineers
Division Engineer

Attachment

cc: Mr. Chase
Mr. Bellmer
Mr. Pronovost
Mr. McLoughlin ✓
Executive Office
Plng Div File
Reading File

United States Department of the Interior

FISH AND WILDLIFE SERVICE
ECOLOGICAL SERVICES
P.O. BOX 1518
CONCORD, NEW HAMPSHIRE 03301

NOV 23 1983

Colonel Carl B. Sciple
Division Engineer
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02254

Dear Colonel Sciple:

This is in response to your October 28, 1983, letter requesting comments on the Addendum to the April 1983 Feasibility Report and Environmental Assessment for the Portsmouth Harbor and Piscataqua River Navigation Project, New Hampshire and Maine.

We have reviewed the Addendum, the April 1983 Feasibility Report, and other pertinent documents including our previous coordination letters and believe that the Portsmouth Harbor project constitutes a major federal action significantly affecting the human environment which, therefore, requires preparation of an EIS in accordance with the CEQ Regulations (40 CFR Part 1500).

The EIS triggering mechanisms include land use changes associated with the proposed disposal site (Section 1508.27(3)(6)), cumulative impacts related to continued filling of saltmarsh, intertidal mud flat and subtidal shallow water areas (1508.27(7)), the potential violation of environmental rules, regulations and guidelines (1508.27(10)), and need for full disclosure of the environmental consequences of the proposed action including a worst case scenario for vessel(s) carrying oil or other hazardous cargo into the port (1500.1). The dredging proposal represents a segmented approach to the development of navigation facilities in this narrow tortuous river (1502.4). According to our information the existing navigation system has been developed and maintained without the benefit of an EIS. We believe an EIS is required to insure that federal agencies and the public have the best possible information to make informed decisions regarding the need for the project, to determine if the project is properly sized and/or scoped, if restrictions on size of ships and/or types of cargoes are needed, and in general what current and future development or uses of the harbor are appropriate. The proposed harbor expansion plans appear to be contradictory to the recent findings of the New England River Basin Commission's Ports and Harbors Study. We also note that the Portsmouth Harbor Feasilibity Study is an action that normally requires the preparation of an EIS (1501.4(a)(1) and 33 CFR 230.6(b)).

In our opinion, the proposed disposal site is environmentally unacceptable. The Cutts Cove site consists of a sheltered embayment of approximately 10 acres in size. Natural resources include a fringe of saltmarsh, a broad expanse of intertidal mudflat that provides habitat for marine worms, shorebirds, waterfowl including black ducks, soft-shell clams, blue mussels and finfish such as winter flounder, Atlantic silverside, sticklebacks and killifish. We consider the Cutts Cove and adjacent area to be in Resource Category 2 in accordance with the Fish and Wildlife Service Mitigation Policy.

In our opinion, the provisions of Executive Orders 11988 and 11990 concerning the protection of floodplains and wetlands and the 404(b)(1) guidelines prohibit the Corps from using the Cutts Cove site as a disposal area because other practicable disposal sites are clearly available. In fact, all of the disposal sites (9) listed in the Addendum are economically viable although not necessarily environmentally acceptable. We believe several other environmentally acceptable disposal sites are available in the study area between Portland and Boston. In our August 8, 1983, letter we recommended that the New England Division utilize Continuation of Planning and Engineering (CP&E) funds to study the dredge material disposal issue until a mutually satisfactory disposal site and/or method is found. We believe the proposed Port Authority site violates the Water Resources Council's Principles and Guidelines for Water and Related Land Resource Implementation Studies since the selected plan is not consistent with Federal laws, regulations, guidelines, and Executive Orders for protecting the Nation's environment.

In summary, we believe your proposal to utilize a Finding of No Significant Impact for this project is inappropriate. We do not consider the proposed Port Authority site (Cutts Cove and adjacent area) to be environmentally acceptable; we strongly recommend against its use; and we consider the entire dredge material disposal matter to be an unresolved issue. We also believe it is premature for the Portsmouth Harbor project to be considered for authorization since considerable preauthorization planning remains to be completed concerning the various NEPA and dredge material disposal issues.

Sincerely yours,

Vernon B Lang

Gordon E. Beckett
Supervisor
New England Field Office

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION I

J. F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 022

November 29, 1983

Carl B. Sciple, Colonel
Corps of Engineers
Division Engineer
New England Division
424 Trapelo Road
Waltham, MA 02254

Attention: Impact Analysis Branch

Dear Colonel Sciple:

We have reviewed the supplemental information dated October 28, 1983, (Addendum to the April 1983 Feasibility Report) concerning the improvements to the existing federal navigation project in Portsmouth Harbor and Piscataqua River, New Hampshire and Maine.

We do not concur with your finding of no significant impact or your determination of 404(b)(1) compliance for the proposed disposal of dredge spoil at the New Hampshire Port Authority (NHPA) Cutts Cove site and adjacent area. The proposed action would result in the filling of 10 acres of mudflats in Cutts Cove including approximately 0.6 acre of fringe salt marsh. In addition, three acres of mudflats adjacent to Cutts Cove on the other side of the railroad tracks would also be filled, including a small area of saltmarsh. In conjuction with the proposed solid fill piers, the total effect of this proposal would result in the permanent loss of 15 acres of valuable intertidal and subtidal land with its associated fauna and flora. Once filled, the site would be used for possible erection of warehouses or general storage areas for vehicles and bulk cargo in addition to the new pier.

This proposal would cause a significant individual and cumulative degradation of waters of the United States, and therefore, it should not be permitted according to Section 230.10(c) of the 404(b)(1) Guidelines. Moreover, we are unaware of any consideration of alternatives sufficient to meet 404 requirements. The Addendum does little more than list various disposal options and select filling of the NHPA site based primarily on economic factors with an apparent lack of regard for adverse environmental impacts. In fact, Section 230.10(a) of the 404 Guidelines requires that the least environmentally damaging, practicable alternative be employed; this is not necessarily the cheapest or most economically beneficial alternative although cost considerations are an element of determining practicability. In this case, there are several alternatives to the proposed plan which appear practicable and are clearly less environmentally damaging.

Because of these concerns, we recommend you use one of the designated ocean disposal sites for the disposal of the dredged material from the improvement project, continue to pursue designation of the Isle of Shoals site, or use the New England Tank Industries (Fuel Storage Corp.) upland disposal site. The use of the Fuel Storage Corp. site has some of the same net benefits as the NHPA project proposal, without any of the significant adverse effects on the mudflats or saltmarsh. These net benefits accrue through the re-use of the material as building aggregate. Rock material should be disposed at the Gunboat shoals or the Rye Ledge areas to provide additional shelter for lobsters.

In summary, we will object to the issuance of a section 404 permit for the proposed filling by the NHPA based on non-compliance with 404(b)(1) Guidelines. Accordingly, we urge you to adopt one of the less environmentally damaging alternatives that are available. Should our objections not be resolved before or during the permit stage, EPA would seek compliance with the Guidelines through the 404(q) elevation process and/or its 404(c) procedures.

We are willing to provide more comprehensive review comments about this proposal upon request. Should you desire additional information or if you have any questions, please contact Edward Reiner of my staff at FTS 223-5470.

Sincerely yours,

for David A. Fierra, Acting Director
Water Management Division

cc: USF&WS, Concord NH
NMFS, Gloucester MA
MEDEP, Attn: Teco Brown

November 29, 1983

Planning Division
Impact Analysis Branch

Mr. Peter Piattoni
Office of State Planning
CZM Management Program
2½ Beacon Street
Concord, New Hampshire 03301

Dear Mr. Piattoni:

This office has recently completed a navigation improvement study at Portsmouth, New Hampshire. Our studies have determined that the proposed improvements would be economically justified and environmentally acceptable.

The plan of improvement consists of removal of ledge rock and sand and gravel from two locations in the Piscataqua channel. The locations being considered are the vicinity of Henderson Point (Area 3) to provide for a channel width of 550 feet; widening by 100 feet, the northern limit of the channel adjacent to Badgers Island; and, providing an emergency maneuvering area downstream of the Maine-New Hampshire Interstate Lift Bridge. The total estimated amount of material to be excavated is 533,000 cubic yards.

As you know in an action independent of the improvement project the State Port Authority is investigating the feasibility of expanding its facilities. The rock and gravel from the improvement would provide useful fill material for this project. Therefore, the proposed disposal area identified in our project report is the New Hampshire Port Authority. Disposal of the material at that location would be a state responsibility and an application for a Section 10 and Section 404 permit will be required.

Enclosed for your review is the Final Feasibility Report including the revised Environmental Assessment and Addendum and 404 Evaluation. Based on the report findings, our determination will be that of no significant impacts.

In accordance with Section 307 of the Coastal Zone Management Act of 1972, my staff has reviewed the core laws of the State of New Hampshire's Coastal Program as they pertain to our proposed navigation project. From this review, we have determined that this project is consistent with the intent and specifics of New Hampshire's Coastal Program. We ask that you concur with this determination.

The enclosed information is to assist you to accomplish your review of the Coastal Zone Consistency Determination. Should you have any questions, please contact me at (617) 647-8220 or the environmental project manager, Mr. Gilbert Chase, at (617) 647-8236.

Sincerely,

Carl B. Seiple
Colonel, Corps of Engineers
Division Engineer

Enclosure

cc: Mr. Chase
Mr. McLoughlin
Mr. Bellmer
Mr. Pronovost
Plng Div File
Reading File
Executive Office

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Northeast Region
Federal Building
14 Elm Street
Gloucester, MA 01930

November 30, 1983

Colonel Carl B. Sciple
Division Engineer
New England Division
Corps of Engineers
424 Trapelo Road
Waltham, MA 02254

Dear Colonel Sciple:

This is in reference to the October 1983 Addendum to the Feasibility Report and Environmental Assessment prepared for Portsmouth Harbor and the Piscataqua River. This Addendum was compiled to address the newly identified disposal site at the New Hampshire Port Authority (NHPA). The National Marine Fisheries Service's (NMFS) previous comments concerning this project were transmitted in our letter dated September 9, 1983.

Project plans entail the widening of the existing channel, necessitating the removal and disposal of approximately 0.53 million cubic yards of clean sand, gravel and rock. Past disposal options have included upland disposal and open water disposal at an approved site; although we have stated our preference for upland disposal and utilization of the material for construction purposes, we have offered no objection to either of these disposal options.

The proposed disposal plan entails filling approximately 16 acres of intertidal and subtidal aquatic habitat to create a pier facility and additional land for NHPA. The proposed fill sites consist of three distinct areas: (1) Cutts Cove -- a 13-acre tidal basin; (2) the Northern Extension -- a 3-acre intertidal area located between National Gypsum Company and the railroad spur; and (3) a subtidal area adjacent to the existing NHPA facility.

Cutts Cove is an almost entirely intertidal basin, consisting of extensive mud flats bordered landward by salt marsh vegetation. These mudflats are populated by the soft-shell clam, *Mya arenaria*, blue mussel, *Mytilus edulis*, and other benthic invertebrates, including worms, gastropods, and other bivalve molluscs. These animals are important members of the marine food web ultimately supporting fisheries. Our inspection of the Northern Extension revealed that it also consists of intertidal flats bordered by a fringe marsh.

Coastal embayments and shallow water habitats are well-recognized for their high primary and secondary productivity. Tidal flats are physically and biologically linked to other coastal marine systems. Many species of estuarine and coastal fishes migrate over tidal flats with the incoming tide to feed on organisms living in the sediments (Whitlatch, R.B. 1982. The Ecology of New England Tidal Flats: A Community Profile. Biological Services Program, FWS/OBS-81/01). Additionally, these shallow water habitats provide nursery grounds for many fish species. Functions of salt marsh vegetation of importance to fisheries include high productivity, detrital export, and provision of spawning and nursery habitat. Many commercially important fishery resources are dependent on salt marsh habitat for all or part of their life cycle. The proposed disposal plan would permanently eliminate approximately 16 acres of this habitat and could thereby reduce the biological productivity of the Piscataqua River estuary.

The NHPA will be required to obtain a Section 10/404 permit from the Corps of Engineers to place fill in wetlands. Based on the information provided thus far, NMFS would be opposed to issuance of this permit. To avoid unnecessarily delaying the regulatory process with such problems related to urban waterfront development projects, we believe that a comprehensive harbor management plan should be developed for the Portsmouth area. Such "special area management plans" have been developed elsewhere through the cooperation of local, state, and federal government agencies, along with private industry and conservation groups. Important parts of any such plan include recognition of the need for mitigation/compensation and definition of conservation areas. Development of such a plan would facilitate the regulatory process by providing potential applicants with a clearer understanding of what is required to obtain a permit for waterfront construction, while allowing the productivity of marine habitats to be maintained.

In summary, the NMFS is opposed to the filling of marine habitat for the disposal of dredged material where practicable alternatives (e.g., ocean disposal) exist. We believe that an alternative dredged material disposal plan that is less environmentally damaging could and should be selected for this project; we prefer upland or ocean disposal. In our opinion, the Environmental Assessment prepared for this project does not adequately describe all reasonable alternatives and the environmental impacts associated with dredged material disposal. Consequently, before proceeding with this project, NMFS recommends that an Environmental Impact Statement be prepared that adequately assesses the impacts of the proposed action and each reasonable alternative on the aquatic environment.

Sincerely,

Robert F. Temple

James E. Douglas, Jr.
Acting Regional Director

U.S. Department of Transportation
Office of the Secretary of Transportation

Regional Representative of the Secretary

Region III
434 Walnut Street
Philadelphia, PA 19106
215-597-9431

1 December 1983

Impact Analysis Branch
Division Engineer, New England Division
Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02254

Dear Sirs:

Your letter of 28 October regarding the addendum to the Final EIS for Portsmouth Harbor and the Piscataqua River was not forwarded to this office until 29 November. I have, this date, forwarded the addendum to the First Coast Guard District, Boston, as that office was the only regional Transportation administration to comment on the April Final EIS.

Due to the delay in forwarding the information, your 30 day comment period will not be met.

Sincerely,

George D. Bond, II
Lieutenant Commander
U.S. Coast Guard
Senior Staff Officer

SIMPLEX
WIRE AND CABLE COMPANY

a subsidiary of tyco laboratories, inc.

December 8, 1983

Colonel Carl B. Sciple, Division Engineer
New England Division
Corps of Engineers
424 Trapelo Road
Waltham, MA 02254

ATTENTION: Impact Analysis Branch

Dear Colonel Sciple:

RE: Portsmouth Harbor and Piscataqua River Channel Improvement Plan

Confirming discussion between Mr. J. McLoughlin, Impact Analysis Branch, and Mr. G. Fontaine, Simplex, we wish to express our interest in having Simplex property considered as a potential disposal site for dredged material resulting from the proposed Portsmouth Harbor and Piscataqua River Channel Improvement Plan.

Simplex Wire and Cable Company is a major supplier of underwater cable to the Department of Defense and to the owners of the world's principal telecommunication systems. Large cable ships routinely call at Simplex to load volume shipments of these cables. In the period between January 1, 1982 and November 30, 1983 25 vessel arrivals were logged at our pier with a total of 458 ship days alongside. Of this total, 387 ship days were associated with U.S. Navy projects. We believe an expansion of our present limited pier facility, if realized, will result in a direct benefit to the Federal Government in reducing ship delays and allowing more rapid turnaround.

Additional benefits would accrue to Simplex and, by implication, to the economy of the area from increased business opportunities.

P.O. Box 479, Portsmouth, New Hampshire 03801-0479 603-436-6100

SIMPLEX
WIRE AND CABLE COMPANY

While further investigation and economic analysis are necessary, the conceptual plan would require enlarging the existing loading facility by construction of a steel sheet pile pier to be filled with the dredged overburden. We estimate approximately 250,000 CY of fill could be accommodated. The proposed pier would enable secure berthing of 2 or possibly 3 of the largest present class of cable ship.

We will be pleased to discuss further any aspects of this project as you may wish.

Sincerely,

Herman H. Dow

Herman H. Dow
Project Engineer

HHD/jmh

cc: J. McLoughlin - Impact Analysis Branch

OFFICE OF STATE PLANNING
STATE OF NEW HAMPSHIRE
2½ BEACON STREET — CONCORD 03301
TELEPHONE 603-271-2155

December 19, 1983

Colonel Carl B. Sciple
Division Engineer, Department of the Army
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02254

Attention: Planning Division
Impact Analysis Branch

Dear Col. Sciple:

This will acknowledge receipt of your consistency statement for the dredging portion of the Portsmouth Harbor and Piscataqua River Navigation Improvement Project.

This office will review the information provided, in consultation with interested state, local, and regional agencies, prior to making a determination of concurrence that the proposal is consistent with the policies of the New Hampshire Coastal Program. The enclosed review procedures establishes the thirty day schedule for review of a direct federal activity. You can expect a response by 27 January 1984, unless a fifteen day extension is requested.

Based on the discussion, held in Boston on 15 November 1983, between Corps personnel and Office of State Planning staff, this review will be on the dredging portion of the project only. Review of the proposed disposal site will take place when the New Hampshire Port Authority submits its formal application for a Corps permit or at such time as an alternative site is selected for disposal of the dredged material.

Please do not hesitate to contact me if you have any questions.

Sincerely,

Peter F. Piattoni

Peter F. Piattoni
Federal Consistency Coordinator

MOK/dre

Enclosure

FEDERAL CONSISTENCY REVIEW PROCEDURE

		DATE
1.	Acknowledge determination request	12/15/83
2.	Initiate thirty-day review period	12/19/83
3.	Review period closes*	1/19/84
4.	Anticipated notification to agency	1/30/84

*Fifteen-day extension may be granted upon request

DEPARTMENT OF THE NAVY
PORTSMOUTH NAVAL SHIPYARD
PORTSMOUTH, N.H. 03801

IN REPLY REFER TO
400:DJB:rjp
11010
Ser 400/444
23 DEC 1983

From: Commander, Portsmouth Naval Shipyard
To: Commanding Officer, Army Corps of Engineers, New England Division

Subj: Feasibility Report on Improvements to the Portsmouth Harbor and Piscataqua River

1. This letter is to confirm the telephone conversation between Captain D. J. Briselden, Public Works Officer of the Portsmouth Naval Shipyard and Mr. James McLoughlin on 20 December 1983. The Portsmouth Naval Shipyard is serviced by the Boston and Maine Railroad by a middle bridge crossing the Piscataqua River. The continued reliable and safe operation of that bridge is of vital interest to the Portsmouth Naval Shipyard. To the extent that the dredging project will improve the safety of the bridge operation, it is of interest and concern to the Portsmouth Naval Shipyard.

D. J. BRISELDEN
By direction

Planning Division
Impact Analysis Branch

Mr. Robert Temple
Acting Regional Director
National Marine Fisheries Service
Northeast Region, Federal Bldg.
14 Elm Street
Gloucester, Massachusetts 01930

Dear Mr. Temple:

This is in reference to your letter of September 9, 1983 and recent meeting with Messrs. Bellmer and Pronovost, of my Impact Analysis Branch, concerning the possible effects of dredging the Piscataqua River, Maine-New Hampshire on the shortnose sturgeon (Acipenser brevitostrum). The following evaluation is based on continuing consultation under Section 7 of the Endangered Species Act with your staff, specifically a meeting on September 29 between Messrs. Gib Chase and Russ Bellmer of my staff and Messrs. Doug Beach and Chris Manzaris of your Environmental Assessment Section.

The shortnose sturgeon is New England's only federally listed endangered fish species. You have indicated in your letter to us that there exists only one record of this species in the Piscataqua River and it is not certain whether a viable population is present. Recognizing the lack of quantified data on abundance and habitat utilization within the river, information of the species life history from similar river environs was extrapolated to determine areas of suspected preferred habitat. The proposed project areas are located in the lower section of the estuary where sturgeon are not suspected to be frequently found. In review of the life history of this species, the preferred habitat if the species is present, would extend from the upper limits of the salt wedge on into Great Bay, although the project channel area would be utilized as a migratory corridor. Dadswell (1979) reports preferred foraging grounds in the upper Saint John estuary were the shallow (1-5m) highly eutrophic, inshore regions. Adults of the species were reported to overwinter in the lower reaches of the estuary. Potential preferred foraging areas in the Piscataqua River environs include the backbay area near Newcastle Island and Great Bay area beyond the Atlantic Terminal Corps and upper project limits. Overwinter sites if in fact such a sturgeon population exists, would be mainly restricted to that portion of the channel from Sullivan Point seaward.

Plng Div

Mr. Chase/mm/236

December 23, 1983

The dredging and blasting as proposed would be conducted on the extreme periphery of the channel and in areas thought not to be important for spawning or foraging of the species. The dredging and blasting would take place over approximately 16 months with blasting planned for the winter months. The spring spawning according to published literature would be expected to occur upstream in Great Bay proper or one of the tributaries where salinities are lowest. The salt wedge is highly pronounced in Areas 1 & 3 with salinities as high as 21 ppt and 28 ppt. Spawning and foraging for the species generally occurs in waters of substantially lower (3 ppt or less) salinities.

The proposed dredging would not involve a loss of potential food sources and the material would not be deposited in area considered preferred habitat. No long-term adverse impacts would result to any population which may exist. It is expected that the section(s) of river under consideration for improvement may if used at all is for limited periods by the species during their transit between prospective concentration areas upstream and downstream of the project sites. Inasmuch as the extent or range of the species in this estuary has not been specifically delineated, the significance of the proposed project impact upon the total habitat for the species cannot be quantified. Based on consultation with your staff, existing life history information, and location of proposed activities, there would be minimal impacts if any on riverine habitat.

Our determination, based on existing information and your staff's opinions, is that at this time dredging and blasting would have no adverse effect on the shortnose sturgeon in the Piscataqua River and there is no need for further formal consultation.

Your concurrence with our findings of no adverse effect on A. Brevitostrum is requested. If you have any additional questions, please contact Mr. Gib Chase at (617) 647-8236, or FTS 839-7236.

Sincerely,

Joseph L. Ignazio
Chief, Planning Division

cc: Mr. Chase
Mr. Bellmer
Mr. Pronovost
Plng Div File
Reading File

22 Dec 83

C/ENV RES SEC

C/IMP ANAL BR

C/PLNG DIV

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02254

REPLY TO
ATTENTION OF

NEDPL-C

29 DEC 1983

SUBJECT: Navigation Improvement, Portsmouth Harbor and Piscataqua River, New Hampshire and Maine

Rear Admiral Richard A. Bauman
Commander
First Coast Guard District
150 Causeway St.
Boston, MA 02144

1. The New England Division, Corps of Engineers has prepared a report recommending modifications to the existing Federal navigation project at Portsmouth Harbor, New Hampshire and Maine. The recommended plan includes widening the 35-foot deep channel, located between the vertical lift bridges near the western end of Badgers Island, from its current width of 600 feet to 1,000 feet; also widening by 100 feet, the northern limit of the channel adjacent to Badgers Island; and widening the southern limit of the channel at Goat Island from 400 feet to 550 feet. These improvements are being recommended in the interest of safety to the vessels that traverse the waterway.

2. The report is currently under review by the Board of Engineers for Rivers and Harbors (BERH) and during the Board's meeting on 1 December 1983, I was directed by the Board to consider structural modifications to the Maine-New Hampshire Interstate Bridge to further improve the safety to large vessels that use the waterway. Our studies have indicated that with channel widening, there will be an increase in the number of trips by the larger vessels that currently use the waterway. We are now investigating what effect increasing the bridge's lift span from 200 feet to 300 feet will have on shippers' business procedures. Therefore, we will quantify benefits to the bridge modification to determine economic justification.

3. Should our findings indicate that bridge modifications are engineeringly and economically feasible, our report would also recommend that cost allocation be based on the principles of the Truman-Hobbs Act.

29 DEC 1983

NEDPL-C
SUBJECT: Navigation Improvement, Portsmouth Harbor and Piscataqua River, New Hampshire and Maine

4. On 21 December 1983 I attended a meeting between members of our staffs and members of the Board staff to discuss the navigation improvements and the bridge modification. In attendance were Lt. Commander Anthony Regalbuto, Lt. Charles McMann and Mr. William Naulty. Also attending was Captain Richard Holt, representing the Portsmouth Pilots. During our meeting, the applicability of the Truman-Hobbs Act to the bridge modifications was discussed. I am aware of the restrictions in funding that have caused the Coast Guard to limit its use of the Truman-Hobbs Act; however, I would appreciate your opinion on the application of the Act to the modification of the bridge. Any comment you may have would be a welcome addition to our report for the BERH.

5. Should you have any questions on this matter, I would be pleased to discuss them with you or members of your staff. Please feel free to call me at 647-8220. My Project Engineer for this project is Mr. James McLoughlin, and he can be contacted at 647-8520.

CARL B. SCIPLE
Colonel, Corps of Engineers
Commanding

cf:
CDB (2)
Mr. Coleman - 117N
Exec. Ofc.
Plng. Div. Files
Reading Files

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Northeast Region
Federal Building
14 Elm Street
Gloucester, MA 01930

JAN 4 1984

Mr. Joseph L. Ignazio
Chief, Planning Division
New England Division
Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02254

Dear Mr. Ignazio:

This is in response to your December 23, 1983, letter requesting our concurrence with your determination that the proposed blasting, dredging and disposal of material from portions of the Piscataqua River navigation channel will have no effect on the endangered shortnose sturgeon (Acipenser brevirostrum). We have reviewed your letter and the materials sent to our office in earlier correspondence on this project.

As stated in your letter, no data exists on the existence of a viable population of shortnose sturgeon in the Piscataqua River. The existence of the species in the river is based on only one current record. No surveys have been planned to further describe the distribution and abundance of the species in this river prior to this project. Therefore, it was appropriate for your office to consider the species as an inhabitant of this river system in order to carry out your Section 7 consultation responsibilities under the Endangered Species Act of 1973, as amended (ESA). Extrapolation of life history behaviors and habitat preferences from other similar river systems where this information is known is recognzied as the only method of applying the best available information on this species to your impact assessment for this project. Your letter adequately accomplished this assessment for the purposes of this ESA Section 7 consultation.

We agree with your determination that the project area to be blasted and dredged, as well as the disposal area are likely to be used by shortnose sturgeon only as a migration route from downstream intertidal feeding/foraging or overwintering areas to similar areas upstream near or above Great Bay. Shortnose sturgeon, if present, are more likely to use these migration routes in early spring (late-April to early May) and again in late spring (early June) as individuals move to or from spawning or pre-spawning areas well upstream. The proposed schedule for blasting in the winter will avoid sturgeon migration periods. Larval and juvenile sturgeon are believed to prefer the less saline habitat above the project area and would not be expected to be affected by the blasting and dredging operations.

We concur with your assessment that the proposed blasting, dredging and disposal of dredged material in the lower Piscataqua River will have no adverse effect on the endangered shortnose sturgeon. We further concur that no further consultation under Section 7 of the ESA is necessary at this time. Should project plans change or new information become available that changes the basis for this determination, then consultation should be reinitiated.

Sincerely,

James E. Douglas, Jr.

James E. Douglas, Jr.
Acting Regional Director

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02254

Mr. Pronovost/WPC/552

REPLY TO
ATTENTION OF

Planning Division

Jan 11 /84

Mr. Robert Temple
Acting Regional Director
National Marine Fisheries Service
Northeast Region, Federal Bldg.
14 Elm Street
Gloucester, Massachusetts 01930

Dear Mr. Temple:

On December 1, 1983 the Feasibility Report on Improvements to the Existing Federal Navigation Project in Portsmouth Harbor and Piscataqua River, New Hampshire and Maine was reviewed by the Board of Engineers for Rivers and Harbors. The Board directed that the New England Division investigate the cost and feasibility of increasing the waterway opening by modification of the existing New Hampshire-Maine interstate bridge; and modify and recoordinate the findings of no significant impact (FONSI) with respect to dredged material disposal.

We have modified the FONSI and are enclosing it for your review and comment. Your expeditious review would be appreciated. If you require additional information, please contact me at (617) 647-8508 or Mr. Russell Bellmer, the Environmental Resource Section Chief at (617) 647-8142.

Thank you for your earliest attention to this matter.

Sincerely,

Joseph L. Ignazio
Chief, Planning Division

Enclosure

SEE ATTACHED LIST OF ADDITIONAL ADDRESSEES

cc: Mr. Pronovost
Exec. Ofc.
Reading
Plng. Div. Files

Mr. Robert Temple
Acting Regional Director
National Marine Fisheries Service
Northeast Region, Federal Bldg.
14 Elm Street
Gloucester, Massachusetts 01930

Mr. Gordon E. Beckett
U.S. Dept. of the Interior
Fish and Wildlife Services
Ecological Services
P.O. Box 1518
Concord, New Hampshire 03301

Mr. David A. Fierra, Acting Director
Dept. of the Interior
U.S. Environmental Protection Agency
Region I, JFK Federal Building
Boston, Massachusetts 02203

January 18, 1984

Planning Division
Impact Analysis Branch

Mr. Earle G. Shettleworth, Jr.
Director
Maine Historic Preservation Commission
55 Capitol Street
Augusta, Maine 04333

Dear Mr. Shettleworth:

You will find enclosed for your staff review a report entitled: "Remote Sensing Survey Report, Portsmouth Harbor..." which represents the result of a study performed by Michael Roberts, Warren Riess, and personnel of Ocean Surveys, Inc. to locate magnetic anomalies within areas of proposed improvement dredging which could reflect presence of sunken historic period vessels.

The study located 13 magnetic anomalies, 7 of which are recommended for further investigation by divers to determine presence or absence of historic period material in their vicinity. We are in agreement with these findings and plan to contract for this "groundtruthing" in Spring, 1984.

We would appreciate your timely comments on this report, for inclusion in our revised feasibility report, which is now being written.

Sincerely,

Joseph L. Ignazio
Chief, Planning Division

Enclosure

Copies Furnished:
Mr. Lloyd Chapman
Office of Cultural Programs
National Park Service
143 South 3rd Street
Philadelphia, PA 19106

Dr. Robert Bradley
Maine Historic Preservation Commission
55 Capitol Street
Augusta, ME 04333

SAME LETTER SENT TO:
Mr. George Gilman
Director, Div. of Parks & Recreation
Dept. of Resources & Economic Development
P.O. Box 856
Concord, NH 03301
ATTN: Dr. Gary Hume,
Historic Sites Section

cc: Mr. Wilson, Mr. Chase, Mr. McLoughlin(CDB)
Mr. Coleman(Coastal Engrg. Br.)Plng Div.
File, Reading File

January 18, 1984

Planning Division
Impact Analysis Branch

Mr. Robert Temple
Acting Regional Director
National Marine Fisheries Service
Northeast Region, Federal Bldg.
14 Elm Street
Gloucester, Massachusetts 01930

Dear Mr. Temple:

This is in reference to our letter of December 23, 1983 and your response of January 4, 1984 concerning the possible effects of dredging and blasting within portions of the Piscataqua River, Maine - New Hampshire on the shortnose sturgeon (Acipenser brevitostrum). Through an oversight our letter stated that the proposed schedule for blasting would be limited to the winter months. The blasting schedule has not been finally determined, however, we expect blasting could occur at any time within the estimated 16 month project time frame. We do not believe, however, that blasting would adversely impact on shortnose sturgeon in the river.

Our opinion is based on the following information which was discussed with your Mr. Douglas Beach and Mr. Russell Bellmer of my staff. As you note in your January 4, 1984 letter, shortnose sturgeon, if present, are more likely to use these migration routes in early spring (late-April to early May) and again in late spring (early June) as adult individuals move to or from spawning or pre-spawning areas well upstream. Larval and juvenile sturgeon are believed to prefer the less saline habitat above the project area and would not be expected to be affected by the blasting and dredging operations.

The proposed blasting would be limited to areas at the side of the Piscataqua River and not in the deepest part. The blasting would be a fracturing type with the concussion force directed into the rock. This would localize the water column impact area. The shortnose sturgeon anatomy with an open swim bladder would offer some protection from the concussion force. Researchers have retrieved individuals from fifty feet of water with no damage due to pressure changes on the swim bladder.

The proposed blasting areas, therefore, would be located where, if shortnose sturgeon were present, they would spend the least amount of time. The impact area is localized which further reduces the possibility of an individual being impacted. The anatomical make-up (open swim bladder) of the species reduces the potential for damage due to a concussion wave.

Our determination, based on existing information and your staff's opinions, is that at this time blasting would have no adverse effect on the shortnose sturgeon in the Piscataqua River and there is no need for further formal consultation.

Your concurrence with our findings of no adverse effect on A. Brevitostrum due to blasting is requested. If you have any additional questions, please contact Mr. Russell Bellmer at (617) 647-8142, or FTS 839-7142.

Sincerely,

Joseph L. Ignasio
Chief, Planning Division

cc: Mr. Chase
Mr. Bellmer
Mr. Pronovost
Mr. McLoughlin
Plng Div File
Reading File

MAINE HISTORIC PRESERVATION COMMISSION
55 Capitol Street
Augusta, Maine 04333

Earle G. Shettleworth, Jr.
Director

Telephone:
207-289-2133

January 20, 1984

Mr. Joseph L. Ignazio, Chief
Planning Division
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts

Dear Mr. Ignazio:

Thank you for your letter of the 18th with the report by Michael Roberts, Warren Riess and Ocean Surveys, Incorporated on the remote sensing survey of the Piscataqua River for historic shipwrecks which may lie within areas planned for improvement dredging.

I find this report to be comprehensive and complete, and I am in full agreement with you that on-site inspection of seven of the thirteen identified anomalies would be advisable.

Sincerely,

Earle G. Shettleworth, Jr.
State Historic Preservation Officer

cc: Dr. Robert L. Bradley
Maine Historic Preservation Commission

John Wilson
New England Division, Corps of Engineers

EGs/slm

OFFICE OF STATE PLANNING
STATE OF NEW HAMPSHIRE
2½ BEACON STREET — CONCORD 03301
TELEPHONE 603-271-2155

January 24, 1984

Paul E. Pronovost, Chief
Impact Analysis Branch
Corps of Engineers
New England Division
44 Trapelo Road
Waltham, Massachusetts 02254

Re: Portsmouth Harbor Improvement Project

Dear Mr. Pronovost:

Thank you for making the trip to Concord for the meeting on the 18th. Please convey my thanks to the other Corps of Engineers staff who came and participated in the discussion. The meeting provided a good opportunity for all of the agencies most directly involved in the federal consistency review process to discuss the project and their related concerns.

As agreed at the meeting, the Office of State Planning has prepared a brief summary of the major points raised relative to the dredging portion of the project.

State Agency Concerns

Three major areas of concern were raised from the state's perspective:

1. Fishery protection
2. Recreational and small commercial boating
3. Water quality considerations

1. The New Hampshire Fish and Game Department normally prefers that any dredging activity be conducted during the winter months to minimize the impact on various fisheries, including smelt, herring, coho salmon, striped bass, and commercial lobstering. Fish and Game is concerned that blasting would damage or kill large numbers of fish and, if conducted other than during winter months, could interfere with migration and with the lobster industry. Another fishery concern centered on the impact that silting would have on spawning that occurs in the area.

2. The Department of Resources and Economic Development (DRED) described the extensive use of the harbor and river during the summer months by recreational boaters, which adds to the already narrow and congested harbor. The river is difficult to navigate, especially for sailboats, even under normal circumstances, because of the tides, the swift current, and the lift bridges that frame the work site opposite Seavey Island. These problems could be severely compounded if the channel were to be closed for extended periods of time during the blasting. Safety considerations during the blasting itself was also presented as a concern.

3. The Water Supply and Pollution Control Commission (WSPCC) raised the question of the impact on water quality in the area during the dredging operation. Information was requested on the composition of the material to be removed.

Corps Response

Corps personnel described the construction methods under consideration, focusing particularly on the use of fracture blasting rather than the more commonly recognized crater blasting. This method would crack the bedrock in place prior to its removal by dredge. A safety zone would be established only for the relatively short period when the blasting actually occurs, not during the extensive time required to prepare the area and place the charges. The river would be patrolled during this time and warnings would be sounded.

Conclusions

Based on the description of the work methods and mitigation proposed and on the discussion that ensued, the concerns of Fish and Game and DRED appear to be alleviated. The Corps was strongly urged to make every effort to conduct the work on the Area adjacent to Seavey Island during the winter months. The river is narrow at that point and performing work there during the summer months would pose more of a problem both for recreational boating and commercial craft. In addition, there would be a chance of less mortality of migrating fish if blasting were conducted at the upper dredge site during the non-winter months because of the wider channel at that location.

The question of water quality degradation was not fully resolved. WSPCC will review the complete Feasibility Report to determine if the technical data provided is sufficient to answer their questions.

The Corps agreed to look into the possibility of conducting the Seavey Island area work during the winter months and will respond as soon as possible. The Corps also mentioned that a multi-Agency Observation Team will be organized to oversee the blasting activities. Representatives of state agencies will be welcome to serve on this group.

We look forward to receiving the Corps' comments and response on the issues discussed at this meeting, but more importantly, we anticipate a continued working relationship as this project progresses through the planning and engineering phases to execution of the project.

Sincerely,

James F. McLaughlin

James F. McLaughlin
Coastal Program Manager

JFMcL:am

United States Department of the Interior

FISH AND WILDLIFE SERVICE
ECOLOGICAL SERVICES
P.O. BOX 1518
CONCORD, NEW HAMPSHIRE 03301

Mr. Joseph L. Ignazio
Chief, Planning Division
New England Division
U.S. Army Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02254

FEB 1 1984

Dear Mr. Ignazio:

This is in response to your January 11, 1984 letter requesting that we review and comment on the revised Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for the Portsmouth Harbor and Piscataqua River Improvement Dredging Project.

We have reviewed the revised EA and FONSI and believe that the comments in our November 23, 1983 letter regarding your October, 1983 EA and FONSI remain appropriate. The significant issues addressed by our previous letter remain unresolved. These issues involve NEPA compliance and incomplete project planning with particular reference to dredge material disposal.

The Corps of Engineers (Feasibility Report, page 2) has been instrumental in the progressive development of the existing 35-foot deep Federal Channel in Portsmouth Harbor and Piscataqua River. These actions have resulted in the following situation as described in the Syllabus: The conditions in the channel also represent a safety hazard for ships using the harbor. With petroleum representing 90 percent of the marine commerce in the port, an accident involving a petroleum carrier could result in an oil spill with catastrophic environmental and economic consequences. These catastrophic environmental effects would presumably occur in Great Bay Estuary, the Piscataqua River and portions of the Atlantic Ocean. We believe, as your office apparently does, that the cumulative effects of these incremental Navigation Improvement Projects have had and will continue to have significant impacts on the human environment. The environmental suitability of Portsmouth Harbor as a predominately petroleum based port has not been demonstrated in NEPA on other planning processes that we are aware of.

As we indicated in our August 8, 1983 letter, the planning process for this project is incomplete because of the lack of a definite, environmentally satisfactory disposal site and methods for using the material in a beneficial manner. The currently proposed disposal site (Cutts Cove) is considered environmentally unsatisfactory by the Environmental Protection Agency, the National Marine Fisheries Service, and the Fish and Wildlife Service because of adverse impacts to intertidal and subtidal habitat. This site

is directly interrelated with the New Hampshire Port Authority expansion proposal and, therefore, needs to be addressed as part of that action (Section 1502.4 CEQ Regulations). According to the EA, the New England Tank Industries site was dropped as the proposed disposal site about one year ago because of significant social impacts. In August, 1983, the proposed disposal site was the Boston Foul Area. The EA elaborates on the lack of definite disposal plans by stating: Should permit approval not be granted for Port Authority expansion sites, NED would seek to dispose of the material at designated ocean disposal sites or in combination with several alternative disposal options. In our opinion, the Corps should utilize Continuation of Planning and Engineering (CP&E) funds and the EIS process to complete the survey or feasibility level planning for the Portsmouth Harbor Project prior to seeking Congressional Authorization. This would provide an adequate basis for informed decisions about the environmental suitability of the project, its component parts and their direct and indirect effects.

These comments should be considered as supplements to those in our November 23, 1981 letter. We continue to believe that an EIS and additional planning are appropriate and necessary for this project.

Sincerely yours,

Gordon E. Beckett

Gordon E. Beckett
Supervisor
New England Field Office

STATE OF MAINE
EXECUTIVE DEPARTMENT
STATE PLANNING OFFICE

JOSEPH E. BRENNAN
GOVERNOR

RICHARD E. BARRINGER
DIRECTOR

February 2, 1984

Colonel Carl B. Sciple
Division Engineer
New England Division
Corps of Engineers
424 Trapelo Road
Waltham, MA 02254

Dear Colonel Sciple,

This letter is to notify you of our concurrence with your determination that the proposed improvement dredging in the Piscataqua River is consistent with Maine's Coastal Program.

The Maine Board of Environmental Protection issued a Water Quality Certification and consistency concurrence with the Wetlands law for this project on January 11, 1984. A copy of the Board's order is enclosed with this letter.

With best wishes.

Sincerely,

Richard E. Barringer

REB:nv

enclosure

184 STATE STREET, STATE HOUSE STATION 38, AUGUSTA, MAINE 04333 TEL. (207) 289-3261 or 3154

DEPARTMENT OF ENVIRONMENTAL PROTECTION
STATE HOUSE STATION 17 AUGUSTA, MAINE 04333

BOARD ORDER

IN THE MATTER OF

U.S. ARMY CORPS OF ENGINEERS	)	Federal Consistency Review &
Kittery, Maine, York County	)	Concurrence
DREDGING, PISCATAQUA RIVER	)	And Water Quality Certificatio
#03-9164-31130	)	FINDINGS OF FACT AND ORDER

After reviewing the project file which includes an application for a consistency determination under 38 M.R.S.A., Sec. 471-478, Alteration of Coastal Wetlands Law and an application for a Water Quality Certification, under Title IV, Section 401 of the Federal Water Pollution Control Act, the staff summary and other related materials on file with regard to the above noted project, the Board finds the following facts:

1. The Maine Coastal Zone Management Program was approved on September 30, 1978 by the Federal Office of Coastal Zone Management. Under Sec. 307 of the Coastal Zone Management Act, as amended, federal activities which affect land or water resources in the coastal zone must be undertaken in a manner consistent, to the maximum extent practicable, with the requirements of Maine's approved Coastal Zone Management Program.

2. In a letter and application dated November 18, 1983, Colonel Carl B. Sciple of the New England Division Corps of Engineers has requested a consistency determination pursuant to Maine's Coastal Zone Plan for navigation improvements in two areas of the Piscataqua River in Kittery, Maine and Portsmouth, New Hampshire.

3. This project must also receive Water Quality Certification pursuant to Section 401 of the Federal Water Pollution Control Act prior to beginning work.

4. The proposed improvement project consists of removal of unconsolidated materials in the maneuvering area between the two vertical lift bridges. This area is shown as Area #1 on plan of Portsmouth Harbor & Piscataqua River by the New England Division, Corps of Engineers dated January 1982.

5. Dredging in Area #1 will result in widening the 35 foot deep navigation channel from 600 feet to 1000 feet.

6. A second portion of the proposed improvement project consists of removal of ledge and unconsolidated materials in the vicinity of Henderson Point on Seavey Island, Kittery, Maine and Goat Island, New Hampshire. This area is shown as Area #3 on plan of Portsmouth Harbor & Piscataqua River by the New England Division, Corps of Engineers dated January 1982.

7. Dredging in Area #3 will result in widening the southern limit of the 35 foot deep navigation channel from 400 feet to 550 feet.

8. Dredging in Areas #1 and #3 noted above, will result in the removal of 228,000 cubic yards of sand and gravel and 305,000 cubic yards of rock. Testing of the sand and gravel has shown these sediments to be uncontaminated.

9. Dredging will be done with a bucket or clamshell dredge. Rock removal will require drilling and blasting. The Corps proposes a continuous 16 month work period to complete the project.

10. Disposal of dredged material is to be at the New Hampshire State Port Authority site in Portsmouth, New Hampshire (Cutts Cove). Disposal at this site would result in the elimination of approximately 15 acres of intertidal and subtidal aquatic habitat. The Cutts Cove disposal site would involve the filling of 10 acres of mud flats including 0.6 acres of salt marsh.

11. The Piscataqua River supports the following fish species: striped bass, mackeral, flounder, Atlantic salmon, rainbow smelt, shad and alewives. Lobster and crab are numerous, especially in the harbor entrance and lower portions of the river.

12. The Corps of Engineers has in its Feasibility Report listed the expected impacts of blasting. Impacts range from damage to individual fish to large fish kills. While there are some precautionary measures such as warning charges and sceduling blasting to avoid peak periods of fish migration and spawning that can reduce fish and invertebrate mortality, the Corps has not specifically proposed any of these measures.

13. The Corps predicts that impacts on water quality from the dredging project will be short term. These water quality impacts include: increased turbidity; the temporary disturbance and release to the water column of nutrients; some heavy metals, some oil and grease; and the minor release of hydrogen sulfide odors. Temporary dissolved oxygen reduction could occur in the surrounding waters druing dredging due to suspension of organic detritus, fecal pellets and other natural organic compounds. The Corps expects these water quality impacts to be short term because of high current flow and good mixing in the project area.

14. Because the two areas to be dredged are located to the side of the main channel, the Corps does not expect that the water quality impacts would inhibit fish movement.

BASED on the above findings of fact, the Department concludes that the proposed activity will satisfy the requirements of Title 38, M.R.S.A., Section 474 and Section 401 of the Federal Water Pollution Control act for the issuance of an Alteration of Coastal Wetlands Permit and a Water Quality Certification, in that:

A. The project will not unreasonably interfere with existing recreational and navigation uses.

B. The project will not cause unreasonable soil erosion.

U.S. ARMY CORPS OF ENGINEERS
Kittery, Maine, York County
DREDGING, PISCATAQUA RIVER
#03-9164-31130

) Federal Consistency Review &
) Concurrence
) And Water Quality Certification
) FINDINGS OF FACT AND ORDER

C. The project will not unreasonably harm wildlife or freshwater, estuarine, or marine fisheries provided lobsters and finfish are removed from immediate areas of dredging and blasting and provided a blasting schedule which reduces blasting during anadromous fish runs is developed and implemented.

D. The project will not unreasonably interfere with the natural flow of any waters.

E. The project will not lower the quality of any waters, and will not violate applicable Water Quality Standards in that the affects as noted in Finding #13 noted above will be temporary.

THEREFORE, the Board APPROVES the application of the U.S. ARMY CORPS OF ENGINEERS for a Consistency Determination and Water Quality Certification to dredge 228,000 cubic yards of sand and gravel and 305,000 cubic yards of rock from areas noted as Area #1 and Area #3 on plan of Portsmouth Harbor & Piscataqua River by the New England Division, Corps of Engineers dated January 1982, subject to the following conditions:

1. The Standard Conditions of Approval, a copy attached.

2. The Corps of Engineers shall survey the areas in which dredging and blasting is to occur. This survey shall be done immediately prior to dredging or blasting. Should lobsters be found in a ratio of greater than one lobster per square meter, the lobsters shall be removed from the area prior to dredging or blasting.

3. Within 365 days of this Order or prior to dredging, the Corps of Engineers shall submit a plan indicating how blasting affects on finfish will be minimized. This plan shall as a minimum contain a schedule of blasting during anadromous fish runs. This plan shall also provide measures for moving finfish out of the immediate blast area. This plan must receive approval of the Commissioner prior to dredging.

DONE AND DATED AT AUGUSTA, MAINE, THIS 13TH DAY OF JANUARY, 1984.

BOARD OF ENVIRONMENTAL PROTECTION

BY: _____
HENRY E. WARREN, Chairman

PLEASE NOTE ATTACHED SHEET FOR APPEAL PROCEDURES....

Mr. Ignazio/cm/508

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02254

REPLY TO
ATTENTION OF

February 3, 1984

Planning Division
Executive Office

Rear Admiral Richard A. Bauman
Commander
First Coast Guard District
150 Causeway Street
Boston, Massachusetts 02144

Dear Admiral Bauman:

This letter is written as a follow-up to my December 29, 1983 letter to you on Portsmouth Harbor. It is an update of what we have accomplished in the past month regarding our analysis of the Portsmouth Project and data we are preparing for the forthcoming Board of Engineers for Rivers and Harbors Meeting scheduled for March 21, 1984 at which time the Portsmouth Harbor Improvement project will be discussed.

We have met and had telephone conversations with members of your staff with specific attention directed to the need for the modification of the Maine/New Hampshire Interstate Bridge. In discussion with your Mr. Naulty it was reported that the U.S. Coast Guard would canvass navigation interests and provide draft, width, and air requirements for modifying the bridge, if the Corps established that the bridge modification was feasible on an engineering and economic basis. Regarding engineering feasibility we have met with the New Hampshire Bridge Engineer and received tentative engineering concepts and estimates of how the existing bridge could be modified. We have also let a contract with a private consulting firm and expect final cost estimates of bridge modification by the end of February. Even though economic benefits upstream attributable to modifications of the bridge are minimum, it is apparent that there are excess economic benefits brought about by harbor improvements which if applied, could support the bridge modification.

Therefore, I request your help in canvassing shipping interests as to their attitude about the bridge modification and your determination of the proper width, draft, and air requirements. I would especially appreciate your response prior to my testimony before the Board of Engineers on March 21, 1984.

Sincerely,

Carl B. Sciple
Colonel, Corps of Engineers
Division Engineer

cc: Mr. Ignazio/Mr. Avtges
Mr. Smith/Mr. McLoughlin
Mr. Promevost/Mr. Rubin
Exec. Ofc.
Reading
Plng. Div. Files

OFFICE OF STATE PLANNING
STATE OF NEW HAMPSHIRE
2½ BEACON STREET — CONCORD 03301
TELEPHONE 603-271-2155

February 3, 1984

Colonel Carl B. Sciple
Division Engineer, Department of the Army
Corps of Engineers
New England Division
424 Trapelo Road
Waltham, Massachusetts 02254

ATTENTION: Planning Division
Impact Analysis Branch

Dear Colonel Sciple:

The federal consistency review for the dredging portion of the Portsmouth Harbor and Piscataqua River Navigation Improvement Project has been completed.

The New Hampshire Coastal Program (NHCP), in consultation with state, regional, and local agencies, concurs with your assessment that the proposal is consistent with the policies of the NHCP. The Wetlands Board, as part of its approval, recommended that work at the dredge site opposite Seavey Island be conducted during the period from December to March.

A meeting was held at the Office of State Planning on 18 January 1984 to review the project and provide an opportunity for state agencies with responsibilities in the harbor area to discuss their concerns with staff from the Corps. Three major state areas of concern were raised at the meeting and were summarized in a letter on 24 January 1984 to Paul E. Pronovost, Chief Impact Analysis Branch. A copy of this letter is enclosed for your files.

The first two concerns - fishery protection and recreational and small commercial boating - are reflected in the Wetlands Board recommendation on timing. It is our understanding that the Corps will submit a letter to this office stating that it is feasible to perform the blasting work at the Seavey Island site between December and March and that every effort will be made to accomplish the work during this time period.

The third area of concern - water quality considerations - has been reviewed by the Water Supply and Pollution Control Commission. I enclose, for your information, a copy of their statement of concurrence.

Review of this project has provided an opportunity to establish contact and communication between the New Hampshire Coastal Program and Corps of Engineers personnel. I appreciate the efforts of your staff and their willingness to provide requested information and attend meetings, here in New Hampshire, that have allowed detailed and valuable discussions of the proposal.

Sincerely,

Marcia O. Keller

Marcia O. Keller
Federal Consistency Coordinator

MOK/slj

Enclosures

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Northeast Region
Federal Building
14 Elm Street
Gloucester, MA 01930

February 6, 1984

Colonel Carl B. Sciple
Division Engineer
New England Division
Corps of Engineers
424 Trapelo Road
Waltham, MA 02254

Dear Colonel Sciple:

This is in reference to your letters of January 11 and 18, 1984 concerning the proposed improvements to the existing Federal Navigation Project in Portsmouth Harbor and Piscataqua River, New Hampshire and Maine. The National Marine Fisheries Service's (NMFS) previous comments concerning this project were transmitted in our letters dated September 9, 1983, November 30, 1983 and January 4, 1984.

In our letter of November 30 (copy enclosed), we expressed our concerns relative to the disposal of dredged material from this project. These concerns remain, as does NMFS opposition to the use of Cutts Cove and adjacent intertidal and/or subtidal habitat for dredged material disposal. We continue to support the selection of a disposal site that is more environmentally acceptable, namely upland or ocean disposal. We agree that the proposed dredging and blasting portions of this project will have little impact to the environment. However, until a suitable disposal site that does not involve the filling of aquatic habitat has been selected, we cannot concur with your finding of no significant impact to the environment resulting from this project.

We concur with your assessment that the proposed blasting, dredging and disposal of dredged material in the lower Piscataqua River will have no adverse affect on the endangered shortnose sturgeon (Acipenser brevirostrum). We further concur that no further consultation under Section 7 of the Endangered Species Act of 1973, as amended, is necessary at this time. Should project plans change or new information become available that changes the basis for this determination, then consultation should be reinitiated.

Sincerely,

Robert T. Temple

Robert T. Temple
Acting Regional Director

6-190

Enclosure

February 6, 1984

Planning Division
Coastal Development Branch

Mr. James F. McLaughlin
Office of State Planning
State of New Hampshire
2½ Beacon Street
Concord, New Hampshire 03301

Dear Mr. McLaughlin:

This is to confirm information presented to the New Hampshire Wetlands Board at its January 24, 1984 meeting in Concord, New Hampshire.

Board members expressed concern regarding the proposed channel widening in Area 3, opposite Seavey Island. Their concern was with the impact blasting and dredging could have on the fish population and recreational and small commercial boating activity. in this narrow area of the channel. The Board members requested we undertake construction of Area 3 during the months of December through March. Limiting construction to these months, they felt, would minimize impacts to the fish and recreational and small commercial boating in the area.

The material to be removed from Area 3 consists of 27,000 cubic yards of rock and 34,000 cubic yards of ordinary material. Based on the amount of material to be removed, it appears that work in Area 3 could be accomplished during the months of December through March without additional cost, barring any unforeseen complications.

At this time it appears possible that work in Area 3 could be accomplished during the months of December through March. Every effort will be made by us to arrange the construction schedule to limit construction in Area 3 to these months.

Sincerely,

Joseph L. Ignazio
Chief, Planning Division

Copy Furnished:
CDB (2)
Mr. Coleman - 117N
Reading File
Plng. Div. Files

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
J. F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203

FEB 10 1984

Joseph L. Ignazio, Chief
Planning Division
New England Division
U. S. Army Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02254

Dear Mr. Ignazio:

We have reviewed the modified Finding of No Significant Impact (FONSI) for the proposed improvements to the existing Federal navigation project in Portsmouth Harbor and Piscataqua River in New Hampshire and Maine. In our earlier comments, dated November 29, 1983, we objected to the proposed disposal of dredged material at the New Hampshire State Port Authority (NHSPA) Cutts Cove Site. This issue was also the subject of a meeting between our staffs on December 12, 1983.

While we believe the revised document is a major improvement over the previous version, we cannot concur with your finding of no significant impact. The FONSI is, in our view, premature since a disposal site is not clearly selected and at least one of the disposal alternatives would result in significant impacts. The FONSI identifies the New Hampshire State Port Authority plan as the alternative which maximizes net economic benefits. The FONSI states: "Use of this site(s) as part of our Federal navigation improvement plan is contingent upon the Port Authority's receipt of required permits and project schedule. This Federal navigation study and the NHSPA terminal expansion plan, however, are two independent actions. In the event that permit approval is not granted we would then seek to dispose of the material at (1) one of the designated interim approved ocean disposal sites (e.g., Foul Area) or (2) in combination of several alternatives."

As discussed during the December 12 meeting, we do not agree with your determination that that the projects are independent actions. Since there is a possibility that the dredged material from the improvement work may be used in the Port Authority project, we must consider the two projects related. To not do so could be viewed as "segmenting" the project and contrary to the CEQ requirement that impacts of related actions, federal and non-federal, be evaluated together. Furthermore, we do not believe the dredging and disposal aspects of the project can be treated separately under NEPA, since neither can occur without the other. One remedy would be to withdraw the FONSI until an overall assessment of the NHPA project is completed.

If the Corps dredging project is, in fact, separate from the NHSPA proposal, then the FONSI should select a disposal site from among the available options. We are unaware of any other cases where a FONSI was prepared for a dredging project but no disposal site specified. (However, we agree that this approach would be reasonable if all the potential disposal alternatives were shown to have minimal impacts.)

In our November 29, 1983, letter to Colonel Sciple, we stated that the NHSPA disposal alternative would cause significant individual and cumulative degradation of waters of the United States and should not be permitted according to Section 230.10(c) of the 404(b)(1) Guidelines. Although you identified the NHSPA disposal alternative as the National Economic Development Plan, it is not environmentally acceptable. Under Section 230.10(a) of the 404 Guidelines, the most economically beneficial alternative cannot be permitted if there are practicable, less environmentally damaging alternatives available. There are several alternatives to the proposed plan which are both practicable and less environmentally damaging, and we continue to oppose your proposed use of the NHSPA disposal alternative. I would like to reiterate, however, that we do not oppose the Piscatagua River and Portsmouth Harbor improvement work providing an acceptable disposal site is selected.

We recommend use of an ocean disposal site for the disposal of the dredged material from the improvement project. None of the areas discussed in the FONSI are formally designated by EPA for ocean disposal (Portland is the only one that has proceeded to the final environmental impact statement stage). Moreover, there are no longer any sites with "interim approved" status. However, the FONSI is incorrect in stating the EPA would have to designate the site should the Corps propose to dispose of the material at the Isle of Shoals site or any other area along the New Hampshire coast. Use of the Isle of Shoals site can be pursued by the Corps as long as it is selected in compliance with the Ocean Dumping Regulations which allow for the District Engineer, in consultation with EPA, to choose a site in accordance with §§228.5 and 228.6.

Thank you for the opportunity to comment on this revised FONSI. Should you wish to discuss these issues further or if you have any questions, please contact Edward Reiner of my staff at 223-3911.

Sincerely yours,

David A. Fierra

David A. Fierra, Director
Water Management Division

cc: NMFS, Gloucester, MA
USFWS, Concord, NH

U.S. Department of Transportation
United States Coast Guard

Commander
First Coast Guard District

150 Causeway Street
Boston, MA 02114
Staff Symbol: (obr)
Phone: 617-223-0645

16590
12 MAR 1984

From: Commander, First Coast Guard District
To : Commanding Officer, Corps of Engineers, New England Div.

Subj: NAVIGATION IMPROVEMENT, PORTSMOUTH HARBOR AND PISCATAQUA RIVER, NEW HAMPSHIRE AND MAINE

Ref : (a) Your ltr NED PL-C dtd 29 December 1983
(b) Your ltr dtd 3 February 1984

1. We have reviewed references (a) and (b) and have discussed the suggested modification of the lift span in the Maine - New Hampshire Interstate Bridge. In addition to the funding restrictions mentioned at the 21 December 1983 meeting, Coast Guard application of the Truman - Hobbs Act provisions requires that a bridge actually be an unreasonable obstruction to navigation. A determination that a bridge is obstructive would be based on a review of complaints from marine interests or on a history of accidents in which the alignment of the bridge or of the locations of its piers, etc., is found to be a major contributing factor. The movement of vessels through the Interstate Bridge has been accident free since pilots have been required for vessel passage. Consequently, in our opinion, the Interstate Bridge is not an unreasonable obstruction to navigation.

2. The planned navigation improvements in the Piscataqua River will benefit marine traffic, especially in the area between the vertical lift bridges. Vessels proceeding up river from the Memorial Bridge will be more easily aligned for passage through the Interstate Bridge. The loss of a tug from a vessel on a normal course through the Interstate Bridge would not be as critical as the loss of a tug is during present passages. Due to existing channel restrictions vessels cannot proceed through the bridge on a normal course and are at risk from tide action when a tug is dropped.

3. It is possible that a widened channel may result in an increase in the number of trips of the larger vessels which currently use the waterway. However, such an increase may be offset by a corresponding decrease in the number of smaller vessel passages. The net result actually could be a decrease in the volume of vessel traffic.

4. Our discussions with shipping interests in the area indicate that completion of the planned improvements to the navigation channel in the Piscataqua River should satisfy the reasonable needs of navigation. A reassessment of the span length may be necessary if future projections call for significantly larger vessels.

12 MAR 1984

5. Although Coast Guard guidelines do not permit Truman - Hobbs action, we may be able to provide other assistance in this matter. Please feel free to contact Mr. William J. Naulty, a member of my staff, at (603) 223-0645.

R. I. RYBACKI
Acting

STATE OF MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION - LETTER OF MARCH 23, 1982

1. Section 1 and Section 2 are reviewed independently in Washington, D. C. by the appropriate offices. Therefore, the Environmental Assessment must be independent of the Feasibility Report and must be complete within itself, as indicated in the Army Corps of Engineers Planning Guidance Notebook.

2. The statement that risks will increase is founded upon the assumption that waterborne commerce will increase in Portsmouth in the future, thus statistically creating more chances for accidents. Perhaps a better word would have been the probability of accidents would increase rather than the risk.

3. Larger vessel use is not being encouraged by the proposed dredging in Portsmouth Harbor. Vessels larger than 45,000 DWT will not be able to utilize the harbor even after the proposed project is completed, because of existing restrictions, such as restricted bridge clearances, hard bottom materials, and swift channel currents. To date, there have been no serious accidents in the harbor and no tankers have had oil spills while in transit. This is largely due to the extreme caution and expertise of the Portsmouth pilots. The U. S. Coast Guard is responsible for determining the size of vessels to utilize a navigation project and will restrict the size of the vessels in Portsmouth to that currently in use.

4. As is stated on page 42 of the Feasibility Report, the four-month dredging period from November to March is considered too restricted. Plan (2) described in the paragraph entitled "Construction Schedule", which proposes a sixteen-month consecutive schedule, continues to be the recommended plan.

5. a. The report does include a Table of Contents on pages iii-v.

b. The map entitled Figure 1 does not have proposed dredge areas indicated, as it is a location map showing existing conditions. Figure 5 has proposed dredge areas indicated because it accompanies the presentation and evaluation of detailed plans.

c. Typographical errors have been, to the best of our knowledge, corrected.

UNITED STATES DEPARTMENT OF THE INTERIOR - LETTER OF APRIL 19, 1982

1. By restricting dredging to the four-month period from November to March, the sixteen-month construction period would have to be carried out over four or more years, a time period which is unacceptably long. Furthermore, dredging during these months may be delayed due to hazardous weather conditions, resulting in higher operating costs.

2. Further consideration has been given to the use of the material for creation of juvenile lobster habitat. In a meeting with Maine fishermen in January 1983 those fishing interests stated disposal of the dredged material and rock off the Maine coast was neither needed nor desired. Further discussions with New Hampshire Fish and Game staff revealed that state law now allows commercial fishermen to fish within the previously designated two mile zone. As a result any habitat creation site would have to be located on existing rocky bottom so as not to interfere with commercial fishing activities. The enhancement opportunities by placing the material from the project on existing rocky areas therefore would be limited.

3. The Corps of Engineers does not have the authority to limit ship traffic. Also, the largest size ship able to use the channel at present (45,000 DWT) will remain the same even after the proposed project is completed. The U.S. Coast Guard is responsible for setting the ship size.

UNITED STATES ENVRIONMENTAL PROTECTION AGENCY - LETTER OF APRIL 30, 1982

1. We concur. No comment necessary.

2. We concur. No comment necessary.

3. The use of the fragmented rock to create lobster habitat was proposed by Corps biologists from the outset of this study and was the topic of several coordination meetings with state, Federal, and local interests. Meetings with state agencies and fishermen in Maine showed that the state has no interest in the use of such rock material. The state of New Hampshire suggested some offshore sites; they have since reconsidered. See response to Fish and Wildlife Service April 19, 1982 letter previous page.

4. The most economical and least damaging dredging schedule is the second alternative stated under "Construction Schedule", a continuous sixteen-month dredging operation which restricts blasting during sensitive periods .

5. The estimated project cost is based on the recommended plan and is based on a continuous sixteen-month dredging period.

6. Discussion and references about the effect of blasting have been added.

7. A map of the sampling sites used in the laboratory tests is shown on page 6-6 in Appendix 6, "Environmental Baseline Data".

8. Further sediment sampling and chemical analyses of the channel sediments is not necessary because of the coarse nature of the material. The three samples from Area 1 of the proposed channel improvements are sufficient to characterize the sediments.

NEW HAMPSHIRE DEPARTMENT OF RESOURCES AND ECONOMIC DEVELOPMENT - LETTER OF MAY 17, 1982

No response required. Thank you for your comments.

NEW HAMPSHIRE STATE PORT AUTHORITY - LETTER OF MAY 20, 1982

No comment necessary. Thank you for your review.

STATE OF NEW HAMPSHIRE DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS - LETTER OF MAY 21, 1982

No response necessary. Thank you for your consideration.

GREATER PORTSMOUTH CHAMBER OF COMMERCE - LETTER OF MAY 28, 1982

No reply necessary. Thank you for your consideration.

DEFENSE LOGISTICS AGENCY - LETTER OF JUNE 1, 1982

No response required. Thank you for your consideration.

STATE OF NEW HAMPSHIRE, OFFICE OF THE GOVERNOR - LETTER OF SEPTEMBER 2, 1982

No response required. Thank you for your support.

CONGRESSMAN, NEW HAMPSHIRE, FIRST DISTRICT - LETTER OF SEPTEMBER 7, 1982 AND SEPTEMBER 17, 1982

See letter from New England Division, Army Corps of Engineers in Appendix 7.

BARTON MACHINE, INC. - LETTER OF SEPTEMBER 7, 1982

1. We feel that the channel improvements at Area I will not have an adverse effect on direction and flow of current near your facilities.

NEW ENGLAND TANK INDUSTRIES OF NEW HAMPSHIRE, INC. - LETTER OF SEPTEMBER 9, 1982

1. We appreciate your concern for safety.

2. The Federal government is unable to pay for the transportation of the dredged material to your site. (Note: Since the receipt of this letter, the option of disposing of spoil at the New England Tank Industries Site was dropped. Consequently, the problem of transportation costs no longer exists.)

NEW HAMPSHIRE, OFFICE OF STATE PLANNING - LETTER OF SEPTEMBER 9, 1982

Thank you for your concern. We look forward to your review.

UNITED STATES COAST GUARD - LETTER OF SEPTEMBER 9, 1982

1. Thank you for your review.

2. We agree that Plan B does offer the safest navigation and maneuvering of all three plans. However, Plan B is not as economically efficient when evaluated against Plan A, as illustrated in the Feasibility Report.

BARTON MACHINE, INC. - LETTER OF SEPTEMBER 10, 1982

See reply to letter from Barton Machine, Inc. dated September 7, 1982.

TOWN OF NEWINGTON, NEW HAMPSHIRE - LETTER OF SEPTEMBER 13, 1982

Reference is made to letters from the New England Division dated October 29, 1982 and located in Appendix 6. A description of the meeting held on October 7, 1982 can be found in the chronology dated February 3, 1983.

PEASE AIR FORCE BASE, NEW HAMPSHIRE, LETTER OF SEPTEMBER 14, 1982

This proposed land disposal site has been dropped from further consideration. See letter of September 9, 1982 from New England Tank Industries and letters from town of Newington, NH.

CITY OF PORTSMOUTH, NEW HAMPSHIRE - LETTER OF SEPTEMBER 14, 1982

No response required.

MENDUM COVE ABUTTORS - LETTER OF SEPTEMBER 15, 1982

1. Thank you; we appreciate your comment.

2. The small boat access channel to which you refer is not, to our knowledge, a Federal channel. The area surrounding Mendum Cove is not under Federal management; therefore, the Corps of Engineers has no current authority for maintaining navigation improvements in these waters.

3. The dredged material consists of rock and coarse sand and gravel. Any turbidity caused by dredging and blasting will quickly settle; therefore, there is no reason to believe the siltation you experienced is a direct result of dredging. Morever, the strong tidal current of the Piscataqua River will flush out any sediments in Area 1. We are unable to dredge in Mendum Cove since it is outside authorized Federal channel limits. The dredging of recreational waters by the Corps of Engineers is handled under different Federal laws and would require a separate request by local government to consider the project.

STATE OF NEW HAMPSHIRE FISH AND GAME DEPARTMENT - LETTER OF SEPTEMBER 15, 1982

1. We concur.

2. We agree. The coarse nature of the sediments prevents long term turbidity which is harmful to organisms.

3. We understand concern with anadromous fish. Blasting would be scheduled whenever possible to avoid peak periods of migration. A joint or multiagency observation team will be established to quantify and report any significant impacts to fishery resources.

4. The New England Tank Industries Site has been dropped from further consideration.

5. The use of fractured rock for juvenile lobster habitat has been reconsidered. Information gathering meetings have been separately held with New Hampshire and Maine fishing interests. There was no local enthusiam for such habitat development in Maine waters. The New Hampshire sites have been found unfavorable after further consideration and discussion with your office.

6. We concur.

WILLIAM L. PINGREE, D. M. D. - LETTER OF SEPTEMBER 16, 1982

No comment necessary.

THE DOLPHIN STRIKER - LETTER OF SEPTEMBER 16, 1982

We appreciate your comments.

PORTSMOUTH NAVIGATION DIVISION OF CENTRAL WHARF TOWBOAT CO., INC. - LETTER OF SEPTEMBER 17, 1982

No reply necessary. We appreciate your comments.

THE OAR HOUSE - LETTER OF SEPTEMBER 17, 1982

We appreciate your comments.

SPRAGUE STEAMSHIP AGENCY - LETTER OF SEPTEMBER 17, 1982

Thank you for your comments.

VIKING CRUISES - LETTER OF SEPTEMBER 19, 1982

Thank you for your consideration.

UNITED STATES DEPARTMENT OF THE INTERIOR, FISH AND WILDLIFE SERVICE
LETTER OF SEPTEMBER 20, 1982

1. Please see response to Fish and Wildlife Service April 19, 1982. Letter regarding use of rock for creation of juvenile lobster habitat.

2. The proposed 16-month continuous construction schedule is still the optimum choice. Of your recommended construction scenarios, only the third is acceptable. The first, constructing the project in one season, is unrealistic since the dredging operation requires sixteen months to complete and could never be accomplished in four. The second, constructing the project over more than one season, is not acceptable because of costs and time constraints. Working in the winter months is more costly due to bad weather conditions and the cold. The costs of setting up the dredge equipment and later removing it each season are too high. Also, the four-year time period is too lengthy, considering the vital importance of safety improvements to the harbor. The sixteen-month continuous dredging operation continues to be the one supported by the Corps.

3. See reply to Ms. Ann Pistell dated 15 November 1982, paragraph 5, for more of our comments about blasting. Measures for mitigating blasting impacts are found in the Environmental Assessment under Project Features which mitigate impacts.

NEW HAMPSHIRE STATE PORT AUTHORITY - LETTER OF SEPTEMBER 20, 1982

Thank you for your comments.

GEOFFREY E. CLARK, M.D. - LETTER OF SEPTEMBER 20, 1982

A major need for the project are safety considerations. The economic benefits are also important. We appreciate your comments.

EXPORT MANAGEMENT COMPANY, INC. - LETTER OF SEPTEMBER 20, 1982

We appreciate your letter and comments.

TOTAL WASTE MANAGEMENT - LETTER OF SEPTEMBER 20, 1982

No reply necessary. Thank you for your concern.

DAVID T. BREWSTER - LETTER OF SEPTEMBER 20, 1982

No reply necessary. Thank you for your comments.

GRANITE STATE MINERALS, INC. - LETTER OF SEPTEMBER 20, 1982

As the report states the widening of the channel at Henderson's Point is imperative to the safety of the vessels which make the turn there. Thank you for your comments.

NEW HAMPSHIRE DEPARTMENT OF RESOURCES AND ECONOMIC DEVELOPMENT - LETTER OF SEPTEMBER 21, 1982

Thank you for your comments.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY - LETTER OF SEPTEMBER 21, 1982

Response to EPA comments of April 30, 1982 given on page 1-111.

RPM AND ASSOCIATES - LETTER OF SEPTEMBER 22, 1982

No reply needed. Thank you for your comments.

A. N. DERINGER, INC. - LETTER OF SEPTEMBER 23, 1982

No reply necessary. Your interest is appreciated.

PEABODY AND LANE, INC. - LETTER OF SEPTEMBER 24, 1982

No reply necessary. We appreciate your review.

WILLIAM W. SEAWARD, JR. - LETTER OF SEPTEMBER 27, 1982

No reply required. Thank you for your consideration.

WINEBAUM NEWS, INC. - LETTER OF SEPTEMBER 28, 1982

Thank you for your letter. We appreciate your interest in the project.

STATE OF MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION - LETTER OF SEPTEMBER 28, 1982

See reply from New England Division, Army Corps of Engineers in a letter dated 15 November 1982.

GEORGE W. DUFFY - LETTER OF SEPTEMBER 29, 1982

No reply required. Thank you for your comments.

BOSTON OVERSEAS, INC. - LETTER OF SEPTEMBER 29, 1982

No response required. Thank you for your comments.

BOSTON AND MAINE CORPORATION - LETTER OF SEPTEMBER 30, 1982

No comment necessary. Thank you for your letter.

MAINE DEPARTMENT OF MARINE RESOURCES - LETTER OF OCTOBER 1, 1982

See reply from New England Division, Army Corps of Engineers dated 27 October 1982.

DEPARTMENT OF THE NAVY - LETTER OF OCTOBER 5, 1982

1. We feel that the Navy will benefit from improvements at Areas 1 and 3. The Navy, with engineering and construction work by the Corps, has completed a dredging project in the vicinity of Simplex Wire and Cable Co. Navy vessels utilizing this berth must pass through Areas 1 and 3. Any interruption of harbor traffic will affect the Navy. Furthermore, a capsized tanker or an oil spill would have direct impact on the Portsmouth Navy Yard. An oil spill and/or the ensuing fire could be carried by the currents of the Piscataqua into the shipyard, causing possible damage to the ships and submarines. Lastly, the port is a major petroleum distribution center. In the case of a military emergency, safe access to the channel by tankers would be vital to the continued operation of the Navy Base and other defense-related activities in the area.

2. While we are unable to change the report at this late date, we include your letter as documentation of the change in the Navy's evaluation of the project.

PORTSMOUTH HARBOR/PISCATAQUA RIVER IMPROVEMENT SAFETY COMMITTEE - LETTER OF OCTOBER 5, 1982

Thank you for your support. The article by Captain Richar Holt is quite informative.

DORCHESTER SEA-3 PRODUCTS, INC. - LETTER OF OCTOBER 13, 1982

No reply necessary. We appreciate your comments.

GREATER PORTSMOUTH CHAMBER OF COMMERCE - LETTER OF OCTOBER 20, 1982

See the New England Division memorandum dated 14 December 1982.

C. H. SPRAGUE AND SON CO. - LETTER OF NOVEMBER 2, 1982

No reply required. Thank you for your interest.

TOWN OF NEWINGTON, NEW HAMPSHIRE - LETTER OF NOVEMBER 15, 1982

1. The town's official stand on the matter was to prohibit the fill from being used at New England Tank Industries. See the chronology dated 3 February 1983 for further detail.

2. The Corps of Engineers released the project for public review on August 18, 1982. (See public notice contained in this appendix.). The comments received in the subsequent 30-day period did not warrant a public hearing. However, a meeting with the town Planning Board was held on October 7, 1982. A description of this meeting can be found in the February 3, 1983 chronology. As a result, this dredged material will not be placed at New England Tank Industries.

DEPARTMENT OF MARINE RESOURCES, MAINE - LETTER OF NOVEMBER 16, 1982

No reply necessary. Thank you for your involvement.

DION'S YACHT YARD, INC. - LETTER OF JANUARY 18, 1983

No reply necessary. We appreciate your letter.

TOWN OF NEWINGTON, NEW HAMPSHIRE - LETTER OF JANUARY 27, 1983

Thank you for your letter. See chronology dated 3 Febraury 1983 for the complete history of this matter.

NEW HAMPSHRIE DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS - LETTER OF FEBRUARY 3, 1983

The use of the material at the New Hampshire State Port Authority Site is considered the NED Plan. Development of the site will require approval through the regulatory program of the Corps of Engineers.

NEW HAMPSHIRE DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS - LETTER OF FEBRUARY 15, 1983

No reply necessary.

PORTSMOUTH CONSERVATION COMMISSION - LETTER OF APRIL 21, 1983

1. The local sponsors of the project the State of New Hampshire will have to obtain necessary permits including those required by the regulatory programs of the Corps of Engineers. In this permit process environmental, socio-economic and other concerns will be addressed by the applicant.

2. The dredging itself will not greatly affect fish movement in the river. The Environmental Assessment notes that the areas to be dredged are out of the main ship channel and would not inhibit fish movement. With respect to possible effects of blasting see response #3 to State of New Hampshire Fish and Game Dept. - Letter of September 15, 1982.

3. We concur. The smallest possible charges will be used when blasting, and the charges will be buried to reduce vibrations.

U.S. FISH AND WILDLIFE SERVICE - LETTER OF AUGUST 8, 1983

1. Regarding use of the material for creation of juvenile lobster habitat, please see response to U.S. Department of the Interior - Letter of April 19, 1982.

2. The glacial till is not suitable for beach nourishment.

SIMPLEX WIRE AND CABLE COMPANY - LETTER OF 4 OCT 1983

No reply required. Thank you for your comments.

C. H. SPRAGUE & SON COMPANY - LETTER OF 27 OCT 1983

No reply required. Thank you for your comments.

PORTSMOUTH PILOTS - LETTER OF 27 OCT 1983

No reply required. Thank you for your comments.

GRANITE STATE MINERALS - LETTER OF 31 OCT 1983

No reply required. Thank you for your comments.

DORCHESTER SEA-3 PRODUCTS, INC. - LETTER OF 3 NOV 1983

No reply required. Thank you for your comments.

GOLD BOND BUILDING PRODUCTS - LETTER OF 8 NOV 1983

No reply required. Thank you for your comments.

NORTHEAST PETROLEUM - LETTER OF 9 NOV 1983

No reply required. Thank you for your comments.

N.H. DEPT. OF RESOURCES AND ECONOMIC DEVELOPMENT - LETTER OF 14 NOV 1983

No reply required. Thank you for your comments.

U.S. FISH AND WILDLIFE SERVICE - LETTER OF 23 NOV 1983

Earlier correspondence from the Fish and Wildlife Service throughout project planning did not indicate the need for an EIS. See correspondence dated 19 April 1982, 20 September 1982, 8 August 1983. The recommended disposal area at this time is ocean disposal at the Foul Area. None of the other resource agencies object to project implementation with disposal at the Foul Area.

U.S. ENVIRONMENTAL PROTECTION AGENCY - LETTER OF 29 NOV 1983

The NHSPA site will undergo its own environmental review as part of the Corps regulatory public interest process. At this time a permit application has not been submitted for the State improvement plan. The recommended disposal plan at this time therefore is ocean disposal at the Foul Area.

U.S. NATURAL MARINE FISHERIES SERVICE - LETTER OF 30 NOV 1983

See response to EPA letter of 29 November 1983.

SIMPLEX WIRE AND CABLE COMPANY - LETTER OF 8 DEC 1983

Consideration of disposal sites for the material from the improvement project will continue throughout the advanced engineering and design phase prior to construction. If other more economical and environmentally sound sites are available prior to construction disposal can be made there.

U.S. DEPT. OF THE NAVY - LETTER OF 23 DEC 1983

No reply necessary - Thank you for your letter.

U.S. NATIONAL MARINE FISHERIES SERVICE - LETTER OF 4 JAN 1984

See New England Division letters of December 23, 1983 and January 18, 1984 and U.S. National Marine Fisheries Service's response of February 6, 1984 concerning no effect on endangered species.

MAINE HISTORIC PRESERVATION COMMISSION - LETTER OF 20 JAN 1984

On site inspection of the seven anomalies was conducted in the winter 1984 period. Report on findings now being coordinated.

N.H. OFFICE OF STATE PLANNING - LETTER OF 24 JAN 1984

Mitigation measures incorporated in the project include:

(1) Blasting would be scheduled whenever possible to avoid peak periods of fish and lobster migration and spawning. A joint or multi agency observation team will be established to quantify and report any significant impacts to fishery resources.

(2) Every effort will be made to schedule construction in Area 3 during the months of December through March. This will reduce the impact blasting and dredging might have on fish population and recreational and small commercial boating activity.

See N.H. Office of State Planning Letter of February 3, 1984.

U.S. FISH AND WILDLIFE SERVICE - LETTER OF 1 FEB 1984

See responses to U.S. Fish and Wildlife Service - letter of 23 November 1983 and to U.S. Environmental Protection Agency - Letter of 29 November 1983.

MAINE STATE PLANNING OFFICE - LETTER OF 2 FEB 1984

Provides concurrence with New England Division, Corps of Engineers determination of consistency with Maine's Coastal Program.

Discussions are continuing relative to "conditions 2 and 3".

N.H. OFFICE OF STATE PLANNING - LETTER OF 3 FEB 1984

Provides concurrence with New England Division, Corps of Engineers determination of consistency with New Hampshire's Coastal Program.

U.S. NATIONAL MARINE FISHERIES SERVICE - LETTER OF 6 FEB 1984

See response to EPA letter of 29 November 1984 .

U.S. ENVIRONMENTAL PROTECTION AGENCY - LETTER OF 10 FEB 1984

See response to EPA letter of 29 November 1984.

☆ U. S. GOVERNMENT PRINTING OFFICE: 1984--700-014--60

ADDENDUM TO APRIL 1983

FEASIBILITY REPORT INCLUDING AN ADDENDUM

TO THE FINAL ENVIRONMENTAL ASSESSMENT

PORTSMOUTH HARBOR & PISCATAQUA RIVER

NEW HAMPSHIRE AND MAINE

OCTOBER 1983

US Army Corps
of Engineers
New England Division

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02254

REPLY TO
ATTENTION OF

October 28, 1983

Planning Division
Impact Analysis Branch

Dear Interested Parties:

The enclosed Addendum supplements information presented in the April 1983 Feasibility Report on Improvements to the Existing Federal Navigation Project in Portsmouth Harbor and Piscataqua River, New Hampshire and Maine.

The April 4, 1983 Public Notice which accompanied the release of the Feasibility Report indicated that a disposal site for material to be removed had not been identified. Further investigation has determined that disposal at the New Hampshire Port Authority is the plan which maximizes National Economic Development (NED). This alternative is the NED plan and it is the recommended plan.

The enclosed Addendum addresses the impacts of the recommended plan. Comments on New England Division's recommended plan for improving Portsmouth Harbor should be sent within 30 days of the date of this letter to:

Division Engineer
New England Division
Corps of Engineers
424 Trapelo Road
Waltham, MA 02254
ATTN: Impact Analysis Branch

Sincerely,

Carl B. Sciple
Colonel, Corps of Engineers
Division Engineer

Enclosure

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INTRODUCTION

This Addendum modifies information presented in the April 1983 Feasibility Report and Environmental Assessment prepared for Portsmouth Harbor & Piscataqua River. Pages within this report are presently being revised. The purpose of this Addendum is to allow public review of the most significant change to the published report. The channel improvement plan, recommended in the April 1983 report, remains unchanged. However, a new disposal site has been identified. The recommended disposal site is at the New Hampshire Port Authority. This document provides the opportunity for review of the impacts of the recommended disposal site.

PREVIOUS FEASIBILITY REPORT

In March 1982, a draft feasibility study was forwarded to interested Federal resource agencies, namely the Environmental Protection Agency (EPA) the National Marine Fisheries Service in Gloucester, and the Fish & Wildlife Service in Concord, New Hampshire. This material was also presented to the New Hampshire Port Authority in Portsmouth, New Hampshire. Comments were received from several parties at this time and on 20 August 1982 a Public Notice with a press release was distributed widely and draft reports were sent to numerous parties. In response to the draft report, comments were received throughout the Fall of 1982 and into the winter months of 1983. In April 1983 the feasibility study was forwarded to Washington for further review. The March 1982 and August 1982 draft materials had included a program of dredging within Portsmouth Harbor and the Piscataqua River and dredge material disposal at an upland site in Newington, New Hampshire. Several letters of comment relating to this particular disposal option were received. These comments together with meetings held in Newington and meetings with the Portsmouth Harbor and Piscataqua River Safety Improvement Committee indicated that the Newington disposal site was no longer available. A search was underway for a suitable disposal area when the report was forwarded to Washington. The April 1983 Public Notice indicated that a final disposal option had not been chosen.

Assuming a feasible disposal site would be identified, the report recommended:

- Widening the southern limit of the channel at Goat Island from 400 feet to 550 feet.

- Widening, by 100 feet, the northern limit of the channel adjacent to Badgers Island; and,

- Providing an emergency maneuvering area downstream of the Maine-New Hampshire Interstate Lift Bridge.

The cost of the proposed project (assuming disposal in Newington) was approximately $20 million. Annual costs and benefits yielded a benefit cost ratio of 1.31 to 1. The proposal entailed removal of approximately 533,000 cubic yards of material. Construction would be over a sixteen-month continuous period.

ADDENDUM TO FEASIBILITY REPORT

As stated in the introduction, the channel improvement plan, recommended in the April 1983 report, remains unchanged, except that a new disposal site has been identified. The cost of the channel improvement project has two basic components. They are the actual removal of the material and the disposal of the material. Similarly, the benefits have two basic components. They are the value of improved transportation and the value of the material being removed. A number of disposal alternatives were considered in an effort to identify the alternative which maximized net benefits. The following disposal options were examined:

Land Disposal

Iafolla Industries
New England Tank Industries
Pease Air Force Base

Within Harbor Disposal

New Hampshire Port Authority
Pepperrell Cove

Ocean Disposal

Cape Arundel
Portland
Foul Area
Isle of Shoals

Additionally, in combination with the above, disposal of rock material at Gunboat Shoals for the creation of lobster habitat was investigated.

An analysis of both costs and benefits, for each alternative, identified disposal at the New Hampshire Port Authority as the plan which maximizes net benefits. Preliminary estimates of the costs and benefits of each plan are displayed in Table 1.

TABLE 1

PRELIMINARY ECONOMIC ANALYSIS: ALTERNATIVE PLANS

Disposal Alternative	Annual Benefits	Annual Costs	Net Benefits
Iafolla Industries	$2,634,000	$1,954,000	$ 680,000
New England Tank Industries	2,601,000	1,792,000	809,000
Pease AFB	2,601,000	2,019,000	582,000
New Hampshire Port Authority	2,822,000	1,792,000	1,030,000
Pepperrell Cove and Foul Area	2,601,000	1,839,000	762,000
Cape Arundel	2,601,000	1,884,000	717,000
Portland	2,601,000	1,907,000	694,000
Foul Area	2,601,000	1,837,000	764,000
Isle of Shoals	2,601,000	1,888,000	713,000
Ledge Material (27,000 CY) to Gunboat Shoals, Remaining Material to:			
New England Tank Industries	2,601,000	1,792,000	809,000
New Hampshire Port Authority	2,811,000	1,792,000	1,019,000
Cape Arundel	2,601,000	1,887,000	714,000
Foul Area	2,601,000	1,841,000	760,000
Isle of Shoals	2,601,000	1,892,000	709,000

Disposal at the New Hampshire Port Authority is clearly the NED plan. It is the least costly disposal alternative and also provides the highest productive use of the disposal material. The value of the disposal material at this site is that it may be used as general fill.

The New Hampshire Port Authority (NHPA) is proceeding with plans to develop a second pier and to create fast land by filling in the vicinity of Cutts Cove. NHPA is pursuing these plans irrespective of the proposed Federal project. It is fully expected that their plans will maintain consistency with Federal, state and local permit regulations, with or without the proposed Federal project. When NHPA develops more definitive plans, an application for a Section 10 and Section 404 permit will be required. The application process will proceed independent of the proposed navigation improvement project.

This Addendum addresses the impacts of the new disposal site. The substance of the previous report remains unchanged excepting the Environmental Assessment, the Section 404(b) Evaluation and the Finding of No Significant Impact. These items have been revised and are considered the Addendum to the April 1983 report.

Addendum To Environmental Assessment

Addendum to the Environmental Assessment for the Feasibility Report for Improvements to the Existing Federal Deep Draft Navigation Project, Portsmouth Harbor and Piscataqua River, New Hampshire and Maine.

October 1983

Abstract. The reporting officer (New England Division Engineer) recommends a modified plan calling for disposal of the dredged material at the New Hampshire State Port Authority (NHPA). The NHPA plans to develop an additional pier and create additional land. Three areas have been identified which could accommodate the disposal of 228,000 cubic yards of sand and gravel and 305,000 cubic yards of rock subject to removal. Figure 1 depicts the sites under consideration for receipt of the dredged materials. Planning and engineering documents have been and are currently being prepared in support of the NHPA's expansion program.

The initially selected upland site was located at the New England Tank Industries, Newington, New Hampshire. The designation of a new disposal site is the result of further economic analysis. The proposed NHPA disposal site represents the alternative disposal plan with the greatest net economic benefits consistent with protecting the Nation's environment and enhancement of water dependent development. This plan is identified as the NED plan which maximizes net national economic development benefits.

The quality of the sediments are acceptable and in compliance with the Ocean Dumping (Sec. 103) dredged disposal criteria. Further sediment sampling and chemical analysis of the channel sediments is not necessary because of the coarse nature of the material. The three samples from Area 1 of the proposed channel improvements are sufficient to characterize the sediments. The sediment at this site is composed of coarse sands, gravel, and rock. The material at Area 3 is comprised of approximately 50% sand and gravel and 50% rock. The high velocity flow channel in these areas have swept the bottom clean of fine sediments which would normally contain the heavy metal, PCB and other contaminants. The coarse nature of the material to be dredged will produce little turbidity. Based on dispersion studies conducted by the University of New Hampshire (UNH-SG-167) any suspended material would be concentrated on longitudinal flow in the central channel while allowing limited lateral flow and dispersion into near shore areas. The water and any contaminants are mixed and flushed rapidly through the system and results of the bulk analysis from Area 1 revealed no abnormally high concentrations of metal, oil, grease or other parameters tested.

The rock material because of the various fractured sizes may provide suitable habitat for lobsters. Consideration was given to disposal of the rock at Gunboat Shoals or the Rye Ledge areas to provide additional shelter for lobsters. This plan does not maximize net benefits and therefore is not recommended.

A 16-month continuous construction schedule is proposed. NED intends to utilize those available measures especially those related to blasting which would reduce casualties to the aquatic fauna. Such measures include use of preliminary minor charges and inserting the explosive charges within drilled holes well below the surface. As much of this blasting as can be programmed will take place during the winter months. However, for purposes of economy, the construction will be accomplished during a continuous 16-month period. A field observation team consisting of biologists from State and Federal agencies will monitor the operations. Blasting and removal of the rock will result in the alteration of the existing habitat in the proposed dredged areas. However, hard fractured rocks will still characterize some of the bottom and sides of the channel.

Additional information is provided to the Feasibility Report describing the various alternative disposal options, assessment of potential environmental effects and mitigation measures to be incorporated into the project to minimize short-term impacts.

1. Principal Preparer: The following person was primarily responsible for preparing this addendum to the project Environmental Assessment.

Name: Gib Chase, B.S., M.Ed, M.S.

Expertise:- Marine Biology, Oceanography, Fishery Science, Benthic Ecology, Biofouling, Environmental Impact Analysis.

Experience:- Environmental Resources Specialist, U.S. Army Corps of Engineers, 12 years. Environmental evaluations of coastal engineering projects specifically dredging and disposal of dredged material on marine and estuarine water quality and biological resources.

- New England Division, Army Corps of Engineers, Diving Officer and SCUBA Ecology Team Coordinator 1972-1981.

- Biological Oceanographer, U.S. Naval Oceanographic Office, Washington, DC, 3 years, 1967-1970.

- Fishery Research Assistant, Bureau of Commercial Fisheries, Woods Hole, Mass., 3 years, 1963-1966.

Professional Discipline: Marine Sciences, Environmental Management

2. Rational for Recommended Changes to the Proposed Plan

The reporting officer's (New England Division Engineer) selection of the New Hampshire Port Authority disposal site is based on the net benefit criteria. Disposal of project material at NHPA is one of the least costly alternatives and also provides the highest productive use of the material thereby providing the greatest net economic benefit.

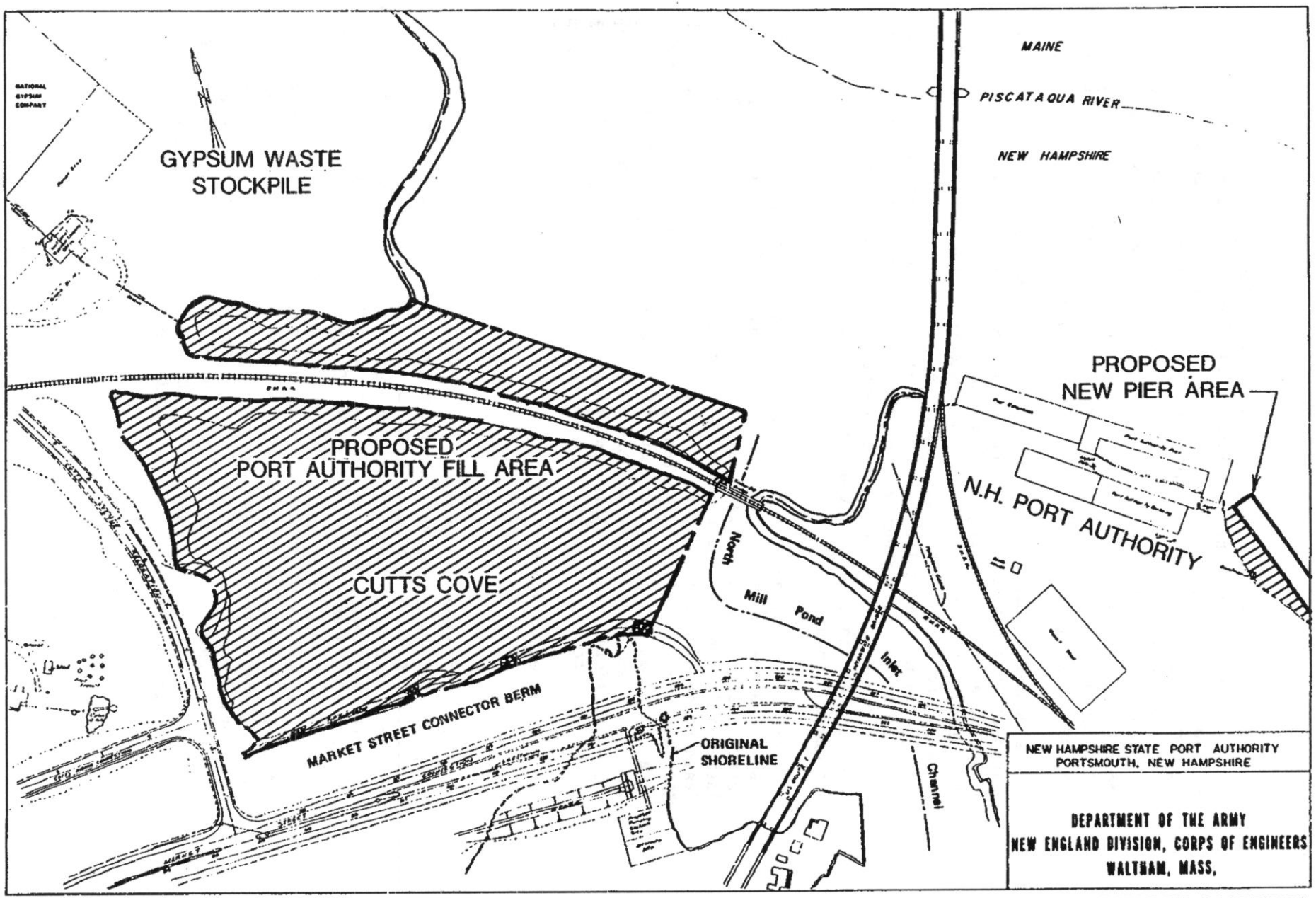

FIGURE 1: PROPOSED DREDGED MATERIAL DISPOSAL SITE
N.H. PORT AUTHORITY

The New Hampshire State Port Authority intends to use the material to create a site for possible erection of warehouses or general storage area for vehicles and bulk cargo as well as a new pier. The total quantity of 533,000 cubic yards of material to be excavated can be accommodated by the three sites considered. Approximately 300,000 cubic yards of fill would be needed to fill the Cutts Cove area. The proposed new pier site can accept roughly 100,000 cubic yards of material with the remaining sediments being deposited in the intertidal zone between National Gypsum Company and the existing Port Authority property.

A number of disposal options were considered during the study and are discussed in detail in the Environmental Assessment and the Report. An upland site at the New England Tank Industries (Fuel Storage Corp) in Newington, originally proposed, was found to be the least environmentally sensitive to disposal but has since been determined to be unacceptable. Federal resource agencies have indicated that the alternative of ocean disposal is acceptable and suggest the rock material for productive use such as creating fish and lobster habitat if possible. Based on available bulk sediment test results the project material is considered acceptable for ocean disposal.

At this time, neither the Isles of Shoals dumping ground or other historic areas along the New Hampshire coast considered for disposal material are designated disposal areas. Because of the availability and desirability of the land disposal site and Port Authority sites, the designation of the ocean site at Isle of Shoals although initiated with EPA, was not pursued. The Boston Foul Area, Portland and Cape Arundel ocean disposal sites therefore at this time are the only officially designated and currently available disposal sites. All three sites would represent increased transportation distances and related costs in excess of the selected NED plan at the NHPA site.

3. Affected Environment

A. General

The Port Authority Terminal is located along the New Hampshire side of the Piscataqua River approximately four miles upstream from the mouth and one and quarter mile downstream of I95 Bridge. Three potential areas have been identified for disposal of the dredged material. These include the Cutts Cove area north and west of the existing Port Authority facility, the area to the river side of Cutts Cove and the Boston-Portland railroad spur and the proposed new pier area located immediately south of the Port Authority wharf and fronting the current scrap metal operation. The proposed pier facility would consist of a fixed-inplace or hinged ramp and barge float(s) to accommodate the vessel's bow or stern ramp. In addition, ancillary facilities are required such as mooring dolphins, bollards, cleats and fenders. Based on the design vessel used in the Port Authority's 1979 preliminary engineering report the berthing dimensions will require a minimum of 110 feet wide and 550 feet in length excluding

approach and fairway requirements. Recent communications with Mr. George Smith, Director, Port Authority indicate the Port Authority current plans are that the pier will be designed to accommodate vessels up to 700 feet in length.

Pier Site

The pier site of the Port Authority has been subject to change in sea level alternately subjecting the site to a quiet estuarine bottom environment or swift flowing currents for the adjacent Piscataqua River. The site is referred to as Nobles Island, although landfilling operations conducted over the last twenty years have now provided a land bridge to the island.

Borings performed by the State of New Hampshire in 1972 (C.E. Maguire, 1979) reveal the shoreline areas to be comprised of fill material near the surface often mixed with the in-situ sand, silts and shell fragments. Beneath these strata was found a more dense but thin stratum of sand and gravel; some silt which overlies the rock has been classified as glacial till.

Away from the shoreline the subtidal bottom is covered with loose mixture of sand and gravel, and some silt and shells which appear to be water deposited. Underlying this was encountered deposits of sand and gravel of variable density over the rock and in some locations packets of clay and silt.

Cutts Cove

The disposal site at Cutts Cove is a tidal basin approximately 2500 feet from the Area 1 dredge site. The site is located in the city of Portsmouth on the southern bank of the River, adjacent to the Port Authority and the tidal channel to North Mill Pond. The site comprises approximately 10 acres and is bounded to the northwest by the entrance road to the National Gypsum manufacturing plant; to the north by the Boston and Maine railroad spur embankment, and to the south by Market Street.

The Cutts Cove site was also considered as a dredge material disposal site by the Navy in 1976, however they decided on a land site at the shipyard. The site capacity is estimated at 300,000 cubic yards.

The walls rise from approximately five feet to more than 10 feet above the floor of the basin. Water enters and drains from the basin during flood and ebb tide at the southeastern end. An opening approximately 300 feet wide allows the water to flow into a channel connecting North Mill Pond with the Piscataqua River. The bottom sediments in the basin is composed of very soft mud and slopes downward along a north-south line with the southern end of the basin gradient floor being slightly above mean low water (MLW). The basin is covered by approximately five to six feet of water at high tide.

The proposed disposal site at Cutts Cove is separated from the existing Port Authority facilities by the North Mill Pond tidal channel. A dike structure has been proposed to run parallel to the channel on the southeastern end of the basin to contain the fill material. Ground access between the two sites would be via Market Street or possibly a bridge over the North Mill Pond tidal channel.

Investigations of the fauna and flora at the Port Authority's Cutts Cove site was conducted by Normandeau Associates in 1976 and showed the area to be typical of soft substrate intertidal areas along the Piscataqua River. Three distinct areas of saltmarsh plants were found in the basin, one in the south southwest shore, one in the southwest corner and one in the northwest corner which is bisected by a small intermittent stream. The total area covered by the Spartina spp. beds at the New Hampshire Port Authority site was estimated to be 0.6 acre.

Among the S. alterniflora culmes, the yellow-green alga, Vaucheria sp., and the green algae Rhizoclonium riparium were found. Vaucheria was the more common taxa. The "rockweeds" Ascophyllum nodosum and Fucus vesiculosus variety spiralis were abundant on rocks along the southwestern edge of the basin, forming a two to three foot wide vertical band on the riprap. On the floor of the basin several areas were covered with mats of the green algae Enteromorpha polifera. As with the vascular plants, these algae species are common in the Piscataqua River.

The bivalve, Mya arenaria (soft-shell clam), a commercially desirable species, was collected in areas adjacent to all three Spartina spp. beds. All representatives were small, and were most likely recently set juveniles. A small number of siphon holes were noted in the vicinity of the southwestern Spartina bed, indicating the presence of adult Mya. It was reported that the quantity of adult Mya present in the area was not sufficient to support any commercial or intensive sport harvesting. Due to existing levels of bacteria in the water, this area is not open to harvesting.

Mytilus edulis (blue mussel) was the most abundant organism observed. Mussels were located exclusively in the southeastern area of the basin where they formed two beds or bars nearly reaching across the opening into the basin. The location of the mussels is most likely related to the presence of coarse substrate (e.g., small stones and cobble)which provide suitable settlement surfaces, and currents which remove wastes and supply food and oxygen.

Northern Extension

In addition to the new pier and Cutts Cove sites a third alternative disposal area under consideration by the Port Authority is that shallow water area located to the river side of the railroad tracks and between the National Gypsum Company and the NHPA property. Placement of fill in Cutts Cove may require stabilization of the railroad embankment. Fill and containment on the riverside of the railroad embankment would stabilize the embankment and create additional fast land. The area to be filled has an area of approximately 3 acres. Bottom substrate in this region is primarily sand-gravel and cobble with considerably more bearing strength than that characterizing Cutts Cove. Biologically the site is characterized by boreal epifaunal and algae species typical of coarse sediment, riverine habitat type.

The Port Authority is currently conducting engineering studies of this area to determine its developmental feasibility.

4. Environmental Consequences

Aquatic Effects

The environmental impacts of the disposal of dredged materials at the Port Authority was addressed by the Navy in its 1976 EIS and is summarized herein. Utilization of the Port Authority Cutts Cove and new pier sites for the disposal of dredge material considered by this proposal will result in the permanent loss of approximately 15 acres of intertidal and subtidal land and its associated fauna and flora. This is based on the assumption that the Port Authority proceeds with its plans for expansion of its existing facilities and completely fills the basin. If the area is not completely filled, the remaining area will be subject to recolonization. The new community will be dependent upon the composition of the substrate, the intertidal elevation and time of year.

Site preparation and disposal activities at the Port Authority site will result in the resuspension of sediment particles, thus causing a temporary reduction in water quality. This material will be transported into the Piscataqua River and North Mill Pond. Associated with the increase in turbidity will be temporary increases in the levels of bacteria and some heavy metals in the water column. Levels of heavy metals and bacteria will be low due to the coarse nature of the dredged sediments. The amount of material resuspended will depend upon dredging and disposal techniques utilized by the contractor.

The Cove area will be lost together with its associated fauna and flora. Similar habitat types are located in adjacent areas and the disposal area does not support a unique assemblage of plants and animals. The loss of the site does, however, reduce the amount of biologically productive tidal flats along the shores of the river. The construction of the new pier would eliminate approximately 2 acres of

intertidal and subtidal habitat. This impact however, will be offset somewhat by the pier structure itself which will provide hard surfaces for the attachment of various epifaunal invertebrates and habitat for fish, lobster as well as mussel production.

Land Use

The land uses surrounding the NHPA site are divided between industrial and residential activities. Generally the industrial uses are located to the east adjacent to the Piscataqua River. The Port Authority pier and the National Gypsum Company are in close proximity to the disposal site.

The residential areas are situated to the west of the site. Residential development along Cutts Avenue, southwest of the site, is separated from the site by the access road to the National Gypsum Company. The Leslie Drive residences are physically separated by a tidal flat left open during construction of the Market Street causeway. The Cutts Avenue community is an island of 10-12 residences surrounded by the National Gypsum plant, I-95, Market Street, and the potential disposal site. The Leslie Drive community is somewhat larger but also is surrounded by industrial uses and major arteries.

The Cutts Cove fill site is located adjacent to the tidal channel to North Mill Pond. Land uses surrounding North Mill Pond are divided between residential and industrial; the industries being to the east and residences to the west of the pond.

Although the projected use of the disposal site is compatible with the present Port Authority activity and the National Gypsum Company's activity, the use would conflict with the nearby Cutts Avenue residences. This residential area would be further surrounded by industrial uses and expressways. The Leslie Drive residences would probably not be impacted in a similar manner due to their physical separation from the site by a tidal outlet and Market Street.

In short, disposal of dredge spoils at the NHPA site would convert an estuarine environment to an industrial environment. The partial buffer between existing industry and existing residential would be eliminated, to the detriment of the Cutts Avenue and, to a less extent, Leslie Drive residences.

Aesthetic Qualities of the Site

Although every waterbody adds to the visual amenities of the area, the surroundings of this tidal flat do not enhance scenic views. The views from the Cutts Avenue and Leslie Drive residences extend to the low density residential areas in Kittery, however, industrial machinery is visible peripherally. The railroad and Market Street, which form the

borders of the site, disrupt the visual amenities directly associated with the site. Bridges, both high-level and lift bridges, which cross the Piscataqua dominate the views to the west and east.

The visual amenities of the site will decline as a result of filling activities. The views of the Piscataqua from nearby residences could potentially be blocked by the construction of storage facilities, depending upon their exact locations and heights. The land area will not offer the same aesthetics as do the tidal flats.

Objectionable temporary odors might be present until water is completely removed from the spoil material. These could impact the residential areas around Cutts Avenue and Leslie Drive. Depending upon wind velocities and directions, other residential areas around North Mill Pond might be affected by the odors as well. Because of the coarse nature of the materials however, little offensive odors are expected.

Noise Levels

Noise levels are characteristic of the urban/suburban area. The residences surrounding this site are subject to ambient noise levels primarily generated by the nearby industrial activities. In particular the scrap metal operation at the NHPA pier, contributes high noise levels.

Transportation noise is generated from the I-95 and interstate bridges, the railroad line, Market Street, and the commercial vessels and private boats operating along the river. The site is also subject to intermittent military aircraft noise from Pease Air Force Base, two miles to the southwest.

Construction work by the Port Authority would contribute to the noise environment. Short term noise impacts will result from the necessary dike construction and spoil distribution machinery. The long-term use of this site by the Port Authority will produce higher noise levels than those generated at present. This will result from the water traffic and the general industrial activity that will occur.

Air Quality Aspects

The ambient air quality levels at this site are similar to those for the entire area. Both the transportation networks and the industrial activities contribute to the pollution level. There is no known pollution problem related specifically to these sites.

During the disposal activities additional pollutants resulting from the disposal equipment, i.e. barges, trucks, will be introduced into the air. However, this should not result in a significant decline in the ambient air quality. The eventual construction activities for the Port Authority storage facilities would result in temporary increases in

particulate levels. Generally the longterm use of the site will introduce additional pollutants, but the impact upon the ambient air quality is likely to be insignificant.

Waterborne Traffic

Additional barge traffic in the navigation channel to transport the spoil material from the dredge site will occur as a result of utilizing these disposal sites. This, however, should not present a problem, as the channel is not operating at capacity levels. At the disposal sites, the barges would be docked outside of the navigation channel and therefore would not interefere with normal traffic.

Long term increases in commercial navigation will probably occur as a result of the increased capacity at the NHPA.

Historical and Archaeological Resources

The Richard Jackson House, the home of an early shipbuilder and one of the oldest houses in Portsmouth, is situated in the vicinity of the disposal site, on Northwest St. on the western shore of North Mill Pond. (see Figure 5.42.1-1). The house has undergone restoration and is now open to the public as a museum. This and other buildings in Portsmouth are sufficiently removed from the Port Authority sites to be free of potential impacts resulting from dredged material disposal at that site.

These historic sites are sufficiently removed from the NHPA disposal site to be free of potential adverse impacts resulting from spoil disposal at that site.

As noted in comment letters from the Maine Historic Preservation Commission (9/9/81; 6/25/82) the portions of the project designated as Areas 1 & 3 have potential to contain historic period shipwrecks. An underwater remote sensing survey is being undertaken to locate potential historic wrecks. Results of this study will be available in November, 1983. Any potential wreck sites located would then be further examined to determine eligibility for inclusion in the National Register of Historic Places, and mitigation planned for any eligible wrecks.

Threatened and Endangered Species

(letters 3/17/81; 9/9/83)

The National Marine Fisheries Service indicates that the dredge project area may be inhabited by the endangered shortnose sturgeon (*Acipenser brevirostrum*). There exists only one record of this species in the Piscataqua River and it is not certain whether a viable population of this species exists or not. The project areas under consideration for improvement are located in the lower section of the estuary where sturgeon are not frequently found. In review of the life history of this species

the preferred habitat extends from the upper limits of the salt wedge on into Great Bay although the project channel area would be utilized as a migratory corridor. Dadswell (1979) reports foraging grounds in the upper Saint John estuary were the shallow (1-5m) highly eutrophic, inshore regions. The two areas proposed for improvements do not constitute foraging grounds. Males of the species were reported to overwinter in the lower reaches of the estuary. Potential feeding areas in the Piscataqua River environs then, would include the backbay area near Newcastle Island and Great Bay area beyond the Atlantic Terminal Company and upper project limits. Overwinter sites in the Piscataqua River, if in fact such a sturgeon population exists, are thought to be restricted to that portion of the channel from Sullivan Point seaward. It is believed that any sturgeon within the river will utilize the deeper portions of the channel during migration and therefore are not subject to blasting or dredge operations.

5. Project Features Which Mitigate Impacts

(1) Blasting would be scheduled whenever possible to avoid peak periods of fish and lobster migration and spawning. Deployment of small warning charges or pulsed electrical currents would also be made to repell schooling fish and lobsters from the general area. A joint observation team will be established to monitor the dredging and blasting to quantity any mortality of fishes.

(2) Intake locations of adjacent lobster pounds would be identified and marked prior to conducting of blasting operations and arrangements made, if necessary, to provide a continuous supply of cool, clean saltwater to the pounds.

(3) Containment dikes would be constructed by NHPA at the proposed disposal sites to retain the materials and prevent excessive release of suspended sediments into the water.

6. Relationship of Federal Environmental Statutes to the Proposed Project

(1) Archaeological and Historic Preservation Act, as amended, 16 U.S.C. 469 *et seq.*

An underwater remote sensing survey is being undertaken to locate potential historic wrecks in the vicinity of the proposed dredged area.

(2) Clean Air Act, as amended, 42 U.S.C. 7401 *et seq.*

(3) Clean Water Act (Federal Water Pollution Control Act), as amended, 33 U.S.C. 1251 *et seq.*
Draft 404 Evaluation Report prepared to cover possible disposal at the New Hampshire Port Authority site.

(4) Coastal Zone Management Act of 1972, as amended, 16 U.S.C. 1451 et seq.

In process of coordination for CZM consistency determination. Compliance pending review of the document.

(5) Endangered Species Act of 1973, as amended, 16 U.S.C. 1531 et seq.

Coordination and review required on this addendum and use of New Hampshire Port Authority sites.

(6) Estuary Protection Act, 16 U.S.C. 1221 et seq.

In process of coordination.

(7) Federal Water Project Recreation Act, as amended, 16 U.S.C. 4601-12 et seq.

(8) Fish and Wildlife Coordination Act, as amended, 16 U.S.C. 661 et seq.

Process continuing with review of this Addendum to the Environmental Assessment.

(9) Land and Water Conservation Fund Act of 1965, as amended, 16 U.S.C. 4601-4 et seq.

Not applicable.

(10) Marine Protection, Research, and Sanctuaries Act of 1972, as amended, 33 U.S.C. 1401 et seq.

Not applicable.

(11) National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470 et seq.

Compliance completed with State Preservation Officer.

(12) National Environmental Policy Act of 1969, as amended, 42 U.S.C. 432 et seq.

Pending issuance of this Addendum

(13) Rivers and Harbors Act, 33 U.S.C. 401, et seq.

Not applicable

(14) Watershed Protection and Flood Prevention Act, 16 U.S.C. 1001 *et seq*.

Not applicable

(15) Wild and Scenic Rivers Act, or amended, 16 U.S.C. 1271, *et seq*.

Not applicable

References Cited

1980 - Site Evaluation and Design Study New Hampshire State Port Authority, Portsmouth, New Hampshire. Preparation for the Department of Public Works and Highways of the State of New Hampshire. Project No. 8304. C. E. Maguire, Inc., Waltham, MA, May 1980.

1979 - Preliminary Engineering Study for a Roll-on/Roll-off/Facility at the Port Authority Terminal, Portsmouth, New Hampshire. Preparation for the Department of Public Works and Highways of the State of New Hampshire. Project No. 8301. C. E. Maguire, Inc., Newington, N.H., March 1979.

1976 - Dredging, Portsmouth Naval Shipyard, Portsmouth, New Hampshire. A candidate Environmental Impact Statement for Project P-152. Contract No. N62472-76-C-1069. Department of the Navy Naval Facilities Engineering Command, Philadelphia, PA. Parsons, Brinckeroff, Qudade & Douglas and Normandeau Associates, October 1976.

Clean Water Act

Section 404 (b) Factual Determination
and Finding of Compliance
Navigation Improvement Project
Portsmouth Harbor and Piscataqua River
Portsmouth, New Hampshire - Maine

1. References.

a. Section 404(b) of Public Law 92-500, Clean Water Act of 1977 (33 U.S.C. 1344(b)).

b. 40 CFR 320 Subparts A, B, C, D, E, F, G, and H dated 24 December 1980.

I. Project Description

a. Locaton and General Description

The proposed Navigation Improvement Project of Portsmouth Harbor and Piscataqua River involves removing (blasting and dredging) 533,000 cu yds of rock, gravel, and sand at two areas along the channel.

The first major concern of the Federal project is the area between Memorial Bridge and the Maine-New Hampshire Bridge. Presently, maneuvering a large vessel between the bridges is very difficult. In order to minimize the risk of a vessel hitting the Interstate Bridge or being forced aground by the current while turning, it is being proposed that the existing maneuvering area be widened to 1,000 feet. It is further proposed that the channel at Badgers Island be widened by 100 feet to allow proper alignment for passage through the bridge.

The second area of concern is Henderson Point. In order to make it around this point, a vessel has to start turning at Sullivan Point. If it is not done at the precise time the vessel will be forced aground by the strong current. In order to alleviate the problem, it is proposed that the ledge forming the southerly limit directly across from Henderson Point be removed to provide a width of 550 feet.

b. Project Authority.

Concern over potential hazards to navigation in Portsmouth Harbor and along the Piscataqua River prompted local interests to request the U.S. Army Corps of Engineers to conduct a study of the harbor. Recognizing the economic importance of the deep-water channel at Portsmouth, the Committee on Public Works of the U.S. Senate at the request of local interests adopted a Resolution on 23 April 1970, authorizing a study to determine the advisability of making improvements to the existing project. The Resolution reads as follows:

"RESOLVED BY THE COMMITTEE ON PUBLIC WORKS OF THE UNITED STATES SENATE, the Board of Engineers for Rivers and Harbors, created under the provisions of Section 3 of the River and Harbor Act approved June 13, 1902, be, and is hereby requested to review the report of the Chief of Engineers on Portsmouth Harbor and Piscataqua River, Maine and New Hampshire, published as House Document Numbered 556, Eighty-Second Congress, and other pertinent reports, with a view to determining whether any modifications of the existing project are advisable at the present time."

On 23 June 1976, the U.S. Senate provided funds for the first stage in the development of a feasibility study and environmental impact investigation to commence on 1 October 1976.

The original project for Portsmouth Harbor was authorized by the U.S. Congress in 1879 with modifications approved in 1890, 1954, and 1962. Additional modifications were approved in 1965 under Section 107 of the River and Harbor Act of 1960.

c. Description of the Proposed Discharge Site(s)

It is recommended that disposal of the dredged material be conducted at the New Hampshire Port Authority (NHPA). The NHPA plans to develop an additional pier and create additional land. Three areas have been identified which could accommodate the material subject to removal. These sites include Cutts Cove, the proposed new pier site adjacent to the existing wharf and the intertidal and subtidal area located between the National Gypsum Company and the Port Authority to the river side of the railroad spur line. Disposal at the NHPA is the plan which maximizes National Economic Development (NED).

d. General Description of Dredged or Fill Material

It is estimated that a total of 533,000 cubic yards of rock, sand and gravel wil require excavation and blasting to accomplish the intended navigation improvements. The sediments at Area 1 opposite the NHPA, is composed of gravelly sand, gravelly clayey sand and ledge. Area 3 bottom sediments consist of rock, ledge and gravel.

e. Description of Disposal Method

The material will be transported to the NHPA by barge. The material will then be offloaded by crane to a temporary receiving area. Actual placement of the material at the final disposal site will be undertaken by the NHPA. Subsurface conditions at the final disposal sites and containment requirements will influence the method and schedule of final placement of the material.

II. 230.11 Factual Determinations

a. Physical Substrate Determinations

The project would permanently eliminate the 13 acre Cutts Cove marine habitat (including the area outside the railroad embankment) and approximately one to two acres of the pier site increasing urban/industrial runoff to the Piscataqua River. The maximum elevation and slope will conform to the existing shoreline elevations.

b. Water Circulation, Fluctuation, and Salinity Determination

(1) The project would not interfere with the flow of the Piscataqua River, but would change onsite drainage patterns at the disposal site(s) and eliminate a portion of the intertidal-subtidal zone. The project would have no measurable effect on downstream salinity gradients or flooding conditions.

(2) Current patterns, circulation and normal water fluctuation will not be altered in such a manner as to result in adverse effects to the environment.

(3) Impacts on the water chemistry, salinity, clarity, color, odor, taste, dissolved gas levels and temperature should be minimal, since the sediment is relatively clean with low levels of nutrients.

c. Suspended Particulate/Turbidity Determinations

The project, by virtue of the filling of the cove would eliminate all biota inhabitating the area and decrease sediment storage and therefore conceivably increase suspended sediments in the river.

As a result of discharge of the dredged material, a temporary minimal increase in suspended particulate and turbidity levels is expected. This impact should be insignificant due to the large grain size of the dredged material, which falls into Category 1 as defined by the Environmental Protection Agency's testing requirements (Federal Register, Wednesday, 24 December 1980).

d. Contaminant Determination

The project would cause slight increase in urban runoff contaminants, such as lead, cadmium, oils, grease, and chlorides within the river. Most non-water-soluble contaminants would be removed by the directing runoff into retention basins and drains which can be designed into the land use plan by the Port Authority. The sediments to be dredged and used for fill material are free of undesirable contaminants.

e. Aquatic Ecosystem and Organism Determinations

The project would result in the elimination of 10 acres of mud flats and 0.6 acres of saltmarsh habitat and 4 to 5 acres of rocky intertidal and subtidal areas with associated benthic invertebrate fauna. It should not impact Piscataqua River fisheries.

(1) Effects on Benthos

Dredging would cause the destruction of benthic habitats and any associated organisms that cannot move out of the path of the operating dredge. Blasting of rock would destroy benthic habitat in the immedite vicinity of the blasting activities. However, the same type of rock surface would remain and similiar epifaunal species is expected to recolonize. Thus no significant loss of habitat would occur as a result of the blasting activity. The blasting technique employed will be similar to highway blasting operations which consist of drilling bore holes and placing the changer into the holes. This method results in a fracturing of the rock characterized by verticle crumbling of the rock with little horizontal spreading of the change impact. At the disposal site, attached and burrowing benthic organisms would be buried by sediment and rock, with considerable mortality expected. Sediment settling effects at the dredge and disposal site would produce some stress on benthic organisms.

(a) Mud Flats: The proposed filling of Cutts Cove would eliminate 10 acres of tidal mud flats and associated biota.

(b) Vegetated shallows: Macro algae species *Ascophyllum nodosum* and *Fucus vesiculosus* are abundant on the rocks at all three sites. The green algae *Enteromopha polifera* covers the Cutts Cove bottom and is also common in the intertidal zone at the river sites. A floral survey was conducted by Normandeau (1976) and reported in their report to the Navy. The algae and vascular plants identified are common in the Piscataqua River.

(3) Threatened and Endangered Species

The dredge project area may be in habitated by the endangered shortnose sturgeon *Acipenser brevirostrum*. However, the two areas under consideration for improvement are located in the lower section of the estuary where sturgeons are not frequently found and removed also from preferred foraging grounds. Conseltation has been initiated with the National Marine Fisheries Service on this matter and will continue.

(4) Fish Crustaceans, Mollusks, and other Aquatic Organisms in the Food Web

The Cutts Cove area provides habitat for a variety of macro benthic fauna including sand shrimp *Crangon* spp. rock crab *Cancer irroratus*, and hermit crabs *Pagurus* spp. Probable fish species which could be expected to frequent the area include the winter flounder, *Pseudopleuronectes*

americanus, Tomcod, Microgadus tomcod, silverside Menidia menidia and mummichog Fundulus heteroclitus.

(5) Other Wildlife

The impacts to wildlife would result mainly from elimination of habitat surrounding the Cutts Cove area. Observations show that the site is utilized by various species of shorebirds and waterfowl for roosting and feeding. Raccoon and skunk are also known to feed along the banks of the Cove.

f. Proposed Disposal Site Determination

(1) A principal impact of the project is the loss of aquatic habitat. The three disposal sites considered includes the 10 acre Cutts Cove site, one or two acres of rocky intertidal and subtidal habitat at the proposed new pier site and approximately 3 acres of rocky, sand, and gravel intertidal and subtidal habitat characterizing that the northern extension area located to the river side of the railroad spur between the National Gympsum and the NHPA.

(2) The proposed project will be in compliance with applicable water quality standards because of the nature of the material.

(3) Potential Effects on Human Use Characteristics

(a) Recreational and Commercial Fisheries: The channel leading into North Mill Pond is used fairly heavily by both recreational and commercial lobster boats. This channel will however be maintained for such purposes. There is no known commercial shellfishing within Cutts Cove although some minor recreational clamming activity may occur on a seasonal basis. Pot fishing for lobsters is conducted in the channel to the river (north) side of the railroad tracks but no pot buoys were observed up in the shallower proposed disposal areas.

(b) Water-Related Recreation: The Cutts Cove area does provide some opportunity for birdwatching, nture photography and environmental field education. The river itself supports an important recreational fishery & boating resource in the project area.

(c) Aesthetics The project would change the aesthetic preception of the area. The visual amenities of the site will decline as a result of filling activities and eventual construction of warehouses and other off loading facilities. The views of the Piscataqua from nearby residence, especially those in Cutts Avenue and the newly constructed townhouses off Market Street opposite the NHPA, could potentially be blocked by the construction of storage facilities depending upon their exact location and heights. The land area will not offer the same aesthetics as do the tidal flats and water.

(d) Parks, National and Historical Monuments, Wilderness Areas, Research Sites and Similar Reserves: The proposed dredging or disposal at the NHSPA will not impact on any areas or sites of research or national and historic importance.

g. Determination of Cumulative Effects in the Aquatic Ecosystem. The filling of these intertidal and subtidal shallow areas may be considered as incremental actions. The applicant NHPA, when engineering plans are more complete will contact State permit agencies to evaluat the extent of potential cumulative impact. The implementation of existing and future development plans by industrial and commercial interest may constitute cumulative impacts of significant importance to aquatic habitats along the river.

h. Determination of Secondary Effects on the Aquatic Ecosystem

Possible secondary impacts associated with construction might include interference with migration of activities of fish and lobster. In order to mitigate or reduce this problem as much as the blasting or possible will be scheduled during late fall, winter and early spring months. Deployment of small warning charges or pulsed electrical or sunic currents would also be made to repell schoding fish and lobster from the general area. A joint or multi-agency survey observation team will be established to monitor the blasting operation and report any significant impacts.

III. Findings of Compliance or Noncompliance with the Restriction on Discharge

a. Adaption of the Section 404(b)(1) Guidelines to this Evaluation

The proposed disposal sites for dredged material from the Portsmouth Harbor-Piscataqua Channel and anchorage areas have been specified through the application of Section 404(b) Guidelines.

The project files and Federal regulations were reviewed to properly evaluate the objectives of Section 404(b) of Public Law 92-500, as amended. A public notice with respect to the 404 Evaluation will be issued accompanying this document.

b. Evaluation of Availability of Practicable Alternatives to the Proposed Discharge Site which would have Less Adverse Impact on the Aquatic Ecosystem

The New Hampshire State Port Authority (NHPA), the principal sponsor of the project, has expressed an interest in receiving the dredged material to fill certain intertidal and subtidal property for expansion of its existing facilities. The selection of the Port Authority Site(s) represents the greatest net economic benefit under the NED plan evaluation. However, the site currently represents a non-permitted disposal site. This site is recommended based on the fact that it

represents the plan which maximizes National Economic Development NED. Approval for filling the site must be obtaned from various State agencies as well as the Army Corps of Engineers itself under the Section 404(b) (1) Evaluation of the Clean Water Act. Additional engineering and environmental field sampling may be required as part of the permit process. Therefore, use of this site is conditional pending the formal permit application submittal by the NHPA, coordination of the public review process and subsequent approval by regulatory agencies with jurisdiction.

The project would reduce the capacity of the Cutts Cove site to store sediments and assimilate excess nutrients. However, because of the sparse vegetation presently existing, the value of the sites wetlands for this function is generally low.

The project would decrese what remaining resource-based recreational value that the property provides. It would also change the aesthetic perception of the property and surrounding area.

The overall economic value of the site would be improved for the State of New Hampshire through its Port Authority and for the city of Portsmouth through an increase in the tax base, cash flow, and job opportunities.

The applicant would be require to take all appropriate practicable steps to minimize any potential adverse impacts of the discharge of the aquatic ecosystem.

Alternative disposal options considered, can be broken down into the following categories; upland, estuarine 404 or within harbor disposal; ocean (103) disposal and productive use of dredged materials.

Upland disposal site(s) considered included the originally proposed land site at New England Tank Industries. Local residents in the town of Newington objected to placement of the material at this site and only a small area is presently available for dredged material placement. Further, the owner of the property indicated that he could not accrue the cost and responsibility of removal and transportation of the dredged sediments from the riverside offloading site to the stockple area.

The Pease Air Force Base actually involves three small sites all of which would require filling of wetlands. The size of the sites, transportation and rehandling logistics render this alternative less econmical and feasible than the NHSPA site.

Iafolla Industries represents a sand and gravel and rock crushing operation located in Rye, New Hampshire. As with all upland sites considerably logistic and costs result with the double and triple rehandling and transport of the material.

In addition to the NHSPA sites the only other in-harbor disposal area identified was at Pepperall Cove where the Kittery Port Authority is interested in developing a breakwater between Fishing and Gooseberry Islands to provide additional protection to the mooring area. This site is a short transport from Area 3 and placement of the rock material upon exisiting rocky shoals between the island would result in less of an environmental impact than the outright elimination of aquatic habitats at the NHSPA site(s).

Potential ocean disposal sites considered include the Isles of Shoals dumping grounds, Boston Foul Area, Portland and Cape Arundle sites in Maine and the Newburyport dump grounds, Massachusetts.

Disposal at the identified ocean disposal areas would have some, though minimal, impacts on water quality and local habitat. Again, the relatively clean nature of the sand, gravel, and rock would serve to reduce significant impacts. The Boston Foul Area, Portland, Cape Arundle and Newburyport sites are all formally designated EPA sites that could accept the clean sediments to be dredged from the Portsmouth project. Both the Cape Arundle and Newburyport disposal site lie within State waters and would require approval from State regulatory agencies. At this time, neither the Isle of Shoals dumping ground or other areas along the coast are designated disposal areas. The U.S. Environmental Protection Agency would have to so designate a site.

There is some potential to develop additional fish and lobster habitat at selected coastal areas by placing rocky material where sandy bottom exists. The rock material, it is felt, can be deposited on barren sand and gravel bottom areas to create artificial reef habitat. The results of such action will transform the infaunal (burrowing) sand and mud bottom invertebrate communities into areas dominated by attached epifaunal species. The hard rock surface will provide stable substrate for the various organisms to attach onto and shelter for lobster, crabs, and finfish. This alternative is more productive from an environmental enhancement viewpoint than merely depositing the materials in a deep ocean site such as the Foul Area where it would be eventually covered by finer dumped sediments from other dredge projects.

c. Compliance with Applicable State Water Quality Standards

The NHSPH has yet to submit a permit application to the Corps of Engineers for review and approval through its regulatory programs. The site(s) therefore is currently a non-permitted disposal site and is subject to the public review process. Consequently the filling of these areas are dependent upon the Port Authroity's demonstration that the site is environmentally acceptable.

The State of New Hampshire has deferred action on a preliminary application submitted in 1976 (Parsons, Brinckerhoff, Quade and Douglas & Normandeau Associates, 1976) because of insufficient information. The

ultimate utilization of the site therfore is conditional upon the NHPA's successfully completing the permit review process.

d. Compliance with Applicable Toxic Effluent Standard or Prohibition Under Section 307 of the Clean Water Act

The discharge material under initial evaluation does not indicate the presence of contaminants in the dredged material above background levels according to the Federal Register of testing requirements dated Wednesday, 24 December 1980, the disposal material falls into Category 1, thus no chemical or biological testing, including mixing zone determination is required.

e. Compliance with Endangered Species Act of 1973

The project will not jeopardize any threatened or endangered species listed under the Endangered Species Act of 1973, as amended, nor would it destroy or adversely modify critical habitat. The Environmental Assessment however does acknowledge the possibility of the estuary being inhabited by the shortnose sturgeon. Consultation has been held with the National Marine Fisheries Service and it was agree that the preferred habitat of this species however is located aobve and below the proposed work areas.

f. Compliance with Specified Protection Measures for Marine Sanctuaries Designated by the Marine Protective Research and Sanctuaries Act of 1972.

The project would not violate any requirement imposed to protect any marine sanctuary designated under Title III of the Marine Protection, Research, and Sanctuaries Act of 1972. Neither the dredge sites nor the recommended disposal area are designated as marine sanctuaries.

g. Evaluation of Extent of Degradation of the Waters of the United States

The project would not cause significant degradation of "waters of the U.S". It would generate immeasureabley small increases in pollution loads within the Piscataqua River. It could eliminate fisheries habitat by 15 acres if all three sites are filled. Approximately 0.6 acres is classified as saltmarsh. During the permitting process mitigation for these lossses would be evaluated with the applicant.

(1) Effects on Wetlands

Disposal of dredged materials at the NHPA site would convert an estuarine cove environment to an industrial environment. Specifically utilization of the Cutts Cove site will result in the permanent loss of 10 acres of intertidal mud flats and its associated fauna and flora. This includes the elimination of an estimated 0.6 acre of *Spartina alterniflora*

saltmarsh beds. The irreversible loss of the area and its associated biota is thought not to have a significant negative impact on the ecology of the Piscataqua River, for similar habitat types are located in adjacent areas and the area(s) in question do not support a unique assemblage of plant and animals. The subsequent use of this land by the Port Authority will be for storage of marine cargo. The applicant, as part of the permit process, may be required to develop a mitigation plan to offset the loss of this aquatic habitat.

Actions affecting plant and animal populations will be the direct elimination of aquatic habitat. Impacts on the land uses will result from the NHPA fill proposal changing tidal mud flats with fringing saltmash and gravelly-rocky intertidal and shallow subtidal habitats into a land mass. The aquatic animal and plant population presently characterizing there areas would be permanently and irreversibly changed.

h. Appropriate and Practicable Stops Taken to Minimize Potential Adverse Impacts of the Discharge on the Aquatic Ecosystem

As with most estuarine and upland disposal sites, the NHSPA site(s) would require containment diking to prevent erosion and runoff from the fill material. For the Cutts Cove site a dike would run parallel to the tidal channel to the east of the site to form a containment structure. The Army Corps of Engineers will employ measures which will reduce the impacts of blasting. A joint agency observation team will monitor blasting operations and quantify any fish mortalities.

i. On the Basis of the Guidelines the Proposed Disposal Site(s) for the Discharge of Dredged or Fill Material is specified as complying with the requirements of these guidelines with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects on the aquatic ecosystem.

FINDING OF NO SIGNIFICANT IMPACT

Portsmouth Harbor is formed by the mouth of the Piscataqua River along the New Hampshire - Maine boundary. It is located about 45 miles northeast of Boston. Water commerce has increased steadily during the past decade from about 1.8 million tons in 1969 to 3.1 million tons in 1981. Harbor users and local officials expect Portsmouth Harbor to continue to play a significant role in the economy of the region by handling an increasing amount of commerce. The harbor also serves as the home of the Portsmouth Naval Shipyard and the avenue of fuel deliveries to Pease Air Force Base. A firm with major Defense Department contracts also makes use of the harbor and channel up the Piscataqua River.

The existing 35-foot deep, 400-foot wide Federal Channel is characterized by sharp bends, swift currents, narrow lift bridges, inadequate turning basins and a tortuous natural channel which limit safe navigation by deep draft vessels even during periods of slack water. However, vessels up to 700 feet long now use the channel. These 700-foot vessels are up to 150-feet longer and carry up to 10,000 dead-weight tons more than those vessels used for design of the existing project.

The New England Division of the Corps of Engineers has prepared a report, in response to a resolution adopted by the U.S. Senate Committee on Public Works, to determine the advisability of modifications to the existing Federal navigation Project at Portsmouth Harbor. We have completed our investigations and a report was submitted to the Board of Engineers for Rivers & Harbors in April of 1983. Our study considered a wide array of management measures to address the navigation problems of the harbor including the use of favorable tides, navigation aids, multiport operations, lightering, the use of other ports, and improving navigation facilities. These measures were formulated into alternative plans which were evaluated in terms of efficiency, effectiveness, acceptability and completeness.

The recommended plan of improvement, which has not yet been approved at the Washington level, includes widening the channel between the vertical lift bridges near the western end of Badgers Island, from its current 600-foot width to 1,000 feet, also widening by 100 feet the northern limit of the channel adjacent to Badgers Island, and widening the southern limit of the channel at Goat Island from 400 feet to 550 feet.

In my evaluation, this assessment has been prepared in accordance with the National Environmental Policy Act of 1969. The determination that an Environmental Impact Statement is not required is based on the forementioned evaluation and information contained in the Environmental Assessment which is summarized below.

The attached environmental assessment addendum provides background on the proposed disposal area and a description of the environmental consequences of the proposed action. The proposed improvements consists

of blasting and dredging of 533,000 cubic yards of rock and sand and gravels from two locations within the channel to eliminate hazardous conditions and afford additional maneuvering area for the commercial vessels utilizing the port. The two areas considered for improvement as discussed earlier are widening of the channel bend between Goat Island and Henderson Point and the channel downstream of the Maine-New Hampshire Interstate Bridge.

The New Hampshire State Port Authority has expressed an interest in receiving the dredged material to fill certain intertidal and subtidal property for expansion of its existing facilities. The selection of the Port Authority site represents the greatest net economic benefit under the NED plan evaluation. Dredging will be accomplished with a clamshell dredge and barges with disposal at the Port Authority. It is proposed that the operations be completed over a sixteen month continuous period in order to maintain the economic cost/benefit ratio and reduce environmental effects.

Environmental concerns which have been identified in relation to the proposed action include:

- protection of anadromous fishes and lobsters population during their spawning migrations.

- potential effects to shortnose sturgeon, an endangered species.

- filling of intertidal and subtidal aquatic environs.

The two areas targeted for improvement are located to the extreme periphery of the channel thus obstruction or interference to migratory fish and lobster populations will be minimal. With respect to the impacts of the proposed blasting, it is anticipated that the amount of blasting to be performed would not result in any significant loss of fish and lobsters and would not significantly affect the food web or natural productivity of the immediate area. No significant loss of habitat would occur as a result of the proposed blasting activity. Measures will be utilized which would reduce casualties to the aquatic fauna. The blasting operation is described as the "fraction type" which consists of drilling holes and placing the charges in the holes much the same as in highway construction. This type of blasting will have minimal horizontal amplification as opposed to"removal blasting" which creates craters in the bottom. A joint agency inspection team will also be established to observe field operations and to document any significant impacts to anadromous fishes.

Consultation under Section 7 of the Endangered Species Act of 1975 was initiated with the National Marine Fisheries Services and it was agreed that if in fact a viable population of shortnose sturgeon existed within the estuary, its preferred habitat would be located above and below the project areas. Thus a "no effect" determination is still expected regarding this particular species.

The sediments within the project area are mostly sands and gravels. Potential impacts of dredging operations with a clamshell bucket would be minor. Increased turbidity would be short-term and minimal due to the coarse nature of the sediments and the dispersive nature of the strong currents in the Piscataqua River estuary. Temporary dissolved oxygen reduction could occur in the surrounding waters during dredging due to the suspension of organic detritus and other natural organic compounds. Since the sediment to be dredged is relatively clean with low levels of nutrients, heavy metals, oil and grease, and other materials, relatively small amounts of these parameters would be introduced into the water column during dredging. There would also be a minor release of hydrogen sulfide odors.

Disposal at the Port Authority will result in the elimination of approximately 15 acres of intertidal and subtidal areas. The lands created are to be used exclusively for water dependent commercial activities which provides substantial benefits. The NHPA is expected to pursue development with or without the Federal project.

For the reasons described above, I have determined that the project navigation improvements as proposed is not a major action having significant impact to the quality of the human environment, therefore, does not require preparation of an environmental impact statement.

_____
Date

_____
CARL B. SCIPLE
Colonel, Corps of Engineers
Division Engineer