Section 107 Navigation Improvement Project
Detailed Project Report and
Environmental Assessment

Blue Hill Harbor
Blue Hill, Maine

US ARMY CORPS
OF ENGINEERS
New England District

February 2022

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Back of Front Cover

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, NORTH ATLANTIC DIVISION
FORT HAMILTON MILITARY COMMUNITY
302 GENERAL LEE AVENUE
BROOKLYN, NY 11252-6700

CENAD-PD-C (11-2a4)

FEB 2 2 2022

MEMORANDUM FOR Commander, US Army Corps of Engineers, New England District (CENAE-EP), 696 Virginia Road, Concord, MA 01742-2752

SUBJECT: Approval of the Final Detailed Project Report and Environmental Assessment for Blue Hill Harbor, ME, CAP Section 107 Study (P2# 328230)

1. References:

a. Memorandum, CENAE-PDP, 02 December 2021, Submittal of Final Detailed Project Report and Environmental Assessment (DPR and EA) for Blue Hill Harbor, ME, CAP Section 107 Study (PWI: 328230) for Approval

b. Memorandum, CENAD-PD-P, 02 February 2022, Final Detailed Project Report and Environmental Assessment (DPR & EA) for Blue Hill Harbor, ME Section 107 Project (PWI 328230) for Approval

2. The New England District (NAE) submitted for approval the Final Feasibility Report, Environmental Assessment and Finding of No Significant Impact for the Blue Hill Harbor, Maine, study as part of the Continuing Authorities Program - Section 107 (Reference 1.a.).

3. The North Atlantic Division (NAD) Review Team reviewed the package, commented on, and backchecked the revised final submission package and recommends approval by the NAD Commander (Reference 1.b.).

4. I concur with the findings and recommendations of the New England District Commander, Colonel John A. Atilano II, which consists of dredging approximately 91,000 cubic yards of material from the existing channel and depositing the majority of the material in open water and the portion unsuitable for open water deposition in an adjacent confined aquatic disposal (CAD) cell. The total project cost is approximately $3.45M with a cost sharing ratio of 90% Federal and 10% Non-Federal. The Non-Federal Sponsor is the Town of Blue Hill, ME. This report recommends that a Federal navigation project be adopted at Blue Hill Harbor, Maine, under the authority of Section 107 of the River and Harbor Act of 1960, as amended.

5. The date of this report approval, CW170, should be recorded in the P2 project schedule. This completes the feasibility phase for the study.

6. The point of contact is Mr. Joseph Forcina, Chief, Civil Works Integration Division, at (347) 370-4584 or joseph.forcina@usace.army.mil.

THOMAS J. TICKNER
Brigadier General, USA
Commanding

Encls
1. CENAE-PDP Transmittal Memo
2. CENAD-PD-P Review Memo

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, NORTH ATLANTIC DIVISION
FORT HAMILTON MILITARY COMMUNITY
302 GENERAL LEE AVENUE
BROOKLYN, NY 11252-6700

CENAD-PD-P (800B-11-2-220a) 2 February 2022

MEMORANDUM FOR Chief, Civil Works Integration Division (Mr. Joseph Forcina)

SUBJECT: Final Detailed Project Report and Environmental Assessment (DPR & EA) for Blue Hill Harbor, ME Section 107 Project (PWI 328230) for Approval

1. References:

a. CENAD-PD-C Email dated 2 February 2022 transmitting the updated Executive Summary and the EA/FONSI in reply to Reference 1b.
b. CENAD-PD-P Memorandum dated 28 January 2022 transmitting the comments in reply to Reference 1d.
c. Pre-brief for the final DPR & EA conducted on 16 December 2021.
d. CENAD-PD-C Email dated 11 December 2021 transmitting the subject Blue Hill DPR and EA package and requesting review.
e. CENAE-PD-P Memorandum dated 2 December 2021 transmitting the final DPR and EA for the Blue Hill Harbor, ME Section 107 Project.
f. CENAD-PD-P Memorandum dated 12 May 2021 transmitting comments on review of draft report to CENAD-PD-C.

2. The Policy & Legal Compliance Review (P&LCR) Team led by the North Atlantic Division Planning and Policy Division (CENAD-PD-P) conducted a backcheck review of the updated documents transmitted via Reference 1a and determined that all economic and editorial comments have been adequately addressed. The team recommends approval of the Blue Hill Harbor DPR and EA for the Design & Implementation Phase. T

3. Please direct any questions to Ms. Naomi Fraenkel, AICP, Navigation Planning Program Lead at (917) 359-2819 or Mr. Young Kim, P.E., Planning Program/CAP Manager at (347) 370-4514.

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JOSEPH R. VIETRI
Chief, Planning and Policy Division
Programs Directorate

CF: Christopher Ricciardi, Ph.D./CWID DST

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD MA 01742-2751

CENAE-PDP 02 December 2021

MEMORANDUM FOR Commander, North Atlantic Division, U.S. Army Corps of Engineers, (ATTN: CENAD-PD-CID-P, Mr. Christopher Ricciardi), Fort Hamilton Military Community, 301 General Lee Avenue, Brooklyn, NY 11252-8400

SUBJECT: Submittal of Final Detailed Project Report and Environmental Assessment (DPR and EA) for Blue Hill Harbor, ME Section 107 Project (PWI 328230) for Approval

1. Public Review of this report was concluded in May 2020. MSC review of the draft report was completed 12 May 2021. ATR was certified 11 August 2021. The project addresses the need for commercial navigation improvements at Blue Hill Harbor, located in Hancock County, in the Town of Blue Hill, Maine, the project Sponsor. The recommended plan consists of a 6-foot channel and turning basin to access the town wharf in the inner harbor to principally benefit the town's commercial lobstering fleet.

2. NAE hereby requests NAD approve the enclosed Final DPR and EA. As discussed at the 14 September 2021 pre-brief, the report was prepared using FY21 price levels, and an updated FY22 estimate will be provided when the PPA package is submitted.

3. The non-federal sponsor, the Town of Blue Hill, has provided a letter of support for the project and a Self-Certification of Financial Capability.

4. Additional information on this investigation can be obtained by contacting the Project Manager, Mr. Mark Habel, at (978) 318-8871 or Mark.L.Habel@usace.army.mil.

J. A. Atilano II
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8 Encls
See Attached Submittal List

JOHN A. ATILANO II
COL, EN
Commanding

MSC Review of Final Detailed Project Report (DPR) and Environmental Assessment (EA)

Section 107 Feasibility Phase Decision Document

Submittal Pre-Brief Held with NAD and District: 14 September 2021

List of Final Report Submittal Items	
00	Transmittal Memo from NAE Commander to NAD Commander (With Copy to CWID) transmitting the Final report
01	Final DPR/EA and Appendices, Including:
	Main Report
	Environmental Assessment and FONSI
	Appendix A – Correspondence Appendix B – Economics Appendix C – Engineering Design Appendix D – Cost Engineering Appendix E – Real Estate Appendix F – Sediment Testing Appendix G – EFH Assessment Appendix H – Suitability Determination
02	Track Change Version of DPR and EA and Economics Appendix Showing Edits made Since the Draft Report
03	Response to Comments Document – Draft PGM (Word File)
04	Certification of District Quality Control Review – 14 September 2021
05	Certification of Agency Technical Review – 11 August 2021
06	Updated Certification of Legal Sufficiency – 24 September 2021
07	Updated CAP Project Fact Sheet – 14 September 2021
08	Non-Federal Sponsor Letter of Support and Self-Certification of Financial Capability for Decision Documents – 8 November 2021

CERTIFICATION OF LEGAL SUFFICIENCY

The Detailed Project Report and Environmental Assessment for establishing a Section 107 Federal Navigation Project in Blue Hill Harbor, Blue Hill, Maine, has been reviewed by the New England District Office of Counsel.

Of note the Real Estate Planning Report (REP) states a Temporary Work Area Easement is required for this project. The work area referenced in the REP is owned in fee by the non-federal sponsor (NFS). As such an easement is not required, however, the NFS must provide an Authorization for Entry for Construction that includes the work area. The remainder of the report is determined to be legally sufficient.

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Julie Byars
Assistant District Counsel

BLUE HILL HARBOR
BLUE HILL, MAINE

NAVIGATION IMPROVEMENT PROJECT

DETAILED PROJECT REPORT
AND
ENVIRONMENTAL ASSESSMENT

FEBRUARY 2022

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EXECUTIVE SUMMARY

The U.S. Army Corps of Engineers (USACE), in partnership with the town of Blue Hill, Maine (Town) conducted this feasibility study to examine establishing a Federal Navigation Project (FNP) in Blue Hill Harbor, Blue Hill, Maine. The study was conducted to determine if Federal participation in channel and related navigation improvements is warranted. The proposed channel improvements would increase the harbor's ability to accommodate safe and efficient commercial fishing vessel operations from the town landing. Establishing a FNP would also eliminate groundings of fishing boats transiting to and from the landing at lower tides.

There is no existing Federal Navigation Project for Blue Hill Harbor. A prior study in 1972 recommended adoption of a project consisting of a channel to the town landing with a turning basin at its head. Lack of local financing prevented implementation of a project at that time. An initial appraisal and Federal Interest Determination (FID) was completed August 13, 2013 and recommended proceeding with this cost-shared feasibility study. A Feasibility Cost-Sharing Agreement was executed between the town of Blue Hill and the USACE on June 29, 2015.

This study developed and analyzed various alternatives for navigation channel improvements and the benefits that each alternative provides. The Recommended Plan, as shown in Figure ES-1, would establish a channel -6 feet deep at mean lower low water by 80 feet wide, extending about 5,400 feet from deep water off Parker Point up-harbor to the Blue Hill town landing with a one-half-acre turning basin at its head. Only the upper 2,600 feet of the channel would require dredging. The dredging would be by mechanical bucket dredge and scow that will be able to operate in shallow draft areas in the channel.

The project would involve the dredging of about 71,500 cubic yards (CY) of mixed silty and sandy material from the channel and turning basin. Testing has determined that most of this material is suitable for open-water placement at the previously used Eastern Passage Disposal Site. Dredged material from the upper channel reaches includes about 10,600 cubic yards from the upper two feet of material that has been determined unsuitable for unconfined open water placement. To dispose of the unsuitable portion of the dredged material a confined aquatic disposal cell (CAD), about 1.8 acres in size, would be constructed in the harbor north of the channel. Forming the CAD cell would require dredging an estimated 19,500 cubic yards of material. Of the remaining 60,900 CY of the suitable dredged material from the lower channel reaches, about 8,800 CY, would be used to cap the CAD cell after it is filled. All remaining suitable material, including 52,100 CY from the channel and the 19,500 CY dredged to create the CAD cell (a total of 71,600 CY) would be placed at the previously used Eastern Passage Disposal Site.

Various other channel depths and upland disposal options for the unsuitable material were also evaluated. The Recommended Plan, with a 6-foot channel and turning basin and disposal of unsuitable material in a CAD cell would result in the greatest economic net benefits derived for providing the commercial fishermen with reliable and improved access to the facilities in Blue Hill Harbor.

Figure ES-1
Blue Hill Harbor, Maine
Recommended Plan

The USACE has concluded the proposed navigation improvements would cause a temporary disruption of the environmental resources present in the construction work area and immediately adjacent during dredging operations and no significant long-term effects are anticipated. Due to the benefits attributable to the commercial fishing industry, any effects are considered to be offset by the improvement and the resulting overall economic benefit to the region.

Future maintenance dredging of the completed improvements by the Federal government would be done when needed contingent upon the availability of maintenance funds, the continued economic justification of the project, and the environmental acceptability of maintenance activities.

An analysis of climate change focused on anticipated sea level rise rates and their effect on the feasibility of proposed navigation improvements through accessibility of the Town Landing. Three levels of sea level rise, historic, intermediate and high were evaluated for the 50-year project economic life and the 100-year planning horizon. The analysis was conducted with respect to mean higher high water, and the 99% Annual Exceedance Probability storm surge at mean high water was used to approximate an annual storm event or nor'easter highest annual tide levels. The analysis determined that the level of risk was not assumed to effect project feasibility.

The total estimated cost of design and construction for the recommended plan, based on price levels as updated in February 2022 for Fiscal Year 2022 (October 2021) price levels, would be $3,253,000. Annual benefits to commercial navigation would be $181,000 as compared to annual costs of $125,400 resulting in a benefit to cost ratio of 1.44, and net annual benefits of $55,600.

The Lands, Easements, Rights of Way, Relocations and Disposal Areas (LERRDs) costs for town provision of a construction access for the town wharf include $5,000 in Government administrative costs and $5,000 in town costs. The latter cost may be credited against the town's additional ten percent post-construction share of total project costs.

Escalating the design and implementation cost to FY2024 (December 2023) price levels gives a fully funded cost of $3,447,000. The non-Federal Sponsor would be required to provide ten percent of the cost of design and construction ($344,700) up-front upon execution of a Project Partnership Agreement before project design can be completed, and a second ten percent upon completion of construction, which after credit for Town-provided easements ($5,000) would be $339,700. The total non-Federal share of project implementation is $689,400, including real estate. The total Federal share, 90 percent up-front, is $3,102,300.

Table ES-1
Blue Hill Harbor, Maine
Section 107 Navigation Improvement Project Summary
Projected Costs and Cost-Sharing for the Recommended Plan

Improvement Dredging - Cubic Yards – Channel – CAD Cell		71,500 CY 19,500 CY
Project First Costs (FY 2022 (Oct 2021) Price Levels)		
Construction Costs and Contingencies (Oct 2021)		$2,678,000
Planning, Engineering and Design		$354,000
Construction Management		$212,000
Real Estate Costs (LERR – Town Wharf Access)		$10,000
Total Project Costs		$3,253,000
Total Investment Cost (with IDC)		$3,262,000
Cost-Benefit Analysis (Updated FY 2022 Price Levels) (2.25% FY22 Interest Rate = 0.03352)	Commercial Navigation Benefits Only	Commercial & Recreational Benefits
Annual Cost	$125,600	$125,600
Annual Benefits	$181,000	$327,600
Annual Net Benefits	$55,400	$202,000
Benefit Cost Ratio	1.44	2.61
Cost-Sharing – Design & Implementation (FY24 Fully-Funded Price Levels)		
Fully Funded Project Cost (December 2023)		$3,447,000
Federal Cost – 90%		$3,102,300
Non-Federal Cost – Up-Front – 10%		$344,700
Non-Federal Additional Contribution Post Construction		$344,700
LERR Credit		-$5,000
Total Non-Federal Cost Share - Cash		$684,400

The District Engineer finds that Federal participation in providing commercial navigation improvements at Blue Hill Harbor, Maine is warranted. The proposed action would result in positive economic benefits to the commercial fishing fleet and the local economy, exceeding annualized costs. Based on the review and evaluation of the environmental effects of the proposed action as presented in the accompanying USACE 2021 Environmental Assessment, the adoption of a Federal Navigation Project at Blue Hill Harbor is not a major Federal action significantly affecting the quality of the human environment. In making this determination the District Engineer has considered public and other comments on the Federal Action.

In conclusion, the USACE recommends that a Federal navigation project be adopted at Blue Hill Harbor, Maine, under the authority of Section 107 of the River and Harbor Act of 1960, as amended, in accordance with the Recommended Plan identified in the Detailed Project Report, with such further modifications thereto as in the discretion of the Chief of Engineers may be advisable.

The recommendations contained in this report reflect the information available at this time and current USACE 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 authorized for implementation funding.

Blue Hill Harbor, Maine
Navigation Improvement Project
Detailed Project Report

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BLUE HILL HARBOR, MAINE
SECTION 107 NAVIGATION IMPROVEMENT PROJECT
DETAILED PROJECT REPORT

1 INTRODUCTION

This study evaluates the feasibility of establishing a Federal Navigation Project (FNP) in Blue Hill Harbor, Blue Hill, Maine. The improvements would increase the harbor's ability to accommodate safe and efficient vessel operations from the town landing. Navigation improvements would alleviate delays for the commercial fishing vessels using the landing for offloading catch, fueling, and provisioning. They would also eliminate groundings of fishing boats transiting to and from the landing at lower tides.

The commercial fleet at Blue Hill has increased over the years, with boats being based out of several small coves and harbors along the Town's shores on Blue Hill Bay. Improving the town landing at Blue Hill Harbor would provide a central location for the fleet to work from. This would assist in attracting a stable group of buyers for the catch landed by the fleet, place the fleet closer to services, supplies and fuel providers, and enable near year-round operations from a protected harbor area.

Lack of adequate channel depth and turning area at the town wharf have limited its use to higher tide stages. Part of the Town's fleet chooses to operate out of more distant small coves and harbor areas, which are in more exposed locations that limit their months of operation and safety of access. Reduced operating costs could be realized with a central and more accessible landing. These tidal delays and damages increase the operating costs of Blue Hill fishermen, reducing net incomes and reducing overall economic efficiency.

This Detailed Project Report (DPR) is the result of an engineering, economic and environmental feasibility study of navigation improvements in Blue Hill Harbor, Maine (Figure 1). The town is home to a large commercial fishing fleet and a number of seasonal recreational boats and facilities.

A 1972 U.S. Army Corps of Engineers (USACE) DPR concluded that establishing a Federal navigation channel in Blue Hill Harbor was in the Federal interest, but lack of local financing prevented implementation at that time. By letter of September 9, 2009 the town of Blue Hill requested that the USACE revisit the feasibility and Federal interest in the improvements proposed in 1972 for the navigation conditions in Blue Hill Harbor. An initial appraisal and determination of Federal Interest was completed August 13, 2013 and approved by the North Atlantic Division on October 24, 2013. The Section 107 Fact Sheet was approved by the Assistant Secretary of the Army for Civil Works (ASA-CW) on November 21, 2014. A Feasibility Cost-Sharing Agreement was executed between the town of Blue Hill and the USACE on June 29, 2015. The principal Federal interests at Blue Hill are improving the safety and efficiency of commercial navigation for vessels accessing the town wharf where grounding damages, tidal delays, and congestion delays hinder vessel operations.

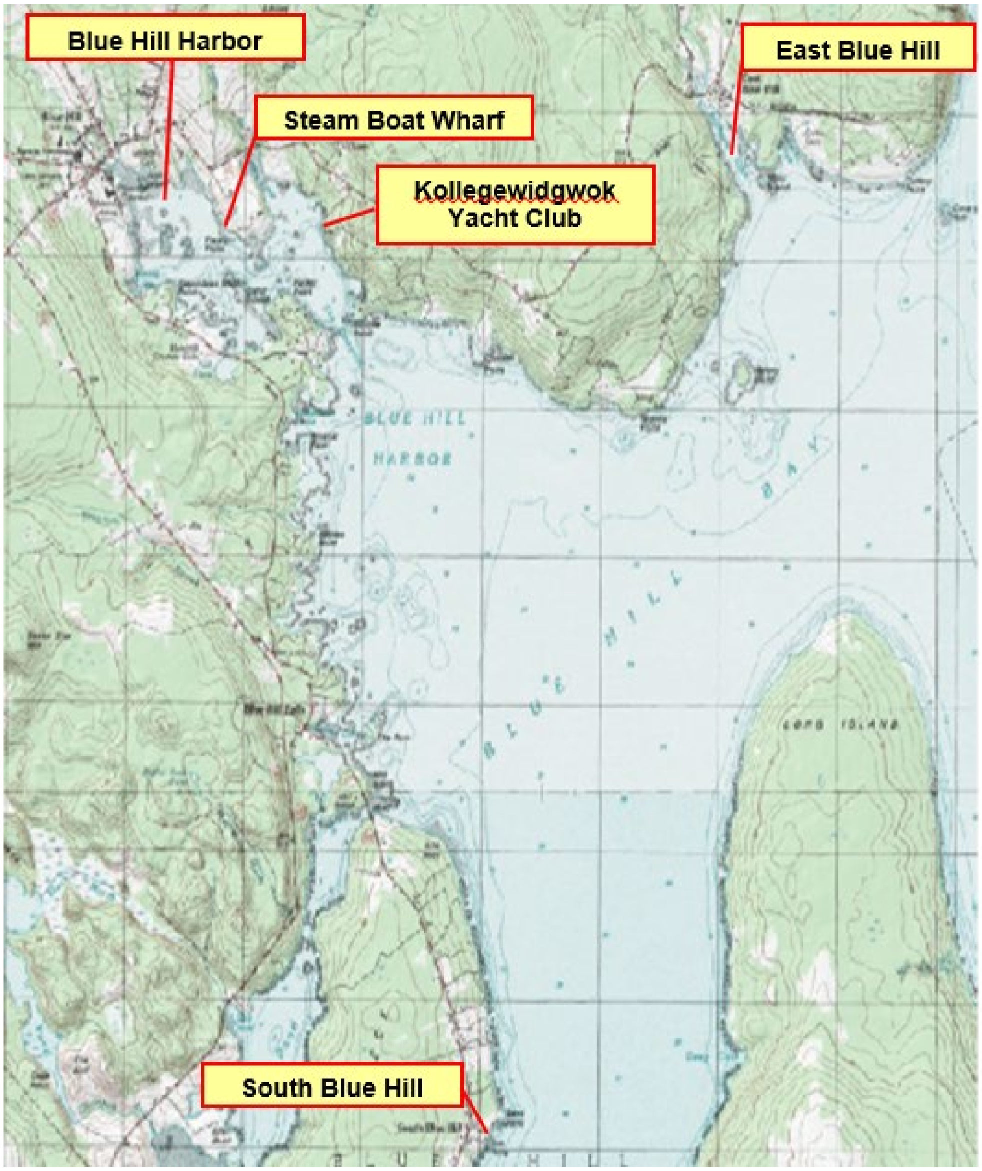

Figure 1 – Project Location Blue Hill Harbor, ME Navigation Improvement Project

1.1 Study Purpose and Authority

This report is prepared and submitted under the authority and provisions of Section 107 of the River and Harbor Act of 1960, as amended. Section 107 provides authority for the USACE to improve navigation including dredging of channels, anchorage areas, and turning basins and construction of breakwaters, jetties and groins, and other general navigation features in partnership with non-Federal government sponsors such as municipalities, counties, special chartered authorities, or units of state government. The town of Blue Hill is the non-Federal sponsor for this study and project.

1.2 Project Study Process

The feasibility study is cost-shared 50/50 between the non-Federal Sponsor and the U.S. Army Corps of Engineers, except for the first $100,000 in study costs which is funded 100 percent by the Federal government. The feasibility study examines reasonable alternatives for the problems and needs and determines the best solution consistent with Federal policy. The solution must pass three criteria: economic feasibility, environmental impacts, and it must have a local partnership. The steps in the process are:

1. Feasibility Study - The first $100,000 of Feasibility Study costs were 100 percent federally funded, including the preparation of a Federal Interest Determination that recommended proceeding with the feasibility study. Costs over the $100,000 are being shared with the non-federal sponsor on a 50/50 basis (up to one-half of the non-federal share can be in the form of in-kind services).
2. Final Project Design and Preparation of Plans and Specifications - Detailed design and preparation of plans and specifications are treated as part of total project costs for purposes of cost sharing and the non-federal cost share for these activities is collected with the construction cost share.
3. Project Construction - Funding of project design and construction for commercial navigation projects with a design depth of 20 feet or less is initially 90 percent Federal and 10 percent non-Federal. The non-Federal Sponsor is also responsible for an additional 10 percent contribution after construction, payable over a period of up to 30-years.
4. Future Project Maintenance - The U.S. Army Corps of Engineers is responsible for future maintenance of projects for commercial navigation for project depths of 50 feet or less, subject to available funding. Funding for shallow draft project maintenance has been constrained in recent years. Maintenance of projects constructed for recreational navigation purposes, or separable project features designed to provide recreational benefits, are a 100 percent non-Federal responsibility.

1.3 Project Location

Blue Hill Harbor is the principal commercial fishing harbor of the town of Blue Hill, located in Hancock County, Maine. The harbor is located 160 miles by highway northeast of Portland, Maine, 16 miles west of Bar Harbor, and 13 miles southwest of Ellsworth, Maine. Blue Hill Harbor is located on the northwest side of Blue Hill Bay, northwest of Long and Mount Desert Islands. Small boat harbors in the area are Union River 11 miles to the northeast, Bass Harbor about 19 miles to the southeast, and Northeast Harbor about 24 miles to the southeast. Blue Hill Harbor and the surrounding location can be found on the National Ocean Survey Chart #13316 entitled "Blue Hill Bay." Blue Hill is located in Maine’s second Congressional District.

1.4 Scope of the Study

This DPR summarizes the investigation of alternatives for providing navigation improvements at Blue Hill Harbor, Maine, for the benefit of the area’s commercial fishing fleet. The steps in the study included an inventory of applicable and available information, performance of topographic and hydrographic surveys, environmental sampling and testing, and preparation of base plans. Public officials and harbor users were contacted to provide information and seek input in the study process. Based on these efforts, planning objectives and constraints were developed and alternative plans formulated. These plans were developed and evaluated in coordination with state authorities and the final alternative plans were selected for detailed study.

This report provides for the following:

- Identifying existing conditions and historical trends within the study area;
- Determining the navigational problems and needs of the area;
- Determining the most probable future condition without Federal improvements;
- Developing alternative improvement plans;
- Evaluating and comparing the engineering, economic, environmental, and social impacts of the alternative plans, with respect to the future condition; and
- Recommending improvements that are implementable, economically feasible, environmentally and financially acceptable, and socially beneficial.

The geographic scope includes:

- The inner portion of Blue Hill Harbor which includes town wharf and the area known as Steamboat Wharf,
- The naturally deep channel area, connecting the inner, middle, and outer portions of Blue Hill Harbor,
- Alternative landing points for the commercial fishing fleet within the town of Blue Hill, including South Blue Hill and East Blue Hill,
- Areas of possible impacts beyond the immediate vicinity of Blue Hill Harbor, including the dredged material disposal site and the areas from which resources are harvested by the commercial fleet.

1.5 Prior Studies and Improvements

Navigation improvement studies of the Blue Hill area have occurred since 1891 when the first survey of navigation conditions was conducted by USACE. The River and Harbor Act of 1890 authorized a survey of Blue Hill Harbor for the purpose of securing a large entrance to the harbor. The survey report in 1891 found that Blue Hill Harbor was not worthy of improvement by removal of the ledges known as “Middle Ground, Eastern and Western”, but aids to navigation were recommended.

The River and Harbor Act of 1911 authorized a preliminary examination of Blue Hill inner harbor for the purpose of providing a navigable channel to the town wharf, but the findings of the report were that Federal funding was not justified.

The River and Harbor Act of 1945 authorized a preliminary examination of Blue Hill inner harbor for the purpose of providing a navigable channel to the town wharf. The preliminary examination report in 1946 found that improvements were warranted pending study of cost and local cooperation. The 1951 survey report concluded that providing a channel to and a turning basin near the town wharf was not economically justified at that time.

The River and Harbor Act of 1965 authorized a survey of Blue Hill Harbor to determine the advisability of providing improvements in the interest of navigation and allied purposes. A reconnaissance report in 1969 recommended further study of the feasibility of establishing a channel in Blue Hill Harbor. The 1972 Detailed Project Report recommended constructing a channel 100 feet wide, 6 feet deep, from deep water to the Town Wharf including a turning basin 300 feet by 300 feet, 6 feet deep, adjacent to the wharf. The planned improvement did not proceed due to project non-Federal Sponsor funding limitations.

Figure 2 – West and Northwest at the Town-Owned Landing in Inner Blue Hill Harbor

1.6 Study Participants and Coordination

The preparation of this report required the cooperation of Federal agencies, state and local government agencies, elected officials of the state and local governments, local commercial fishermen, other harbor users, and interested individuals. Appendix A contains a record of public involvement, agency coordination, and project correspondence.

1.7 Non-Federal Sponsor

The project's non-Federal Sponsor is town of Blue Hill, Maine. The town first requested a study of Blue Hill Harbor in their letter of 4 September 2009. The study was initiated in 2012 and a Federal Interest Determination was approved by the North Atlantic Division 24 October 2013. The Section 107 Fact Sheet was approved by the Assistant Secretary of the Army for Civil Works (ASA-CW) on November 21, 2014. A Feasibility Cost Sharing Agreement was executed with the Town on 29 June 2015.

1.8 Environmental Operating Principles

The USACE has reaffirmed its commitment to the environment in a set of "Environmental Operating Principles". These principles foster unity of purpose on environmental issues and reflect a positive tone and direction for dialogue on environmental matters. By implementing these principles within the framework of USACE regulations, the USACE continues its efforts to evaluate the effects of its projects on the environment and to seek better ways of achieving environmentally sustainable solutions in partnership with stakeholders. The seven "Environmental Operating Principles" are as follows:

1. Foster sustainability as a way of life throughout the organization.
2. Proactively consider environmental consequences of all USACE activities and act accordingly.
3. Create mutually supporting economic and environmentally sustainable solutions.
4. Continue to meet our corporate responsibility and accountability under the law for activities undertaken by the USACE, which may affect human and natural environments.
5. Consider the environment in employing a risk management and systems approach throughout the life cycles of projects and programs.

6. Leverage scientific, economic and social knowledge to understand the environmental context and effects of USACE actions in a collaborative manner.
7. Employ an open, transparent process that respects views of individuals and groups interested in USACE activities.

1.9 USACE Campaign Plan

The U.S. Army Corps of Engineers Campaign Plan guides USACE policy decisions on how we organize, train, and equip our personnel; how we plan, prioritize, and allocate resources; and how we respond to emerging requirements and challenges and meet national priorities. The Campaign Plan is regularly updated and the current version of the plan covers the period of FY2018 to FY2022.

The USACE strategic plan effort towards improvement began in August 2006 with the "12 Actions for Change" and has evolved to four goals and associated objectives. Although the effort originally developed with a focus on missions that seek to manage risk associated with flooding and storm damage, the Campaign Plan Goals and Objectives are applied to all aspects of the USACE service to the nation including its civil works mission. USACE Campaign Plan Goals and Objectives are derived, in part, from the Commander's Intent, the Army Campaign Plan, and Office of Management and Budget guidance. The four goals are (1) Support National Security, (2) Deliver Integrated Water Resource Solutions, (3) Reduce Disaster Risk, and (4) Prepare for Tomorrow.

The goal and associated objectives most closely related to the study and recommendation of a navigation improvement project at Blue Hill Harbor is:

Goal 2: Deliver Integrated Water Resource Solutions

- <u>Objective 2a – Deliver Quality Water Resources Solutions and Services</u>
  The Recommended Plan for navigation improvements at Blue Hill Harbor meets this objective by delivering a project which, within the limits of Federal participation established by Congress, meets to the extent practicable the expectations of our partners and stakeholders in providing safe and efficient navigation for the commercial fleet operating from the town wharf in Blue Hill Harbor.
- <u>Objective 2c – Develop the Civil Works Program to Meet the Future Needs of the Nation</u>
  The Recommended Plan for navigation improvements at Blue Hill Harbor meets this objective by delivering a project which, within the limits of Federal participation established by Congress, provides sustainable system of channel improvements. The study and recommendation were conducted with stakeholder engagement and the public received an opportunity to review and comment on the study and its recommendations through the National Environmental Policy Act (NEPA) process.
- <u>Objective 2d – Manage the Life-Cycle of Water Resources Infrastructure Systems to Consistently Deliver Reliable and Sustainable Performance</u>
  The project has been formulated with the complete life-cycle in mind, with a consideration of the costs and impacts of both initial construction and future operations and maintenance, to determine the most cost-effective alternative solution to address problems and opportunities with navigation at Blue Hill Harbor.

2 PROBLEM IDENTIFICATION

This section discusses the project area and the reasons requiring navigational improvements. It establishes the planning objectives and constraints that direct subsequent planning tasks.

2.1 Existing Conditions

2.1.1 General Description

Blue Hill Harbor, which is extensive in area, is divided into three parts known locally as the outer, middle, and inner harbors. The outer harbor, situated southeast of Parker and Sculpin Points, has an area of approximately 350 acres, with depths ranging from 24 to 48 feet. The outer harbor is exposed to easterly and southerly winds. The middle harbor has an area of 80 acres with depths from 6 to 30 feet. The outer and middle harbors are connected by a deep natural channel between Parker and Sculpin Points. This channel has a width of about 150 feet and a controlling depth of 20 feet. The middle harbor is well protected in all directions. It connects with the inner harbor through a natural channel passing between Parker and Peters Points. The channel has a minimum width of 150 feet and a controlling depth of about 19 feet. The inner harbor contains 57 acres in which shallow depths prevail, ranging from 6 feet at a point 2,200 feet southeast of the town wharf to +3.5 feet at the head of the harbor. The mean lower low water (MLLW) line is about 500 feet seaward of the town wharf. The mean range of the tide is 10.3 feet, and the spring range is 11.7 feet.

Under existing conditions, about half the fishing vessels based in the various parts of Blue Hill load and offload their vessels primarily at South Blue Hill Wharf. Some also use the inner harbor wharf when it is accessible, at high tide. While South Blue Hill Wharf is the most used commercial fishing area, the wharf has no power, water, or other services. Fuel trucks deliver fuel directly to vessels pulled up at the dock. Supplies and catch are loaded and off-loaded while vessels are pulled up at either the dock or at barges moored nearby. The landing at South Blue Hill is very exposed to winds and waves, particularly from the south and southeast. Loading and offloading delays occur frequently due to both congestion and the exposed conditions. As the only loading and offloading facility in the harbor, South Blue Hill facilities can be congested, requiring vessels to wait for a space to load or offload. Offloading delays of one to two hours are common, particularly in the summer months, with fishing vessels often lined up to offload. Offloading delays also occur during bad weather and the winter months, when high winds or waves make tying up to the exposed wharf too hazardous. Vessels which do tie up in bad weather are sometimes damaged from banging against the dock. The municipal wharf and floats at South Blue Hill are also regularly damaged, requiring repairs, as vessels knock against the wharf and floats during rough weather.

Some vessels use the inner harbor wharf periodically, depending on conditions and tides. When using the inner harbor wharf, tidal delays can be significant, with vessels lining up to wait for the tide. Another concern in the inner harbor is that vessels moored in the Steamboat Wharf area use private land to access their vessels and park vehicles. If this access is no longer allowed, an alternative location for access and parking will be required. Access and parking at South Blue Hill Harbor is already at capacity, particularly in the summer months. At East Blue Hill access is more limited, with a small boat ramp, limited parking, and no other public facilities. A large private marina occupies much of the harbor area at East Blue Hill. Fishermen and their floats are moored in the harbor's outer reaches. The harbor would have difficulty accommodating more than the 8 fishing boats that already work out of that location.

2.1.2 Recreation/Tourism

The town's economy is heavily dependent on the seasonal summer tourist business. The summer residents, most of whom come from other states, have built up the shoreline of Blue Hill so that about 80 percent of its 15 miles of shoreline is now occupied by estates and summer homes. The town's population is about 2,650 (2020 estimate), a decline of about two percent since 2010. In the summer months the population of Blue Hill swells to over 6,000 with the addition of tourists and seasonal residents attracted to the many recreation and tourism opportunities of the area, cultural amenities such as art galleries, a chamber music center, and nearby Acadia National Park.

Blue Hill Bay borders the west side of Mount Desert Island. During the summer months this reach of the Maine coast offers an unexcelled cruising ground for the boating enthusiast. Bar Harbor on Mount Desert Island is considered the largest yachting center east of Marblehead, Massachusetts. Although there are three other harbors along the east and south sides of the island which are used by boats on vacation cruises, there are no suitable harbors on the Blue Hill Bay (western) side of the bay to attract these craft. An expansion of Bass Harbor on the island's southwest tip completed in 2011 is already fully used by the expanded fishing fleet of that island harbor.

While the principal focus of improvement to Blue Hill Harbor is the commercial fishing fleet on the Bay's western shore, harbor improvements here may also incidentally benefit seasonal recreational boating. Improvements to Blue Hill Harbor would provide access to a population center which would attract craft that presently by-pass the upper reach of Blue Hill Bay. Factors which deter visitors from using the Blue Hill Harbor under existing conditions include the congestion encountered at the yacht club and boat yard landings and lack of public facilities. Without additional access to all-tide public wharf facilities, transients will continue to by-pass the harbor seeking other ports where suitable wharf facilities are available. Any recreational boating benefits would stem from joint use of the improvements designed for the commercial fishing fleet.

2.1.3 Economic Conditions

Appendix B contains the Economic Assessment of the proposed Federal Action. The town of Blue Hill is located in northeastern Maine in Hancock County. In 2010, Blue Hill had a population of 2,686 and contained 1,936 housing units (US Census Bureau, 2010). Summary socioeconomic statistics for the town, county and state are shown in the tables below. Between 2000 and 2010, the population and the number of housing units increased, with a population growth of 12.4% and a 30.3% increase in housing units (US Census Bureau, 2000). The median family income in Blue Hill in 2010 was $44,158 (US Census Bureau, 2010). This is slightly lower than the median family income in Maine of $46,933.

In 2016, Blue Hill had a labor force of 1,240 and an unemployment rate of 3.1%. The largest employment sectors in Blue Hill in 2016 were Health care and Social Assistance (27.5%), Retail Trade (18.8%), Accommodation and Food Services (9.1%), and Educational Services (9.0%). (Maine Department of Labor, Center for Workforce Research and Information)

Commercial fishing is a major industry in Maine. It plays a significant role in the economy of Blue Hill and the wider regional area. The economic impact of the industry extends beyond the fishermen to include the many fish buyers, fish processors, and suppliers to Blue Hill fishing activity. Fishing also provides a more year-round income than the seasonal industries that cater to tourists and summer visitors.

In 2014, Blue Hill fishermen landed nearly 1.8 million pounds of catch, including 1,547,549 pounds of live lobster valued at nearly $5,600,000 (Blue Hill Harbormaster, 2015). Other major species landed include eel and scallops. In 2014, total landings were valued at $6,113,000 (Blue Hill Harbormaster, 2015). Blue Hill fishermen generally fish seven to eight months a year, six days a week, and typically fish full-time. Lobster boats predominate, with generally one or two crew per boat plus a captain.

2.1.4 Vessel and Fleet Presence

Currently, the Town of Blue Hill contains 428 vessels, of which 50 are commercial fishing vessels and 378 are seasonal recreational vessels. In comparison, in the early 1970's there were seven commercial vessels operating out of Blue Hill. Commercial vessels moor at several areas around the town, including South Blue Hill, Inner and Outer Blue Hill Harbor (including Steamboat Wharf), and at East Blue Hill. The geographical location of Blue Hill Harbor provides prime commercial fishing access to Blue Hill Bay. The fishing vessels range in draft from three to ten feet, with 96 percent of the vessels having drafts 4.5 feet or below.

Recreational craft are used only seasonally, generally between Memorial Day and Columbus Day. Recreational craft are based at private docks all along the Town's shoreline, with concentrations at marinas at Webbers Cove Boatyard at East Blue Hill, Kollegewidgwok Yacht Club at Peters Cove, and the Blue Hill Boatyard on the Inner Harbor. Recreational boating was not a focus of this study. However recreational craft which do not operate out of the marinas and transient recreational craft could benefit incidentally from any navigation improvements designed to serve the commercial fishing fleet through improved access to the town wharf.

2.1.5 Harbor Operations

Facilities to support the commercial fishing fleet are located at South Blue Hill and in the inner harbor. The inner harbor is located in the center of town within the main downtown retail district, in upper Blue Hill Bay. In 2012, the town completely rebuilt the inner harbor town wharf, a $300,000 to $400,000 investment, with the long-term goal of relocating commercial fishing loading and offloading operations to a protected location in the center of town. The new town wharf has a crane as well as water service and electricity and ample parking. Currently, the town wharf in the inner harbor is used only minimally since it is accessible at only the highest tides, generally 3 daylight hours per tidal cycle. So high tide access to the town wharf is only available once for 3 hours per working day. The upper end of the inner harbor is dry at mean low tide, with the mean low water line being about 500 feet from the town wharf.

At Peters Point, about 3,400 feet downstream of the town wharf, there are remains of an old steamship company wharf (Steamboat Wharf) upon which a small timber dock has been built. This property is now privately owned as part of a large summer estate. There is a depth of about 13 feet of water near this wharf. Owners of the dock allow transients and some locally-based boat-owners to use the dock. However there are no supply facilities or ramp and parking is limited. Boat access is by skiff. The wharf is located about 1.25 miles from the center of town. Access by land is over a state highway and a dirt road leading to the summer estate which cannot be acquired by the town.

2.2 Problems and Opportunities

The principal navigation issue at Blue Hill Harbor is that the existing conditions do not accommodate safe and efficient operations of comm1ercial fishermen and other vessel operators in the Blue Hill area. Regional demands on the commercial fishing fleet, navigation delays, and inefficiencies have become problematic for the fleet. There is a lack of sufficient water depth in the inner harbor to access the publicly-owned shorefront facilities in Blue Hill Harbor. Under present conditions, navigation is limited to the period of 1.5 hours before and 1.5 hours after high tide, a total of 3 hours, or about one-quarter of the tidal cycle. At low tide a boat drawing two feet or more cannot approach closer than 2,000 feet seaward of the Town Wharf. The only other landings in Blue Hill Harbor that have adequate water access are the Kollegewidgwok Yacht Club in Peter's Cove and the privately owned old Steamboat Wharf site on Peter's Point. The yacht club is a private seasonal recreational facility. The owner of the old Steamboat Wharf site does allow several fishermen to launch across that shore but the site has limited parking and facilities available and would not support expanded or more efficient commercial fleet operations.

Currently, a majority of commercial vessels load and offload at town facilities at South Blue Hill, located outside the protected inner harbor and five miles by road from the town center. South Blue Hill Wharf contains a municipal ramp, docks and floats, as well as 23 moorings for commercial fishermen. South Blue Hill is at maximum capacity with no room for expansion. The heavy use of this area by many of the vessels and the narrow width of the ramp results in frequent and significant congestion delays. The lack of appropriate access to the unloading facilities has caused delays for some boats as they wait to unload their catch resulting in excess labor and fuel costs. The exposure of the site along the more open lower bay also presents challenges to expanded operations.

Other fishermen are based in East Blue Hill Harbor, located outside the protected inner harbor to the northeast. Other fishermen work from the former Steamboat Wharf site, located on the harbor's eastern shore. In addition to the 23 fishing vessels which moor at South Blue Hill, 8 commercial vessels moor at East Blue Hill, 12 moor at the Steamboat Wharf area, and 7 moor elsewhere around the harbor. Currently, there is some use of the town wharf in the inner harbor, but its use is limited due to the shallow access. A large float and gangway is located next to the boat ramp at the Town Wharf and is accessible at higher tides.

The Blue Hill commercial fishing fleet has already maximized the available berthing and offloading space so providing a new channel will alleviate the commercial fleet's navigation problems. The vessels utilizing Blue Hill as a base of operations, must be better accommodated if the commercial operators at Blue Hill are to continue to be competitive in the New England region fish industry. If accommodations are not made, the existing commercial fleet will continue to experience delays, groundings and berthing difficulties reducing the efficiency of commercial fishing operations. To improve navigation conditions that the town seeks dredging of a new channel to allow vessels to safely reach the town wharf and its access and offloading areas. This study analyzes the alternatives for channel improvement and the benefits that each alternative provides to the existing fleet.

In summary the problems for commercial navigation at Blue Hill are as follows:

- There is a lack of sufficient water depth in the inner harbor to access the publicly-owned shorefront facilities in Blue Hill Harbor. This limits access to the town wharf to only a few hours either side of high tide.
- Fishermen are limited to short period of the day in which they may launch, provision, fuel and offload catch from their boats at the wharf.
- In response to lack of efficient public access many fishermen operate out of other coves in the town or harbor that provide less protection, less adequate access facilities, greater congestion and competition with recreational craft, and damages and delays associated with these conditions.

The opportunity exists to reduce or eliminate these inefficiencies for the commercial fishing fleet at Blue Hill by improving navigational (waterside) access to existing public landing facilities. Improvements in waterside access would benefit the area's fishermen by reducing the cost of operation and harvest of their catch. Goals and methods to achieve these improvements are describe in following sections.

2.3 Without Project Condition

The *"Without Project Condition"* is the expected condition if the federal government takes no action to improve the navigation capabilities in the Blue Hill Harbor area.

- At South Blue Hill the wharf will continue to be the only loading and offloading area with all-tide access for Blue Hill fishermen. The exposure of the South Blue Hill wharf to storms and other bad weather conditions will continue to result in damages to vessels, damages to town infrastructure, seasonal restrictions on use, congestion, and resulting delays.
- At East Blue Hill lack of a commercial wharf, congestion and competition with the larger recreational fleet will continue to constrain fishing operations.
- For those vessels which use the Blue Hill Harbor inner harbor town wharf, extensive tidal delays, groundings, and congestion will continue. Fishing boats that use other areas in the harbor, such as the Steamboat Wharf site will continue to operate without adequate landing facilities for commercial operations.
- These delays and damages increase the operating costs of Blue Hill fishermen, reducing their net incomes and reducing overall economic efficiency.

The most likely future condition with navigation at Blue Hill is a continuation of the existing conditions which constrain commercial fishing operations. The improvements that the town has made to the town landing will continue to be under-utilized.

2.4 Planning Objectives

Planning Objectives are the desired results of the planning process that will address the identified problems and typically result in the desired changes between the without- and with-project conditions. Planning objectives serve to eliminate from consideration alternatives and considerations that will not address the identified problem.

State and local objectives for the project area include the continued development, management and success of the Blue Hill Harbor area as a base for commercial fishing. The Federal objective of water and related land resources project planning is to contribute to National Economic Development (NED) consistent with protecting the Nation's environment, pursuant to national environmental statutes (National Environmental Policy Act), applicable executive orders, and other Federal planning requirements. This requirement involves:

- Water and related land resources project plans shall be formulated to alleviate problems and take advantage of opportunities in ways that contribute to this objective.
- Contributions to NED are increases in the net value of the national output of goods and services, expressed in monetary units. Contributions to NED are the direct net benefits that accrue in the planning area and the rest of the Nation. Contributions to NED include increases in the net value of those goods and services that are marketed, and also of those that may not be marketed.

Planning objectives that have been identified to specifically address the navigation problems and opportunities at Blue Hill Harbor for the 50-year period of analysis are:

- Reduce the cost of commercial fishing boat operations in Blue Hill Harbor by eliminating tidal delays and related inefficiencies with waterside access to public landing facilities. .
- Contribute to safer conditions for the commercial fishing fleet in Blue Hill Harbor by reducing or eliminating the risk of vessel groundings and congestion, and providing access to more protected year-round public landing facilities.

2.5 Planning Constraints

Planning Constraints are the parameters (natural, fiscal, institutional, etc.) that limit the implementation of a proposed plan or plans to allow for improvement of the navigation conditions in support of the commercial and recreational industries at Blue Hill.

- The primary constraint at Blue Hill Harbor is the natural conditions. Blue Hill inner harbor is a tidal mudflat that is exposed across most of its area at low tide with several areas of rock ledge showing. Navigation improvements within the harbor should be aligned to avoid encountering ledge and minimize the dredged material volume.
- Another constraint is the nature of the material to be dredged and the limitations that places on suitable disposal alternatives. The 71,500 CY material to be dredged for the proposed channel improvements includes approximately 10,600 CY of surficial sediment in the project area nearest to the town wharf that was found to contain polycyclic aromatic hydrocarbons (PAHs). This material while not contaminated to an extent that would require remediation, was found to be unsuitable for unconfined open water placement. This material must be transported upland to an approved landfill or contained on site in a manner consistent with USACE, Environmental Protection Agency (EPA) and state policies.
- The town's resources are limited, given the low population and limited fiscal resources available to the municipality. Recommended improvements will need to take the town's fiscal resource limits into account.
- The presence of fisheries and shellfish resources in the harbor and the bay will limit the time of year in which dredging and dredged material disposal can take place to the mid-

fall to early spring timeframe. The routes selected for hauling dredged material must be coordinated with resources agencies and fishermen active in the bay to avoid conflict.

3 FORMULATION OF PLANS

The formulation of alternatives for navigation improvement at Blue Hill considered the problems and needs of the study area, and the opportunities and objectives of the study. An alternative must be considered reasonable and designed to achieve the planning objectives and are developed with regard to the planning constraints previously identified. State and non-Federal Sponsor objectives are essential considerations in the evaluation of alternative plans.

3.1 Plan Formulation Rationale

The formulation of alternative plans is based on a standard set of criteria. Each of the alternative plans must:

- be complete so that it provides and accounts for necessary investments or other actions to ensure the realization of the planned effects;
- be effective to alleviate the specified problems and achieve the specified opportunities;
- be efficient, demonstrating a cost-effective means of alleviating the specified problems and realizing the specified opportunities;
- be acceptable by state and local entities and the public, and;
- be compatible with existing laws, regulations, and public policies.

Each alternative is considered on the basis of its effective contribution to the planning objectives, and the selection of a specific plan is based on technical, economic, and environmental criteria that allows for a fair and objective appraisal of the effects and feasibility of alternative solutions.

Technical criteria require that the plan have the dimensions necessary to accommodate the expected vessel use, sufficient navigation area to provide for maneuvering of boats, and allow for development or continued use of shore facilities. All plans must contribute to navigational efficiency and be complete within themselves.

Economic criteria require that the benefits of the navigation improvement exceed the economic costs and that the scope of the project is such to provide maximum net benefits. Environmental criteria require that the tentatively selected plan preserve and protect the environmental quality of the project area. This includes the identification of effects to the natural and social resources of the area and the minimization of expected impacts that adversely affect the surrounding environment. It also includes the assessment of effects that may arise during the construction of the proposed navigation improvements and those activities attracted to the area after plan implementation.

3.2 Management Measures

Management measures can be identified and evaluated as the basis for formulating alternative plans to solve the navigation problems in Blue Hill Harbor. These management measures are categorized as either structural or non-structural.

Structural measures are those that involve the construction of features that would, to varying degrees, meet the planning objectives developed for Blue Hill Harbor. These include channel improvements such establishing a channel to access additional port areas. A channel would need to be deep enough to reduce or eliminate tidal delays and the risk of grounding. A channel of sufficient width would reduce or eliminate channel congestion and assist in maneuvering for facility access and egress.

Nonstructural measures involve those that would achieve the same planning objectives, but without resorting to structural improvements. An example of a nonstructural measure applicable to small fishing harbors involves the transfer of commercial fishing vessels to neighboring ports having capacity to sufficiently accommodate additional vessels at existing facilities. Another example of a nonstructural measure for a small fishing harbor would be use of tidal navigation to avoid dredging. These are discussed in the general consideration of alternatives below.

Given the limited nature of the improvements under consideration for this Section 107 CAP small navigation project more costly structural solutions such as relocation of port facilities to areas with deeper navigation access were not considered. The Blue Hill Harbor town wharf in the inner harbor is already developed for navigation access. Acquisition of private lands for public commercial port development in other areas of the harbor or town would be far more costly than constructing a channel to the existing inner harbor town wharf.

3.3 Analysis of Alternatives Considered

3.3.1 General Considerations and Non-Structural Alternatives

Navigation improvement alternatives were developed and analyzed during the early stages of the planning study. These alternatives included both structural measure (various dredging options) and nonstructural measures, including the possibility of transferring commercial fishing vessels to neighboring ports (Table 1).

<u>Fleet Transfer to Other Harbors</u>: The transfer of some of the fishing vessels to nearby harbors is contingent on the ability of these harbors to provide adequate protection, capacity, and efficiency of operation. It is not likely that any commercial operators would permanently transfer their vessels if another alternative site does not have the capacity to provide adequate access features and facilities.

USACE planning efforts determined that harbors in the vicinity of Blue Hill do not meet the necessary qualifications of an "adequate" fishing port. Nearby harbors, such as Bass Harbor in Tremont, Maine and Stonington Harbor in Stonington, Maine, are fully used and suffer from overcrowding. These ports cannot handle the potential influx of vessels due to their lack of adequate anchorage or berthing space.

The only other option in Blue Hill Bay is the Union River Federal Navigation Project at Ellsworth, Maine. This harbor is a tidal river port, seasonally restricted by winter ice formation and does not have shore support facilities necessary for the fishing fleet and boats operating from Blue Hill. All three alternative harbors would increase the daily haul distance by 20 to 25 miles roundtrip.

Table 1 – Distances to Alternative Ports			
From Blue Hill Harbor	Bass Harbor	Union River	Stonington Harbor
Miles Overland by Road	37	14	24
Miles by Water	21	20	26

Within the town of Blue Hill the commercial fishing fleet has apportioned itself in the most efficient way possible given the existing conditions. Of the 50 fishing vessels that are based in Blue Hill, 23 are moored at South Blue Hill, 12 moor at Steamboat Wharf in Blue Hill Harbor, 8 moor at East Blue Hill, and 7 moor elsewhere. South Blue hill is the most developed of the alternatives within the town, but only 23 moorings are available. The South Blue Hill landing is at maximum capacity and is abutted by privately owned residences, making expansion of the landing cost prohibitive. South Blue Hill is exposed to wind and waves from all directions. Some fishermen not moored at South Blue Hill unload their catch there, contributing to the congestion related delays.

Steamboat Wharf lacks facilities to load/unload provisions and catch on launch boats. The landing is completely on privately owned land and access could be rescinded at any time. East Blue Hill's shore facilities are not equipped for commercial use. The anchorage is full and primarily utilized by recreational vessels.

Continue Tidally Restricted Navigation: Tidal navigation is presently practiced by the portion of the fleet that unload at the town wharf in Blue Hill Harbor. New England experiences a semidiurnal tide; in general there are two high tides and two low tides every 24 hours and 50 minutes. The highs and lows (and therefore range of the tide) can vary considerably from one tidal cycle to the next. Experienced fishermen understand the tides in the areas they operate and pay attention to the tide charts. Even so, the effects of storms, waves, swells, surges, currents, winds and other factors all contribute to uncertainties in navigating shallow coastal waters and harbors. Groundings can occur when deeper draft boats are operated without sufficient underkeel clearance to account for these conditions and the effect on a boat's hull in the water and sail area (cross section exposed to the wind) above the water.

Fishing boats leave the harbor loaded down with provisions, ice, fuel, and bait, and return to the harbor loaded down with catch on ice. When loaded draft, plus a reasonable underkeel clearance for sea and channel conditions, exceeds the available controlling depth in the channel, then groundings can occur. The only solution short of dredging is to delay the channel transit, which costs the boat time, and if inbound fuel and labor. Significant delays inbound can result in spoilage of catch and reduction in the ex-vessel value of the catch.
At Blue Hill the non-Federal Sponsor and the commercial fleet have requested the USACE to examine channel improvement to alleviate tidal delays and groundings. Further reliance by the fleet on tidal navigation would fail to address the problems experienced by the fleet.

3.3.2 Structural Alternatives

The Town of Blue Hill has made improvements to benefit commercial interests to the town wharf, located in the inner harbor which is completely protected. The town wharf has water, electricity, and a crane for loading/unloading. The wharf also has a heavy duty concrete boat ramp for launching vessels. The town wharf is directly adjacent to a hospital and a fire department. It also serves as the base of operation for the Harbormaster. The town wharf is in the town center, which provides ease of access to fuel, ice, and other necessary provisions.

The town center is accessed by state highways. A channel into the town wharf would provide necessary access to facilities and would provide relief to overcrowding at other landings. All tide access to the town wharf in the inner Blue Hill Harbor is the only reasonable alternative to relieve the delays and groundings experienced by the existing fleet. Due to the constraint of avoiding rock ledge in the harbor and the fixed location of the town wharf, only one channel alignment was analyzed.

Due the presence of elevated PAH levels in the upper two feet of sediment in the proposed channel's upper reach, alternatives were developed to handle the material determined unsuitable for unconfined open water placement at either of the two existing and recently used open water sites in Blue Hill Bay. After conferring with the Town and state regulatory agencies it was determined that the 10,600 of material with higher PAH levels could either be rehandled at the shore and hauled away by truck to an approved landfill or placed in a confined aquatic disposal cell constructed in the harbor to receive that material (Figure 3).

Alternatives were developed based on project depth optimization and disposal options for unsuitable dredged material. Project depths of 5, 6, and 7 feet at MLLW were evaluated to aid in optimization of the tentatively selected plan. Alternatives for disposal of unsuitable dredged material include placement in an in-harbor Confined Aquatic Disposal (CAD) Cell, or re-handling material ashore for dewatering and transport to an upland disposal facility. Table 2 below shows the features of the alternative plans.

Table 2 – Blue Hill Harbor, Summary of Detailed Plans

Federal Plan Description	Plan 1	Plan 2	Plan 3
Channel Depth (MLLW)	5 Feet	6 Feet	7 Feet
Channel Length - Total	5,400	5,400	5,400
Channel Length - Dredged	2,500	2,600	2,700
Channel Width	80 Feet	80 Feet	80 Feet
Turning Basin	0.6 Acres	0.6 Acres	0.6 Acres
Disposal Alternatives	Plan A	Plan B	
Suitable Material	Open Water EPDS	Open Water EPDS	
Unsuitable Material	CAD cell	Upland	

(1) Plan A – Town Wharf Channel & CAD Cell – This alternative for navigation improvement proposes to establish a channel in Blue Hill Harbor 80 feet wide from deep water northeast of Parker's Point up-harbor to the Blue Hill town wharf with the channel widened to form a turning basin 160 by 160 feet adjacent to the town wharf. Based on the vessel size and the amount of congestion in the area it was determined that a width of 80 feet would provide proper clearance for vessels using the town wharf to maneuver to the offloading docks, and around other vessels.

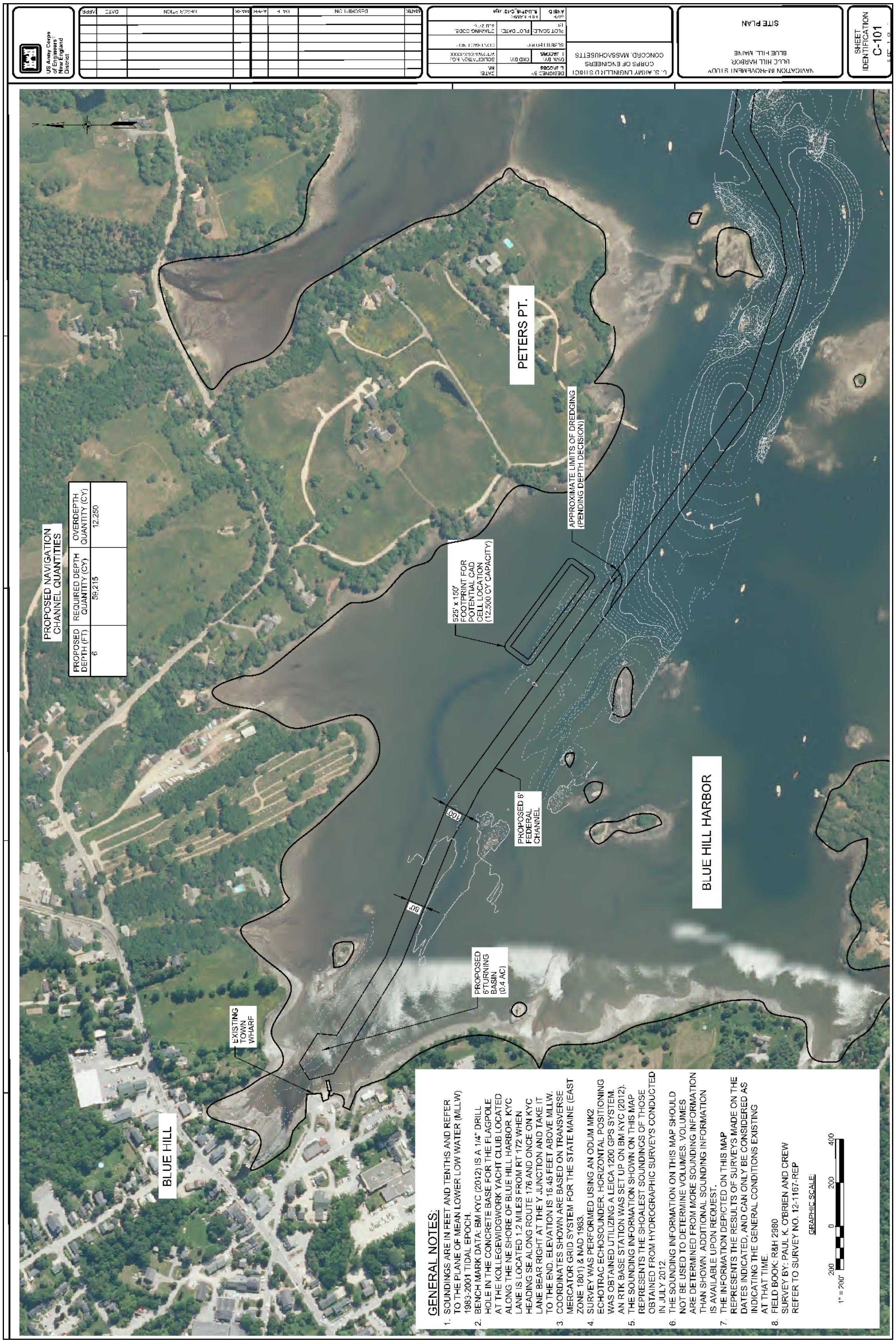

Figure 3 – Location of Plan A and Plan B

Under this plan disposal of suitable dredged material would be at one of two available open water placement sites in Blue Hill Bay. Both sites are located about 14 miles from the town wharf at Blue Hill Harbor. The remaining 10,600 CY of unsuitable material would be placed in a CAD cell dredged in the inner harbor along the channel. The material dredged to form the CAD cell would be placed in the open water site in the bay. Suitable material dredged from the lower channel reaches would be used to cap the CAD cell once it was filled with the unsuitable material. To accommodate the unsuitable material and the cap about 19,500 CY of material would be dredged to form the CAD cell. After filling the CAD would be capped using suitable material dredged from the lower channel reaches.

(2) Plan B –Town Wharf Channel & Upland Disposal – This alternative allows for the same channel dimensions and features as Plan A but with a different disposal method for the unsuitable material. The portion of dredged material not suitable for open water placement would be excavated and re-handled ashore for dewatering, then placed into lined trucks and transported to a licensed landfill for disposal. Table 3 below shows the quantities of dredged material estimated for each of the three project depth increments and the breakdown of those quantities into suitable and unsuitable materials.

Table 3 – Quantity Estimates (in Cubic Yards) for Plans A and B

Channel Depth Increment	Required Removal	1-Foot Overdepth Allowance	Total Cubic Yards (cy)	Total Suitable Material	Total Unsuitable Material
5-Foot Channel	48,600	11,800	60,400	49,800	10,600
6-Foot Channel	59,200	12,300	71,500	60,900	10,600
7-Foot Channel	73,000	13,200	86,200	75,600	10,600
CAD Cell excavation with Plan A would require an additional 19,500 cy of dredging under each depth increment. 6-Foot Quantities revised for modified channel bend.					

3.4 Dredged Material Management Alternatives

Appropriate suitable disposal of the dredged material can impact project cost and engineering feasibility, due to the distance and location associated with the disposal, special handling of the dredged material, the method of dredging required by the disposal method, and the need for any containment or treatment of the dredged material.

The material to be dredged at Blue Hill Harbor is predominantly poorly graded fine to coarse sands with overlying marine clay deposits (see Environmental Assessment). A cobbley glacial till material is found in the upstream areas by the town landing. A suitability determination was prepared based on sediment test results and was concurred with by the USACE, EPA and the state of Maine. Approximately 10,600 CY of sediment localized in the upper two feet of sediment located in the upper channel reach and proposed turning basin portions of the project was determined to be unsuitable for open water placement due to elevated PAH levels. All other sediment from the proposed Blue Hill Harbor Navigation Improvement Project, excluding that 10,600 CY, was found to be suitable for open water placement. Five options for disposal of the material were considered: open water placement, upland disposal, CAD cell, Confined Disposal Facility (CDF), and beneficial use:

- Open Water Placement – The nearest available ocean disposal site in Blue Hill Bay is the Eastern Passage Disposal Site (EPDS). This site is approximately 14 miles southeast of Blue Hill Harbor. This site is the preferred disposal site for the portion of this dredging project found suitable for open water disposal.
- Upland Disposal – An upland disposal site was identified in collaboration with Maine DEP. The Juniper Ridge landfill in Alton, ME was determined to be the closest acceptable site for upland placement. The site is located 56 miles north of Blue Hill, ME. The material unsuitable for open water placement would need to be either dewatered and trucked offsite or transported in lined trucks to the disposal site.
- Confined Aquatic Disposal Cell – A CAD cell is an engineered containment feature for the isolation of dredged material determined to be unsuitable for unconfined open water placement. CAD cells are constructed to reduce the risk from unsuitable sediments by storing them in a depression in the bottom of an aquatic system. CAD cells may be constructed from (1) naturally occurring bottom depressions; (2) sites from previous mining operations, such as beach nourishment borrow sites; or (3) new dredging operations created expressly for the containment structure. Confined aquatic disposal cells can reduce the risk from unsuitable materials by confining the sediments to a smaller footprint, increasing contaminant diffusion times, removing them farther from physical processes that can result in transport, and providing a means to effectively cap the sediments.
- Confined Disposal Facility – A CDF is an engineered structure for containment of dredged material. The confinement dikes or structures in a CDF enclose the disposal area above any adjacent water surface, isolating the dredged material from adjacent waters during placement. The Town had considered construction of a containment along the shore to the north of the turning basin site by bulk-heading an area seaward of the existing shore and backfilling the area using material from the dredging project and potentially the adjacent tidal flats between the basin and shore that was unsuitable for open-water placement. The cost of constructing a stone or sheet pile bulkhead would be significantly in excess of the cost of constructing a CAD cell in the harbor or the bay. Any difference in cost would need to be borne by the Town. This disposal measure was dropped from further consideration due to cost.
- Beneficial Use - Nourishment – The project provides opportunity to evaluate beach nourishment and nearshore disposal. These are considered actions that provide beneficial reuse of the dredged material and are generally considered to have positive environmental benefits and generally have the least adverse effects from the proposed navigation improvement. The unsuitable material in the upper two feet of the upstream dredge areas cannot be used for either beach or nearshore placement. The remainder of the material from the lower strata to be dredged is a mix of till, marine clays, sands and gravels with a dredge cut of between one to five feet. This mixed material in a shallow cut does not lend itself to segregation of materials in a manner that would allow them to be used as nourishment. There are also no public beaches in the upper or western regions of Blue Hill Bay that would benefit from nourishment actions.
- Beneficial Use - Wetlands – Dredged materials of mixed grain size can sometimes be used for saltmarsh or mudflat restoration or creation. Such features have been constructed along the Maine coast in the past when that option was determined to be the least costly

means of disposing of the dredged material. When not the least cost means, Federal participation must be based on an evaluation of ecological habitat benefits v. the increase in project costs, or the non-Federal Sponsor must be willing to pay the cost difference. Such project typically involve rehandling of the dredged material, using of additional dredge plant and equipment, and long-term site management and monitoring. Incorporation of habitat restoration project features into the dredging project for Blue Hill Harbor would be more costly than open water placement at either of the two existing nearby sites. No opportunities for development of saltmarsh or other coastal wetlands habitat using the dredged material from Blue Hill were identified during the study.

- Beneficial Use – Ship Island – Ship Island is located in lower Blue Hill Bay about 16 miles from Blue Hill Harbor and is operated by the U.S. Fish and Wildlife Service as part of the Maine Coastal Islands National Wildlife Refuge Complex. The Service contacted the USACE in early 2021 proposing that the suitable silty dredged material from Blue Hill Harbor be placed upland on the island to mitigate the effects of sea level rise on the island's elevation. Based on similar recent projects in New England that involved re-handling of material to beach sites the Service was informed that the cost of such an alternative would likely be more than twice the cost of open water placement. This alternative was not considered further.

3.5 Results of Initial Screening of Alternatives

All three project depth increments would improve navigation safety, reduce tidal delays and channel congestion by providing improved channel dimensions and therefore have significant benefits to the commercial fishing fleet. Benefits increase for each increment of depth, with no commercial vessels requiring a depth of more than 7 feet. Plans A and B with their different disposal methods for unsuitable material also address the planning objectives. The combined depth and disposal plans are each complete within themselves. No additional work is required for any plan to generate its evaluated benefits relative to the without-project condition. Those plans are efficient in that increment depth optimization has identified the channel depths for each that produce the maximum net benefit. Plans A and B are acceptable to the non-Federal Sponsor, port users, and regulatory agencies as they contribute to the viability of the commercial fishing industry.

3.5.1 System of Accounts

The Principals and Guidelines for Water and Related and Resource Implementation Studies (P&G) require all studies to consider the impact of various alternatives with respect to four accounts, National Economic Development, Environmental Quality, Regional Economic Development and Other Social Effects.

- National Economic Development (NED): Plan A produces net NED benefits (benefits greater than the costs of the improvements) by contributing to improvement in the efficiency of navigation. Plan B does not produce net commercial NED benefits.
- Environmental Quality (EQ): Plan A involves dredging to improve navigation access. Dredging results in disturbance to the harbor bottom and a temporary loss of benthic biota and other minor impacts. Placement of the dredged material will bury benthic biota in the placement site. All these impacts will be temporary and are not considered significant.

- Regional Economic Development (RED): The benefits of port infrastructure improvements typically extend beyond the NED benefits which are measured on the vessel and at the dock in terms of operational efficiencies (crew time, fuel, repairs, etc.), costs of transporting cargo and passengers, and changes in ex-vessel value of catch landed. More economic activity on the water generally means more activity shore side for provisioning ships, servicing ships, offloading and processing, marketing, buying and transporting catch, operating and maintain shore facilities, operating the port, and other activities. These are examples of the RED benefits that could be expected to accrue to the region from harbor improvements. All of the plans considered would yield RED benefits, as all would improve the efficiency of navigation. But only Plan A could be expected to generate sufficient RED benefits to justify its cost with respect to commercial navigation.
- Other Social Effects (OSE): Other Social Effects include those that extend beyond economic development and environmental quality to include impacts to the community, human health and safety, energy conservation, and cultural resources impacts. Those working in the fishing fleet, those who provision and service the boats and shore facilities, and those who process, transport and distribute their catch are members of the community to which their employment contributes. Infrastructure improvements that improve the efficiency of port operations and navigation safety will have a positive effect on the community as a whole. Improving safety of vessel and port operations, and helping to ensure timely delivery and freshness of catch contribute to human health and safety. Improving navigational efficiency would contribute to energy conservation by saving the fishing fleet at sea time and fuel.

The results of cultural resource investigations and coordination with state and tribal cultural resource officials have concluded that dredging and dredged material disposal under Plan A will have no significant impact on historic or archaeological resources.

4 COMPARISON AND EVALUATION OF DETAILED PLANS

4.1 Plan Features

Screening of alternatives eliminated those which involved development of a new or expanded public wharf/town landing facilities at sites other than the existing town landing at Blue Hill Harbor, transfer of the fishing fleet to other towns, or a continuation of tidally constrained use of the harbor. Consultation with the town and harbor users also resulted in elimination of other sites around Blue Hill Harbor for a new public landing. The only plans carried forward for detailed development and analysis are Plan A and Plan B for a channel with a turning basin to allow better access to the wharf and boat ramp at the existing year-round town landing.

Plan A and Plan B are acceptable alternatives to improve navigation within the study area. For both plans a 6-foot channel would extend from deep water in the lower harbor northeast of Parker’s Point up-harbor about 5,400 feet to the town landing at Blue Hill. Only about the upper 2,500 to 2,700 feet of the channel would require dredging. The lower channel reaches would be jurisdictional limits to ensure that the channel remained open and un-encroached by facilities and moorings. The channel would be 80 feet wide, widened to 160 feet at its upper end to provide a turning basin off the town wharf about 160 feet long.

Table 4 summaries the alternatives and the expected results from implementation with respect to the project purpose and need. Plan A and Plan B differ in the means of disposing of dredged material for the upper two feet of the dredge cut in the upper areas of the channel and turning basin that has been determined unsuitable for unconfined open water placement. That material is about 15 percent of the total to be dredged for the 6-foot channel and basin.

Subsurface analysis indicates that the removal of rock or ledge is not required for any plan evaluated. The dredged material for Plan A and Plan B is a mixture of clean sand, silt, and gravel suitable for open water disposal, and unsuitable material that will require an alternative disposal option. The suitable material would be placed at the EPDS, located 14 miles southeast of Blue Hill Harbor, in Blue Hill Bay. This site was last used in 2010-2011 for disposal of material from the maintenance and improvement dredging of the nearby Bass Harbor Federal Navigational Project.

The suitable material could also be placed at the Tupper's Ledge disposal site in Union River Bay at the head of Blue Hill Bay. Tupper's Ledge was last used for the maintenance dredging of the Union River FNP in 2000-2004. Tupper's Ledge could benefit from the placement of suitable dredged material atop the disposal mound from 2004. For purpose of this report the Eastern Passage Disposal Site is the recommended placement site.

The alternatives for disposal of the 10,600 CY of unsuitable material from the upper project reaches are construction of a CAD cell in the harbor, or re-handling, dewatering, and overland transport of the material to a lined landfill licensed to receive such material. With room for a cap the CAD cell would require the removal of about 19,500 CY of parent material suitable for open water placement.

Table 4 – Description of Navigation Improvements

	Proposed Action	Resulting Project Condition	Disposal of Dredged Material
Plan A Channel with CAD cell	Both Plans: Construct an 80-foot-wide Federal channel from deep water to the town landing and an 0.6acre turning basin.	Both Plans: Provide the necessary channel width and depth for commercial vessels to overcome tidal delays and avoid groundings.	Suitable Material to EPDS Unsuitable Material – Construct a 19,500 cubic yard in-harbor CAD Cell
Plan B Channel with Upland Disposal			Suitable Material to EPDS Unsuitable Material – Rehandling and overland transport to a landfill

Preliminary screening of the several depth options was carried out to determine the optimal depth and the combination of alternatives that would yield the greatest net economic benefits. This analysis is summarized here and described in greater detail in Appendix B – Economic Assessment. Preliminary estimates of project cost and benefits using FY 2019 price levels were used for initial screening of alternatives. Due to risk and uncertainties at that level of analysis unit prices and contingencies used were high. This analysis is shown in Table 5.

In total three project depth increments (-5, -6, or -7 feet MLLW) were compared to determine which depth would optimize net economic benefits. The two disposal alternatives for the dredged material were also evaluated to determine if either were economically feasible. Economic analysis determined that a -7-foot MLLW channel depth would serve 100% of the existing fleet at Blue Hill, so no depths beyond -7 feet were considered in this analysis.

4.2 Project Costs

The project first costs and annual charges are directly related to the volume of material to be removed, increasing as the dredging depth increases, shown in Table 6. The total first cost of design and implementation is the amount cost-shared with the non-Federal Sponsor. No new aids to navigation would be required. Appendix D, Cost Engineering, provides a more detailed cost breakdown including total project cost summary and contingency risk analysis.

Once a tentatively selected plan for disposal method was identified, cost engineering and economic analysis were further refined and updated to better estimate project costs and benefit-cost comparison. The impact of risk on design and construction was examined. Several assumptions were made to evaluate the projected costs as follows:

- The estimate assumes mechanical dredging with a floating plant consisting of a dredge barge with an 8-cy bucket, two split hull bottom dump scows of about 1500 cy capacity, one tug, and survey and work boats.
- Suitable dredged material from the project and CAD cell will be placed at the EPDS, a 14-mile tow (one way) from Blue Hill Harbor.
- The dredging and disposal work would take about three months.
- Based on experience with other similar work in the area dredging and disposal would be limited to a period of roughly 8 November to 8 April, though specific resource impacts may restrict the work further.
- Abbreviated Risk Analysis was revised for the feasibility stage resulting in contract contingencies of 15%, 14% for Planning, Engineering, and Design (PED), and 17% for construction Supervision and Administration (S&A).
- Real estate interests (lands or damages) for the project would be limited to construction access from the town (non-Federal Sponsor) for use of the town wharf. No utility relocations will be needed for the project. All work, dredging and disposal, will be seaward of mean high water and all plant will be floating. All dredging and disposal will be in areas seaward of MHW and subject to the Government’s Navigation Servitude.
- Construction of the project, given its limited scope and straightforward method is estimated to take about two months.

Project first costs and annual charges are directly related to the volume of material to be removed, increasing as the dredging depth increases. Construction costs will be reviewed and certified by the USACE Cost Engineering Center of Expertise. Table 5 compares the construction costs and annual costs associated with each of the incremental depths analyzed for Plans A and Plan B for FY20 price levels. This was the time at which screening of plans and optimization were evaluated. Updated costs and benefits for the recommended plan at current Federal fiscal year price levels will be presented in later sections.

Planning, Engineering and Design Costs: Each of the plans evaluated consists of the same project features and are small in scope to the point that PED costs are similar for all plans and were expressed as a percentage of the construction cost. Surveys and other site investigations would cover the same project area regardless of depth increment. Whether alone or combined all work would fit on a single drawing, have a single dredging line item, and result in no difference in the cost of design investigation or bid document preparation.

<u>Construction Management Costs</u>: Similarly the limited nature of the improvements and the short on-site construction duration (3 to 4 months) result in Construction Management (CM) costs that are similar for the various plans and depth increments, and so will also be expressed as a percentage of the construction cost. Construction Management includes the costs of contract administration, supervision and inspection.

<u>Aids to Navigation</u>: No new United States Coast Guard (USCG) or local aids to navigation would be required. The USCG has buoyed the approach to the harbor and the narrows in the outer harbor as far as Peter's Point. From Peter's Point to the town wharf the channel is a fairly direct route with only two low-angle bends that would not require markers.

<u>Annual Costs</u>: Annual costs include interest and amortization of the project design and implementation cost plus the annualized cost of future project operation and maintenance. Interest and Amortization (I&A) used for alternatives screening is based on the interest rate for Federal fiscal years 2019-2020, 2.75 percent amortized over 50 years in the case of navigation projects, or a factor 0.03704. The updated analysis provided later will use rates from the current fiscal year. To compute I&A the cost of interest during construction (IDC) must first be added to the project first cost.

<u>Annual Maintenance</u>: The frequency of project maintenance in Blue Hill Harbor is expected to be minimal for the proposed alternative. Shoaling has not been a major issue in nearby Federal channels. In the nearby Bass Harbor FNP there has only been one maintenance dredging (2010) action needed in the years after the initial improvement effort in 1963. A total of 9,700 CY of maintenance material were removed. That represents an annual shoaling average of 206 CY over the 47-year period between 1963 and 2010 or an annual shoaling rate of about 0.2% of the 1963 improvement volume of 87,000 CY at Bass Harbor.

Other Federal projects in the area (Stonington Harbor and Southwest Harbor) have not required maintenance since their initial construction in 1984 and 1961, respectively. These harbors are typical of this section of the Maine coast in that they all lack sediment input from either tributary rivers or longshore transport. At Blue Hill only a small stream flows into the harbor from west of the town wharf. For this analysis an annual shoaling rate of 0.5% was used for Blue Hill Harbor, which would result in accumulation of about 365 cubic yards each year, or about 18,200 cubic yards every 50 years.

As the results in Table 5 show, none of the depth increments generated a benefit-cost ratio of greater than 0.75:1 for the upland disposal alternative (Plan B), and this plan was not analyzed further. With CAD cell disposal under Plan A, both the 6-foot and 7-foot depth increments generated positive net annual benefits and benefit cost ratios of greater than 1:1.5. Based on this level of analysis it was determined that only Plan A would be carried forward for detailed cost and economic analysis and further depth optimization.

Project costs were updated in November 2020 to Fiscal Year 2021 price levels, and again in February 2022 to Fiscal Year 2022 price levels to provide the most current estimate. This update was prepared only for the optimized project depth of 6 feet. The updated estimate is shown in Table 6.

Table 5 – Preliminary Screening of Alternative Plans						
FY 2019 Price Levels (Oct 2018)	Plan A – Dispose of Unsuitable Material On-Site in a CAD Cell			Plan B – Dispose of Unsuitable Material at an Upland Location		
Plan and Project Depth	Plan A-1 5-Foot	Plan A-2 6-Foot	Plan A-3 7-Foot	Plan B-1 5-Foot	Plan B-2 6-Foot	Plan B-3 7-Foot
Total Estimated Contract Cost Including Escalation & Contingency	$3,228,000	$3,496,000	$3,778,000	$7,429,000	$7,695,000	$7,972,000
Planning, Engineering, and Design	$646,000	$699,000	$756,000	$1,486,000	$1,539,000	$1,594,000
Construction Management	$323,000	$350,000	$378,000	$743,000	$770,000	$797,000
Total Estimated Project Cost	$4,197,000	$4,545,000	$4,911,000	$9,657,000	$10,003,000	$10,364,000
Annual Costs						
Interest During Construction (IDC)	$5,000	$5,000	$6,000	$12,000	$12,000	$12,000
Total Investment Cost	$4,202,000	$4,551,000	$4,917,000	$9,669,000	$10,015,000	$10,376,000
Interest and Amortization (2.875%)	$159,400	$172,700	$186,600	$366,900	$380,100	$393,800
Annual Maintenance Costs	$21,000	$22,700	$24,600	$48,300	$50,000	$51,800
Total Annual Cost	$180,400	$195,400	$211,100	$415,200	$430,100	$445,600
Annual Benefits						
Commercial Benefits	$62,100	$184,500	$191,100	$62,100	$184,500	$191,100
Recreational Benefits	$46,500	$139,500	$145,300	$46,500	$139,500	$145,300
Total Benefits	$107,700	$324,000	$336,400	$107,700	$324,000	$336,400
Benefit-Cost Analysis						
Total Benefits BCR	0.60	1.66	1.59	0.26	0.75	0.75
Total Net Annual Benefits	($72,700)	$128,600	$125,300	($307,500)	($106,100)	($109,200)

Table 6 – Updated Cost for the Recommended Plan of Improvement		
Costs for Updated Price Levels	**Plan A2 with CAD Cell 6-Foot Project Depth**	
First Costs	**FY 2021 - Oct 2020**	**FY 2022 - Oct 2021**
Mobilization/Demobilization	$363,000	$521,000
Mechanical Dredging and Disposal	$1,618,000	$1,807,000
Remaining Construction Items	$104,000	- - -
Total Contract Cost	$2,085,000	$2,328,000
Contingencies (15%)	$314,000	$350,000
Subtotal	$2,399,000	$2,678,000
Real Estate – Town Wharf Access	$9,000	$10,000
Planning, Engineering and Design	$345,000	$354,000
Construction Management	$207,000	$212,000
Total First Costs	$2,960,000	$3,253,000
Interest During Construction (IDC)	$9,000	$9,000
Total Implementation Cost	$2,969,000	$3,262,000
Annual Costs	(0.03526)	(0.03352)
Interest & Amortization	$104,700	$109,300
Maintenance Dredging	$14,800	$16,300
Total Annual Charges	$119,500	$125,600

4.3 Project Benefits

This section summarizes the benefits of establishing a channel with all tide access to the town landing in Blue Hill Harbor. Table 7 summarizes the breakdown of annual project benefits for Plan A by project depth increment. These benefits were used in the screening of detailed plans and depth optimization in 2019. The same level of benefits would also be produced by Plan B. Commercial benefits were derived from reductions in congestion and tidal delays, including vessel damage cost, lost labor cost, increased fuel consumption cost, and increased ordinary maintenance cost to the fishing fleet. Incidental recreational navigation benefits were developed for joint use of the town landing by small seasonal craft taking advantage of the improved channel access. Appendix B (Economics) provides greater detail.

Table 7 – Annual Benefits of Detailed Plans			
FY2019 Commercial Benefits	Plan A-1 5-Foot	Plan A-2 6-Foot	Plan A-3 7-Foot
Damages Prevented to Wharves and Floats	$9,700	$29,200	$30,400
Damages Prevented to Fishing Vessels	$21,300	$63,900	$66,600
Offloading Delays Reduced - Time Savings	$10,800	$32,300	$33,600
Offloading Delays - Fuel Savings	$11,200	$33,600	$35,000
Tidal Delays Reduced - Time Savings	$2,700	$8,000	$8,300
Tidal Delays Reduced - Fuel Savings	$5,500	$16,500	$17,200
Total Commercial Benefits	$61,200	$183,500	$191,100
FY2020 Recreational Benefits	$46,500	$139,500	$145,300
Total Annual Benefits	$107,700	$324,000	$336,400

Project benefits were also updated in November 2020 to reflect Fiscal Year 2021 prices. As with project costs this update was limited to the recommended plan at the depths that showed a positive benefit to cost ratio with the prior estimates only the 6-foot and 7-foot project depths (Plan A-2 and A-3) were reanalyzed. Table 8 provides this benefit update.

Table 8 – Annual Benefits Update – FY2021		
FY2021 Commercial Benefits	Plan A-2 6-Foot	Plan A-3 7-Foot
Damages Prevented to Wharves and Floats	$29,500	$30,700
Damages Prevented to Fishing Vessels	$64,700	$67,400
Offloading Delays Reduced - Time Savings	$35,100	$36,600
Offloading Delays - Fuel Savings	$28,900	$30,100
Tidal Delays Reduced - Time Savings	$8,600	$9,000
Tidal Delays Reduced - Fuel Savings	$14,200	$14,800
Total Commercial Benefits	$181,000	$188,600
FY2021 Recreational Benefits	$146,600	$152,700
Total Annual Benefits	$327,600	$341,300

4.4 Comparison Summary

Table 9 provides a summary of annual project benefits compared to annual project costs for Plan A-2, consisting of a -6-foot MLLW channel 80 feet wide from deep water off Parker Point up-harbor to the town landing with an 0.6 acre turning basin at its head. To dispose of the unsuitable portion of the dredged material a 19,500 cubic yard CAD cell would be constructed north of the channel. All suitable dredged material, including that produced by construction of the CAD cell, would be placed at the previously used Eastern Passage Disposal Site.

Plan A-2 has been developed consistent the USACE Environmental Operating Principals and in a manner which meets to goals of the USACE Campaign Plan with respect to water resources infrastructure and the civil works program. The plan has been formulated to meet the planning objectives for this project by improving the safety and efficiency of commercial fishing fleet operations at Blue Hill Harbor. Plan A-2 also meets the plan formulation criteria of completeness, effectiveness, efficiency, and acceptability and is compatible with existing laws, regulations, and policies. Interest and amortization (I&A) cost is based on the interest rate for the current Federal fiscal year (2022), 2-1/4 percent amortized over 50 years in the case of navigation projects, or a factor 0.03352.

Plan A2 produces net annual NED commercial navigation benefits, will have no significant impact on environmental quality, will promote regional economic development through improved port operations, and will have an overall positive impact from the perspective of other social effects.

Table 9 – Blue Hill Harbor – Updated Economic Impacts Plan A2 (6-Foot Depth) – With CAD Cell Disposal of Unsuitable Material		
FY 2022 Price Levels (Cost) and Benefits 2.25% (0.03352)	Total Benefits	Commercial Benefits Only
Annual Benefits	$327,600	$181,000
Annual Cost	$125,600	$125,600
Benefit-Cost Ratio	2.61	1.44
Net Annual Benefits	$202,000	$55,400

5 ASSESSMENT AND EVALUATION OF DETAILED PLANS

This section summarizes the analyses for the alternatives selected for detailed study based on their impacts on the environment, existing navigation, and social and cultural resources of the study area. Economic costs and benefits of project implementation have also been analyzed.

5.1 Environmental Impacts

The proposed Federal action has been reviewed under the authorities of the National Environmental Policy Act and all applicable Federal environmental laws, regulations, Executive Orders and Executive Memorandums. The NEPA analysis (see Environmental Assessment) outlines the expected impacts to habitats and environmental resources from dredging and at the disposal sites. This section summarizes the expected environmental effects from dredging and disposal of dredged material.

5.1.1 Dredged Material Suitability

The materials to be dredged have been sampled and tested for physical and chemical parameters and subjected to tier II biological testing. In October 2015 USACE collected sediment vibracores from seven locations throughout the proposed dredging area and depth horizon (see EA, Figure EA-3). Each sediment core was described in the field and composited for analysis of grain size, total solids, and water content. The composited samples were then analyzed for chemical analysis of the contaminants of concern (COC) specified in the Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters (RIM, USACE/EPA 2004).

The sediments in the outer portion of the proposed channel were predominantly poorly graded fine to coarse sands with overlying marine clay deposits and fine woody organic debris. Core penetration for the inner harbor samples was limited due to gravel and coarse sand deposits near the sediment surface and did not reach the proposed dredge depth due to refusal.

There were detectable concentrations of polycyclic aromatic hydrocarbons (PAHs) and metals in all four composite samples. To examine sediment chemistry concentrations in an ecologically meaningful context, result values were screened using the Sediment Quality Guidelines (SQGs). Applicable SQG screening values for marine and estuarine sediments are the National Oceanic and Atmospheric Administration (NOAA) effects-range low (ERL) and effects-range median (ERM). ERL/ERM values are empirically derived guidelines that identify contaminant levels that indicate when toxic effects are unlikely (ERL) and when an increased probability of toxic effects is evident (ERM).

No COCs were identified in the outer channel samples. All COCs in the inner channel samples were also below the ERL value with the exception PAHs which were above the ERL in one composite and above the ERM in another. This suggests that there is increased potential for an adverse response from exposure to surficial sediments from the inner channel area due to elevated PAHs.

A second sampling effort was conducted in May 2016 to better define the vertical and spatial extent of the elevated PAH concentrations in the inner channel area. Push cores were taken at low tide from ten stations in the inner harbor and one location at the mouth of the each of the three tributary streams and outfalls. Core lengths were again limited by refusal. Subsamples for PAH analysis were taken from the top six inches and from six inches to the end of each core. Results from this analysis showed no discernable pattern for the spatial distribution of PAHs in the harbor (see Appendix I - Suitability Determination).

Due to the inability to penetrate inner harbor sediments to the design depth and determine the vertical extent of the elevated PAH concentrations, the town of Blue Hill dug four 4 to 9 foot deep test pits in October 2016 in the upper channel/turning basin area using a small excavator. NAE personnel were on-site to describe the lithology of the pit walls and subsample the sediment in two foot horizons for PAH analysis. Results showed the material to be a stony till with PAH contamination limited to the upper two feet of the inner harbor sediments.

The proposed dredged material from the Blue Hill Harbor Navigation Improvement Project was evaluated through §230.61 of the Clean Water Act (CWA) and found suitable for unconfined open water placement at EPDS with the exception of 10,600 cubic yards of material from the upper two feet of the inner harbor area. The sediment from this portion of the harbor does not require remediation, but is not suitable for open water placement due to elevated PAH concentrations and it is proposed to contain the unsuitable material on-site in a CAD cell. The material excavated to create the CAD cell is outside of the elevated PAH footprint and is suitable for open water placement at the EPDS.

5.1.2 General Environmental Effects of Dredging

Dredging in the proposed channel and turning basin area would result in both permanent and temporary impacts to the benthic communities in Blue Hill Harbor. Permanent impacts include the conversion of 3.7 acres of intertidal habitat to subtidal habitat which in turn will permanently change the benthic community structure of those areas. Temporary impacts include short-term loss of benthos within the direct footprint of the dredging areas and CAD cell area and localized increases in turbidity in areas adjacent to the dredging.

The ecological functions of the existing 3.7 acres of intertidal area, as related to benthic invertebrate communities, are currently impaired. Surveys of the benthic communities in these areas show very low diversity and abundance numbers which suggest the habitat is being subject to some stressor beyond naturally occurring ecological pressure. As the material in these area contains elevated concentrations of contaminants (predominantly PAHs) which have been determined to be unsuitable for open water placement, it was concluded that the contamination is the cause of the diminished benthic community. The removal and sequestering of the unsuitable material should allow the newly created shallow subtidal areas to be contaminant free and allow for the colonization of the area by adjacent benthic populations. Community structure in the new subtidal habitat is expected to be similar to that in the outer harbor subtidal areas. As the benthic community throughout the existing channel and side slopes is a mix of opportunistic early-successional stage benthic communities and mid-successional stage benthic communities, a return to a similar community following dredging is expected within approximately 1-3 years. Mitigation is not being proposed for the loss of intertidal habitat as the area is currently impaired and will be replaced with a habitat that will provide higher quality ecological value to the Blue Hill Harbor system.

Turbidity impacts to benthos are dependent on the concentration and the duration of the suspended sediments (Wilber and Clarke, 2001; Suedel 2014). Motile benthic organisms (e.g., lobster and crab) can generally avoid unsuitable conditions in the field and, under most dredging scenarios, encounter localized suspended sediment plumes for exposure durations of minutes to hours. Although adult bivalve mollusks are silt-tolerant organisms (Sherk, 1974), they can be affected by high suspended sediment concentrations. Hard clams (Pratt and Campbell, 1956), and oysters (Clarke and Wilber, 2001), exposed to fine silty-clay sediments have exhibited reduced growth and survival, respectively. Suspended sediment concentrations required to elicit these responses and mortality are extremely high. Meaning these responses are beyond the upper limits of concentrations reported for most estuarine systems under natural conditions, as well as typical concentrations associated with dredging operations. Therefore, the temporary increases in turbidity associated with the proposed project are not anticipated to significantly adversely impact the benthic communities adjacent to the dredge areas

5.1.3 Summary of Expected Disposal Impacts

No eelgrass is located in or adjacent to the disposal site. Placing suitable mixed sandy and silty material at the proposed EPDS should not have significant long-term effects on the benthic communities at the site. No significant shellfish or lobster resources are located in the disposal site. Direct impacts to fish resources at the placement site are expected to be minimal. Any fish in the vicinity of the placement site would be either expected to avoid the areas of disturbance, be smothered by the material, or be exposed to elevated turbidity for brief periods. Elevated suspended sediment levels should be short-term and localized to the placement site area since the material to be placed at the site is sand. Benthic organisms buried at the disposal site will temporarily eliminate a forage area for fish. Recolonization by benthic species from adjacent areas and new recruitment is expected to occur in a relatively short period of time. The proposed dredging and placement of the sediment will occur during the period of November 8th through April 8th. This window minimizes the presence of aquatic resources in the project area and takes advantage of the lower levels of natural, environmental stresses placed on species that may reside in the work areas. The USACE made the preliminary determination that the proposed project is not likely to adversely impact any state or Federally listed threatened or endangered species. Several listed marine mammals may occur as transient species in the general area but are unlikely to occur within the dredging or placement areas.

5.1.4 Summary of the NEPA Evaluation – Finding of No Significant Impact

A NEPA evaluation (see the EA and draft FONSI) was prepared for the proposed action. Based on the findings the District Engineer has determined that the environmental effects, as presented in the Environmental Assessment, for the improvement dredging of Blue Hill Harbor is not a major Federal action significantly affecting the quality of the human environment. The FONSI will be finalized when signed by the District Engineer upon approval of the Detailed Project Report and Environmental Assessment by the North Atlantic Division Commander.

5.2 Economic Impacts

The expected economic impacts from construction and operation of the alternatives were evaluated by determining costs and benefits. The cost estimates and annual costs, listed in Table 6 and described fully in Appendix D are based on several factors including the quantity and type of dredged material, mobilization and demobilization costs, equipment costs, project design (engineering and supervision) and administrative costs and contingencies. Charges for IDC are based on construction durations and are computed for the purpose of comparing benefits to costs. IDC charges are not included in the cost apportionment.

Costs and benefits are based on a 50-year evaluation period, starting in 2022, and presented in annual terms using the FY21 Federal interest rate for water resources projects of 2.5 percent. The benefits of the proposed plans of improvement have been based on the following assumptions:

- Elimination of tidal delays would result in decreased labor and fuel costs for harvest of the existing catch.
- Increasing the channel depth and length would reduce grounding damage and provide maneuverability and access to existing facilities built by local interests.

The benefits to the existing commercial fleet would occur immediately following the implementation of these improvements. The navigation improvements will not affect harvest rates or prices for the commercial fish market. There will be benefits resulting from a reduction in harvesting costs for the existing level of catch.

5.3 Real Estate Requirements

Real estate interests required for the project are limited to access to the town wharf for the contractor's crew and office for which the town of Blue Hill, the project's non-Federal Sponsor, will provide construction access. The cost to the town to provide the access is estimated at $5,000 and the Government's administrative cost for Lands, Easements, Rights of Way, Relocations and Disposal Areas (LERRDs) review and acceptance is estimated at $5,000. The $10,000 LERRDs cost is included in the total project cost. The town may receive a credit for their $5,000 real estate cost against their additional post-construction 10 percent contribution payment of total project costs.

All work at the dredging and ocean disposal sites would be subtidal, within the waters of the United States, and subject to the Federal government's navigation servitude (see Real Estate Planning Report – Appendix E). All construction equipment would be waterborne plant (dredge, scows, tug, survey, and work boats).

5.4 Climate Change Analysis

Climate change most often impacts navigation projects with respect to sea level rise and its potential to affect operation of shoreline facility access through flooding and restricting allowable air draft for vessel passage beneath bridges. There are no bridges over the routes between Blue Hill Harbor and the open waters of the bay and ocean fished by its fleet. The town landing bulkhead, with a top elevation of about +13.8 feet at MLLW, is not currently impacted at the highest annual tide levels even with elevations about one foot lower moving towards the boat ramp.

Due to the uncertainty associated with future sea level change, USACE policy is to look at three scenarios of sea level change and investigate impacts to project feasibility. The three sea level change scenarios are the low (historic) rate of SLC at the project site, an intermediate rate, and a high rate of SLC and include the global (eustatic) sea level rise rate and vertical land movement. These rates were calculated using the USACE Sea Level Change Calculator (Version 2019.21), using the closest NOAA tide station (Bar Harbor) for the historic trend, to develop approximate changes in sea level rise for Blue Hill Harbor from 2022 to 2122. This time range includes both anticipated project economic life (50 years) and the planning horizon (100 years).

Sea level change is expected to impact access to the town landing over time. To assess the wharf's vulnerability projected changes in sea level were added to existing water levels and compared to the wharf elevation to evaluate if sea level rise will impact landslide infrastructure on or access to the town landing. Mean Higher High Water (MHHW) was selected to evaluate high water levels that are projected to occur daily. The 99% Annual Exceedance Probability (AEP) (1-year Annual Recurrence Interval) storm surge at Mean High Water (MHW) was used to approximate an annual storm event or nor'easter. The MHHW and 99% AEP surge at MHW levels for the years 2072 and 2122 are provided in Table 10 below for each scenario.

A comparison of the wharf elevation, approximately +13.8 feet MLLW (8 feet NAVD88), to the projected water levels in Table 8 shows that the wharf is not projected to be impacted by MHHW alone under the low and intermediate SLC scenarios through 2072. However, wharf access will be affected under the high SLC scenario as MHHW is projected to exceed the wharf elevation at the tail end of the 50-year period of economic analysis in 2068. Looking out 100 years to 2122, the wharf will again not be exceeded by MHHW alone under the low and intermediate SLC scenarios. However, inundation at MHHW under the high SLC scenario will make the entirety of the town landing inaccessible. This level of risk was not assumed to impact project feasibility. However, if a higher sea level scenario is realized, the town will need to make improvements to the wharf area to maintain its access across the tidal cycle.

Table 10 – Climate Change Analysis			
USACE Sea Level Change Rates – Future Scenarios			
Year	**Low RSLC (Feet)**	**Intermediate RSLC (Feet)**	**High RSLC (Feet)**
2072	0.59	1.16	2.97
2122	0.96	2.47	7.23
Note: Sea level change values are relative to the base year of 1992 which corresponds to the midpoint of the current National Tidal Datum Epoch of 1983-2001.			
Projected Water Surface Elevations – Future Scenarios			
Year	**Scenario**	**MHHW (Feet, MLLW)**	**99% AEP Surge at MHW (Feet, MLLW)**
2072 (50 Years)	Low	11.73	13.22
	Intermediate	12.30	13.79
	High	14.11	15.60
2122 (100 Years)	Low	12.10	13.59
	Intermediate	13.61	15.10
	High	18.37	19.86

6 SELECTION OF A PLAN

6.1 The Selected Plan

The Selected Plan for navigation improvements is Plan A-2, shown in Figure 4. The Selected Plan is based on consideration of economic efficiency, minimization of environmental impacts, navigational safety and the needs of state government and local stakeholders. Plan A2 results in the greatest net benefits and is the preferred NED plan. This plan provides the most favorable improvement method for meeting the project objective of reducing navigation hazards and delays.

This plan would establish a channel from deep water in the outer harbor off Parker Point up-harbor to the Blue Hill town landing. The channel would be 80 feet wide and have a depth of -6 feet at MLLW and would have an 0.6-acre turning basin at its upper end opposite the town wharf. Only the upper 2,600 feet of the channel would require dredging. The project would involve the dredging of about 91,000 cubic yards of material, of which 71,500 cubic yards would be from the channel and an estimated 19,500 cubic yards from the CAD cell construction. The dredging would be by mechanical dredge and scow that will be able to operate in shallow draft areas in the channel.

Figure 4
Blue Hill Harbor, Maine
Recommended Plan

The dredged material to be disposed is a mixture of clean sandy material suitable for open water disposal and unsuitable material that will require an alternative disposal option. The suitable material will be placed at the EPDS, located 14 miles southeast of Blue Hill Harbor, in Blue Hill Bay. This site has been used in the past for disposal of material from the maintenance dredging of the nearby existing Federal Navigational Projects. The disposal of the unsuitable material will be in a CAD cell to be constructed within Blue Hill Harbor adjacent to the channel. USACE work estimates are based on an 8 cubic yard bucket dredge or excavator, two or more split-hull scows of about 1500 CY, and a tug to tow the scows to the disposal sites. Small survey and workboats would also be used. All construction equipment would be waterborne plant. No onshore staging would be required. The contractor would be responsible for securing any shore side access for personnel and fuel according to their specific needs. All work at the dredging and disposal sites would be within the waters of the United States.

The total annual benefits in fuel and time cost savings for each project alternative are weighed against the costs of each alternative to determine the benefit-cost ratio. Benefit-cost ratios of each alternative are determined by dividing annual benefits by annual costs. A project is considered economically justified if it has a benefit to cost ratio of 1.0 or greater. The Recommended Plan maximizes net annual commercial navigation benefits is the NED plan. At FY22 price levels and interest rates the Recommended Plan has a BCR of 1.44 and produces net annual benefits of $55,400 using commercial navigation benefits only. Using both commercial navigation and incidental recreational navigation benefits from joint use project features the recommended plan has a BCR of 2.61 and net annual benefits of $202,000.

6.2 Implementation Responsibilities

6.2.1 Cost Apportionment

For harbor improvements for commercial navigation purposes with a design depth of 20 feet or less, local interests are required to provide cost-sharing of ten percent of the cost of design and construction up-front upon execution of a Project Partnership Agreement (PPA). The remaining 90 percent up-front share of the first cost of design and construction is the Federal contribution. A further additional non-Federal contribution of ten percent of the cost of design and construction is payable at the conclusion of construction and can be paid over a period of up to a 30-years. These cost sharing requirements are as specified in the Water Resources Development Act of 1986 (Public Law 99-662), as amended. Table 11 below provides the cost-sharing responsibilities for design and implementation of the Recommended Plan.

6.2.2 Federal Responsibilities

The Federal government will be responsible for preparation of plans and specifications and contract advertisement, award and supervision and inspection of the work. The Federal government will be responsible for project compliance with Federal environmental laws and regulations, including NEPA, the Endangered Species Act (ESA), consistency with the Coastal Zone Management Act (CZM), the National Historic Preservation Act (NHPA), the Fish and Wildlife Coordination Act (FWCA), and the CWA. Federal responsibility includes only the dredging and maintenance of the designated Federal channels, and does not include any berthing facilities, shoreline protection, or site work at upland disposal areas. There is no non-Federal OMRR&R required for the project as the existing town wharf provides sufficient public access.

Table 11 – Cost Apportionment for the Recommended Plan

FY 2024 – Q1 Costs December 2023 Mid-Point of Construction	Total Fully Funded Cost	Federal Share 90%	Non-Federal Share 10%
Dredging and Disposal	$2,476,000		
Contract Contingencies	$372,000		
Construction Total	$2,848,000		
Real Estate LERRs	$10,000		
Engineering and Design	$366,000		
Construction Management	$223,000		
First Cost of Design and Construction	$3,447,000	$3,102,300	$344,700
Post-Construction Additional Contribution	- - - - -	- - - - -	$344,700
Real Estate Credit (Applied to Contribution)			-$5,000
Total Cost Allocation	$3,447,000	$3,102,300	$684.400

6.2.3 Non-Federal Responsibilities

The following is a list of some of the items of local cooperation required for projects authorized under Section 107. The non-Federal sponsor must provide assurance that they intend to meet these items prior to project authorization. The PPA details these and other requirements of the Government and the non-Federal Sponsor for implementation and future maintenance of the project.

1. Provide without cost to the United States, all LERRDs necessary for completing, inspecting, operating, maintaining, repairing, rehabilitating, or replacing the project. This project consists solely of dredged general navigation features and will be constructed using waterborne dredging plant and placement of the dredged materials will be in nearshore waters. All work areas are seaward of mean high water and subject to the government's navigation servitude. Therefore, no LERRDs are required from the non-Federal Sponsor for initial construction. At this time it is assumed that future operation and maintenance of the project will be accomplished in the same manner. However, should different construction methods be used for future Operation and Maintenance the non-Federal Sponsor may be required to obtain LERRDs.
2. Hold and save the United States free from all damages arising from construction, operation, maintenance, repair, replacement, and rehabilitation of the project, except for damages due to the fault or negligence of the United States or its contractors;
3. Assume full responsibility for all non-Federal costs associated with the project. Current law requires that the non-Federal sponsor provide at least 10 percent of the first cost of design and construction of General Navigation Facilities not exceeding 20 feet in depth up-front, and provide an additional 10 percent after completion of initial construction of the project.
4. Agree to be responsible for total project costs in excess of the Federal cost limit of $10 million in accordance with Section 107 of the River and Harbor Act, as amended.
5. Not use funds from other Federal programs, including any non-federal contribution required as a matching share therefore, to meet any of the non-Federal sponsor's obligations for the project unless the Federal agency providing the funds verifies in writing that such funds are authorized to be used to carry out the project;
6. Provide, maintain and operate without cost to the United States, an adequate public landing open and available to use for all on an equal basis. The state pier and other state and municipal facilities around the harbor are adequate to satisfy this responsibility for both the existing FNP and for the recommended improvement.
7. Prevent obstructions or encroachments on the project (including prescribing and enforcing regulations to prevent such obstructions or encroachments) such as any new developments on project lands, easements, and rights-of-way or the addition of facilities which might reduce the outputs produced by the project, hinder operation and maintenance of the project, or interfere with the project's proper function;
8. Comply with Section 221 of Public Law 91-611, Flood Control Act of 1970, as amended, (42 U.S.C. 1962d-5b) and Section 101(e) of the WRDA 86, Public Law 99-662, as amended, (33 U.S.C. 2211(e)) which provide that the Secretary of the Army shall not commence the construction of any water resources project or separable element thereof, until the non-Federal sponsor has entered into a written agreement to furnish its required cooperation for the project or separable element;

9. Keep, and maintain books, records, documents, and other evidence pertaining to costs and expenses incurred pursuant to the project, for a minimum of 3 years after completion of the accounting for which such books, records, documents, and other evidence are required, to the extent and in such detail as will properly reflect total cost of the project, and in accordance with the standards for financial management systems set forth in the Uniform Administrative Requirements for Grants and Cooperative Agreements to State and local governments at 32 CFR, Section 33.20;

10. Perform, or ensure performance of, any investigations for hazardous substances that are determined necessary to identify the existence and extent of any hazardous substances regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 USC 9601-9675, that may exist in, on, or under lands, easements, or rights-of-way that the Federal government determines to be necessary for the initial construction, operation and maintenance of the project;

11. Assume, as between the Federal government and the non-Federal sponsor, complete financial responsibility for all necessary cleanup and response costs of any hazardous substances regulated under CERCLA that are located in, on, or under lands, easements, or rights-of-way required for the initial construction, or operation and maintenance of the project;

12. Agree, as between the Federal government and the non-Federal sponsor, that the non-Federal sponsor shall be considered the operator of the project for the purpose of CERCLA liability;

13. Comply with the applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Public Law 91-646, as amended, (42 U.S.C. 4601-4655) and the Uniform Regulations contained in 49 CFR Part 24, in acquiring lands, easements, and rights-of-way necessary for operation, and maintenance of the project including those necessary for relocations, the borrowing of material, or the placement of dredged or excavated material; and inform all affected persons of applicable benefits, policies, and procedures in connection with said act;

14. Comply with all applicable Federal and state laws and regulations, including, but not limited to: Section 601 of the Civil Rights Act of 1964, Public Law 88-352 (42 U.S.C. 2000d), and Department of Defense Directive 5500.11 issued pursuant thereto; Army Regulation 600-7, entitled “Nondiscrimination on the Basis of Handicap in Programs and Activities Assisted or Conducted by the Department of the Army”; and all applicable Federal labor standards requirements including, but not limited to, 40 U.S.C. 3141-3148 and 40 U.S.C. 3701-3708 (revising, codifying and enacting without substantive change the provisions of the Davis-Bacon Act (formerly 40 U.S.C. 276a et seq.), the Contract Work Hours and Safety Standards Act (formerly 40 U.S.C. 327 et seq.), and the Copeland Anti-Kickback Act (formerly 40 U.S.C. 276c));

15. Give the Federal government a right to enter, at reasonable times and in a reasonable manner, upon property that the non-Federal sponsor owns or controls for access to the project for the purpose of completing, inspecting, operating, maintaining, repairing, rehabilitating, or replacing the project."

6.3 Risk Informed Decision-Making

The non-Federal Sponsor and the public must be informed of the risks associated with the formulation, evaluation, and recommendation of a plan of improvement for Blue Hill Harbor. The contingency risk analysis performed as part of the cost estimate sought to capture these risks and their potential impacts on cost and implementation. The following are some of the risks captured in the contingency analysis.

- With construction limited to late fall to mid-winter for environmental resource impact reasons, it is possible the contractor will encounter significant weather-related delays that will impede his ability to mobilize to the site or transit to and from the disposal area. Further, the project is in eastern Maine, meaning there is potential for ice in the channel which may obstruct contractor access and reduce dredge efficiency.
- The work is in an area influenced by glaciation and characterized by ground moraine and outwash plain deposits. It is possible that materials such as gravel and small boulders will be encountered. These materials can be removed by the mechanical bucket dredge plant that would be used to dredge the project features and can be placed in the disposal site, but may slow production somewhat if encountered.
- The economic benefit of this project has been measured in improved efficiency of vessel operations – fuel and labor savings, reductions in vessel damages, etc. Blue Hill is an active stable port which has shown growth in ships, catch volume and catch value over time. Any risk that the projected benefits will not be achieved is low.
- Availability of competent responsive bidders can be an issue when funding for such small projects regionally results in more work being advertised than the dredging industry can accommodate. In past years some projects have failed to attract any responsive bidders. Given the low level of funding in the past several years for small harbor projects a lack of responsive bidders is not expected to be an issue.
- Knowledge of potential environmental resource impacts from marine construction projects and the concern given species can change over time. If significant time passes between completion of the feasibility phase and project construction, then it is possible that changing resource concerns could change the work window for the project or make mitigation of impacts necessary. New species could be listed as threatened or endangered, or additional habitat could be noted as critical for fisheries resources or climate change could result in a change in species in the project area. At this time coordination with Federal and state resource agencies has not shown any concerns of this nature.
- On rare occasions previously unknown cultural resources can be encountered during construction. In such cases coordination with state and tribal historic preservation officials is re-initiated. Documentation of any finds is a requirement. Depending on the nature of the resource encountered work may be delayed at least in part while coordination is pursued. Research and site investigations made during this study indicate that the potential for such resources in the project area is low.
- Federal funding for small harbor maintenance has been difficult to budget in recent years. Though under current law maintenance of the Federal Navigation Projects is eligible for 100% Federal funding, the budget situation has delayed maintenance of these project. While we cannot predict the situation with respect to future Federal budgets, the non-Federal Sponsor should be aware that delays in Federal funding may delay necessary maintenance dredging.

7 CONCLUSIONS

USACE has evaluated the data for the proposed Federal plan for improving navigation at Blue Hill Harbor. USACE will review, evaluate, and consider the comments and views of interested agencies, stakeholders, and the concerned public regarding the alternative plans. The potential consequences of each alternative will be evaluated on the basis of engineering feasibility, environmental impact and economic efficiency.

We find substantial benefits are to be derived by providing the commercial fishermen with reliable and improved access to the facilities in Blue Hill Harbor. The proposed Federal action was considered individually and cumulatively under the provisions of NEPA, and the action was determined not to have significant effects on the quality of the human environment. The proposed action also incorporates the provisions for protection and ensures compliance with other Federal environmental laws, regulations, Executive Orders and Executive Memorandum such as, for example, the ESA, the FWCA, the NHPA, the CWA, etc. The USACE has concluded the proposed navigation improvements would cause a temporary disruption of the environmental resources present in the construction work area and immediately adjacent during dredging operations and no significant long term effects are anticipated. Due to the significant benefits attributable to the commercial fishing industry, any effects are considered to be offset by the improvement and the resulting overall economic growth of the region.

The Recommended Plan, Plan A-2, would result in the greatest economic net benefits and is therefore the NED Plan. The Recommended Plan establishes a -6-foot MLLW by 80-foot wide Federal channel extending about 5,400 feet from deep water off Parker Point up-harbor to the town landing with an 0.6 acre turning basin at its head. To dispose of the unsuitable portion of the dredged material a CAD cell would be constructed north of the channel. All suitable material, including material dredged to create the CAD cell, would be placed at the previously used Eastern Passage Disposal Site.

8 RECOMMENDATION

The USACE recommends that a Federal navigation project be adopted at Blue Hill Harbor, Maine, under the authority of Section 107 of the River and Harbor Act of 1960, as amended, in accordance with the Recommended Plan identified in this Detailed Project Report, with such further modifications thereto as in the discretion of the Chief of Engineers may be advisable.

The recommendations contained in this report reflect the information available at this time and current USACE 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 authorized for implementation funding.

J. A. Atilano II

28 February 2022
Date

John A. Atilano II
Colonel, Corps of Engineers
District Engineer

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Section 107 Navigation Improvement Project Environmental Assessment, Finding of No Significant Impact and Clean Water Act Section 404(b)(1) Evaluation for Improvement Dredging

Blue Hill Harbor
Blue Hill, Maine

Prepared by:
Planning Division
U.S. Army Corps of Engineers
New England District
Concord, Massachusetts

February 2022

FINDING OF NO SIGNIFICANT IMPACT
Navigation Improvement Project
Blue Hill Harbor
Blue Hill, Maine

The US Army Corps of Engineers (USACE) proposes to create a Federal Navigation Project (FNP) in Blue Hill Harbor, Blue Hill, Maine. The proposed project will dredge a 6-foot-deep mean lower low water (MLLW), 80-foot-wide channel from the outer harbor, extending 5,600 feet northwest to the town wharf. Only the upper 2,600 feet of the project will require dredging, with channel limits in the lower reaches declared for jurisdictional purposes. This channel will be widened at its upper end to form a turning basin, 160 feet wide (0.6 acres), adjacent to the town wharf. Approximately 71,500 cubic yards (CY) of mixed gravel, sand, and silt will be removed from the proposed project area using a mechanical dredge. The 52,100 CY of dredged material from the channel and basin deemed suitable for open water disposal will be loaded onto scows and towed about 11 miles to the Eastern Passage Disposal Site (EPDS), a previously used disposal site near Dodge Island, for placement. Approximately 10,600 CY of material from the upper two feet of the inner harbor, which was deemed unsuitable for open water placement due to the presence of polycyclic aromatic hydrocarbons (PAHs) and metals, will be placed in a confined aquatic disposal (CAD) cell to be constructed within Blue Hill Harbor. The CAD cell will be constructed by removing approximately 19,500 CY of suitable of mixed gravel, sand, and silt material from an area adjacent to the designated channel. Material generated from the CAD cell creation will be placed at the EPDS. About 8,800 CY of channel material would be used to provide a 3-foot-thick cap atop the CAD cell. All dredging will be performed by mechanical dredge and scow that will be able to operate in shallow draft areas in the channel. The contractor will be allowed to dredge 24 hours per day, 7 days per week. Construction will occur between November 8th and April 8th, of the year(s) in which funds become available and is expected to take about four months to complete.

The purpose of this project is to provide navigation improvements to Blue Hill Harbor. The navigation improvements would increase the harbor's capacity to accommodate safe and efficient vessel operations to and from the Blue Hill Town Landing. These improvements would alleviate delays for the commercial fishing vessels that use the landing for offloading catch, fueling, and provisioning. The improvements would also eliminate groundings of fishing boats transiting to and from the landing at lower tides. The commercial fleet at Blue Hill Harbor, which includes vessels based out of several small coves and harbors along the Town's shores on Blue Hill Bay, has been increasing over the past 10 years. Improvements to the town landing in Blue Hill over that timeframe have provided a central location from which the fleet can work. However, lack of adequate channel depth and turning area at the Town Wharf has limited the landings use to only periods of high tide. This causes a portion of the Blue Hill Harbor fleet to operate out of distant coves and harbor areas that are located in exposed locations. This exposure limits the time periods that the fleet can effectively operate safely or has the potential to damage vessels that choose to operate in adverse conditions. Navigation improvements to Blue Hill Harbor would provide all tide access to the Blue Hill town landing. This would reduce operating costs for the fleet by allowing access to a sheltered landing and reduce the possibility of vessel groundings or accidents that could occur in exposed areas.

This project is being completed under the authority and provisions of Section 107 of the 1960 River and Harbor Act of 1960, as amended. Section 107 provides authority for the USACE to improve navigation including dredging of channels, anchorage areas, and turning basins and construction of breakwaters, jetties, and groins, through a partnership with non-Federal government sponsors such as cities and towns, counties, and special chartered authorities (such as port authorities or units of state government).

I find that based on the evaluation of environmental effects discussed in the February 2022 Environmental Assessment, this project is not a major Federal action significantly affecting the quality of the environment. The Environmental Assessment includes an evaluation of the potentially affected environment and the degree of the effects of the action, which are summarized below. None are implicated to warrant a finding of NEPA significance.

(i) Short- and Long-Term Effects: The project will result in short-term impacts such as temporarily increased water column turbidity and the temporary loss of benthic resources within the footprint of the areas to be dredged; these short-term effects will not significantly affect the environment. Long-term impacts of the project include the conversion of approximately 3.7 acres of silty/sandy/gravelly intertidal habitat that is contaminated with PAHs and metals to clean silty/sandy/gravelly subtidal habitat. The project will remove and sequester 10,500 CY of contaminated sediments which will provide a long-term benefit to the benthic invertebrate communities that inhabit the sediments in the footprint of the project. This will present a healthier forage base for fish and other aquatic organisms in the harbor. Therefore, no significant adverse long-term effects of the project are expected, and positive long-term effects are anticipated.

(ii) Beneficial and Adverse Effects: The project will have a long-term, beneficial effect. The proposed navigation improvements will provide safe navigation and all tide access to the inner Blue Hill Harbor. This will reduce operating costs for the fleet by allowing access to a sheltered landing and reduce the possibility of vessel groundings or accidents that could occur in exposed areas. The project will also remove and sequester 10,500 CY of contaminated sediments and remove them from exposure to humans and wildlife. The adverse effects of the project, which include increases in turbidity in the vicinity of the dredging activity and loss of benthic resources in the footprint of the dredged area, are short term and not significant.

(iii) Effects on Public Health and Safety: The project is expected to have a positive effect on public health and safety by sequestering contaminated material from the environment and providing safe navigation in the harbor.

(iv) Effects that would Violate Federal, State, Tribal, or Local Law Protecting the Environment: The action will not violate Federal or state laws protecting the environment. The project will not likely adversely affect any state or Federal threatened or endangered species or designated critical habitat for such species. Additionally, the project will have no known negative impacts on any pre-contact or post-contact archaeological sites recorded by the State of Maine.

Based on my review and evaluation of the environmental effects as presented in the Environmental Assessment, I have determined that this navigation improvement project in Blue Hill Harbor is not a major Federal action significantly affecting the quality of the environment and is therefore exempt from requirements to prepare an Environmental Impact Statement.

28 February 2022
Date

J.A. Atilano II

John A. Atilano II
Colonel, Corps of Engineers
District Engineer

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BLUE HILL HARBOR, MAINE

1.0 INTRODUCTION

The purpose of this Environmental Assessment (EA) is to present information on the environmental features of the project area and to review design information to determine the potential impacts of the proposed Blue Hill Harbor navigation improvement project. This Environmental Assessment describes project compliance with the National Environmental Policy Act of 1969 (NEPA) and all appropriate Federal and State environmental regulations, laws, and executive orders. Methods used to evaluate the environmental resources of the area include biological sampling, sediment analysis, review of available information, and coordination with appropriate environmental agencies and knowledgeable persons. This report provides an assessment of environmental impacts and alternatives considered along with other data applicable to the Clean Water Act Section 404(b)(1) Evaluation requirements.

2.0 STUDY AREA

Blue Hill Harbor is the principal commercial fishing harbor of the town of Blue Hill, located in Hancock County, Maine (Figure 1). The harbor is located 160 miles by highway northeast of Portland, Maine, 34 miles west of Bar Harbor, 30 miles southeast of Bangor and 13 miles southwest of Ellsworth, Maine. Blue Hill Harbor is located on the northwest side of Blue Hill Bay, northwest of Long Island and Mount Desert Island. Small boat harbors in the area are Union River 11 miles to the northeast, Bass Harbor about 19 miles to the southeast, and Northeast Harbor about 24 miles to the southeast.

3.0 PURPOSE, NEED, HISTORY AND AUTHORITY

The purpose of this report is to provide an assessment of the potential environmental effects of the navigation improvement project proposed for Blue Hill Harbor in Blue Hill, Maine (Figure 2). The navigation improvements would increase the harbor’s ability to accommodate safe and efficient vessel operations to and from the Blue Hill town landing. These improvements would alleviate delays for the commercial fishing vessels that use the landing for offloading catch, fueling, and provisioning. The improvements would also eliminate groundings of fishing boats transiting to and from the landing at lower tides. The commercial fleet at Blue Hill Harbor, which includes vessels based out of several small coves and harbors along the Town’s shores on Blue Hill Bay, has been increasing over the past 10 years. Improvements to the town landing in Blue Hill over that timeframe have provided a central location for the fleet to work from. However, lack of adequate channel depth and turning area at the town wharf has limited the landings use to only periods of high tide. This causes a portion of the Blue Hill Harbor fleet to operate out of distant coves and harbor areas, which are located in exposed locations. This exposure limits the time periods that the fleet can effectively operate safely or has the potential to damage vessels that choose to operate in adverse conditions.

Navigation improvements to Blue Hill Harbor would provide all tide access to the Blue Hill town landing. This would reduce operating costs for the fleet by allowing access to a sheltered landing and reduce the possibility of vessel groundings or accidents that could occur in exposed areas.

This project is being completed under the authority and provisions of Section 107 of the 1960 River and Harbor Act, as amended. Section 107 of the River and Harbor Act of 1960 provides authority for the U.S. Army Corps of Engineers (USACE) to improve navigation including dredging of channels, anchorage areas, and turning basins and construction of breakwaters, jetties and groins, through a partnership with non-Federal government sponsors such as cities, counties, special chartered authorities -such as port authorities- or units of state government.

There is no existing Federal navigation project for Blue Hill Harbor. Blue Hill Harbor has been studied by the USACE for navigation improvements four times in the past: 1890, 1912, 1951 and 1972. The first three studies resulted in a decision that no Federal improvements were warranted due to lack of navigation use of the harbor. The 1972 report found improvements to be warranted but did not recommend a project be adopted as the community was unable to provide the required cost share funds for construction.

4.0 PROJECT DESCRIPTION

The proposed Blue Hill Harbor project will dredge a 6-foot-deep mean lower low water (MLLW), 80-foot-wide channel from the outer harbor, extending 5,600 feet northwest to the town wharf. Only the upper 2,600 feet of the project will require dredging, with channel limits in the lower reaches declared for jurisdictional purposes. This channel will be widened at its upper end to form a turning basin, 160 feet by 80 feet, adjacent to the town wharf. Approximately 71,500 cubic yards (CY) of mixed gravel, sand, and silt will be removed from the proposed project area using a mechanical dredge. The 61,000 CY of dredged material deemed suitable for open water disposal will be loaded onto scows and towed about 11 miles to the Eastern Passage Disposal Site (EPDS), a previously used disposal site near Dodge Island, for placement. Approximately 10,500 CY of material from the upper two feet of the inner harbor, which was deemed unsuitable for open water placement due to the presence of polycyclic aromatic hydrocarbons (PAHs) and metals, will be placed in a confined aquatic disposal (CAD) cell within Blue Hill Harbor. The CAD cell will be constructed by removing approximately 19,500 CY of suitable of mixed gravel, sand, and silt material from an area adjacent to the designated channel. Material generated from the CAD cell creation will be placed at the EPDS. All dredging will be by mechanical dredge and scow that will be able to operate in shallow draft areas in the channel. Construction will occur between November 8th and April 8th and is expected to take about four months to complete.

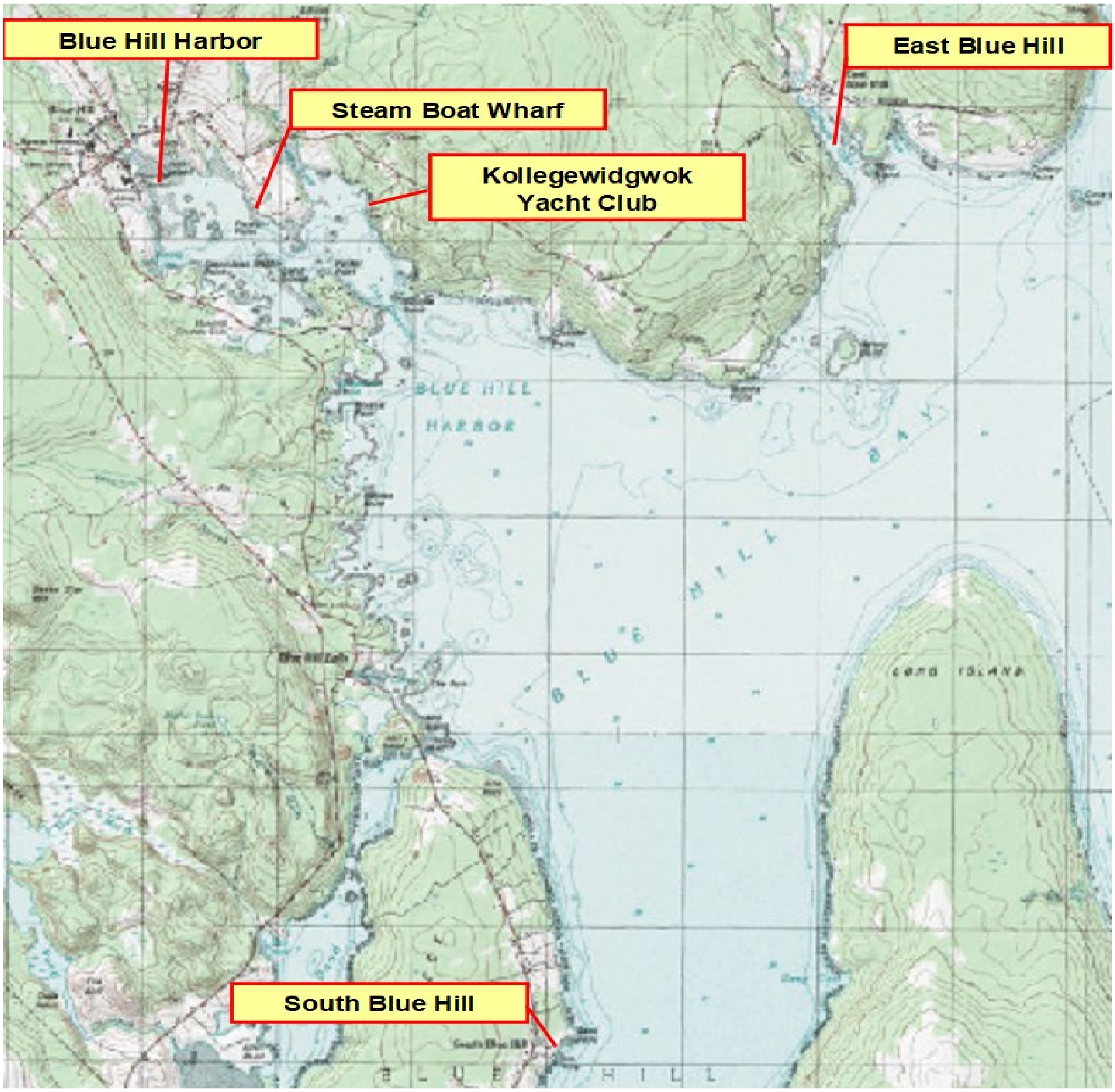

Figure 1: Location of Blue Hill Harbor, Maine.

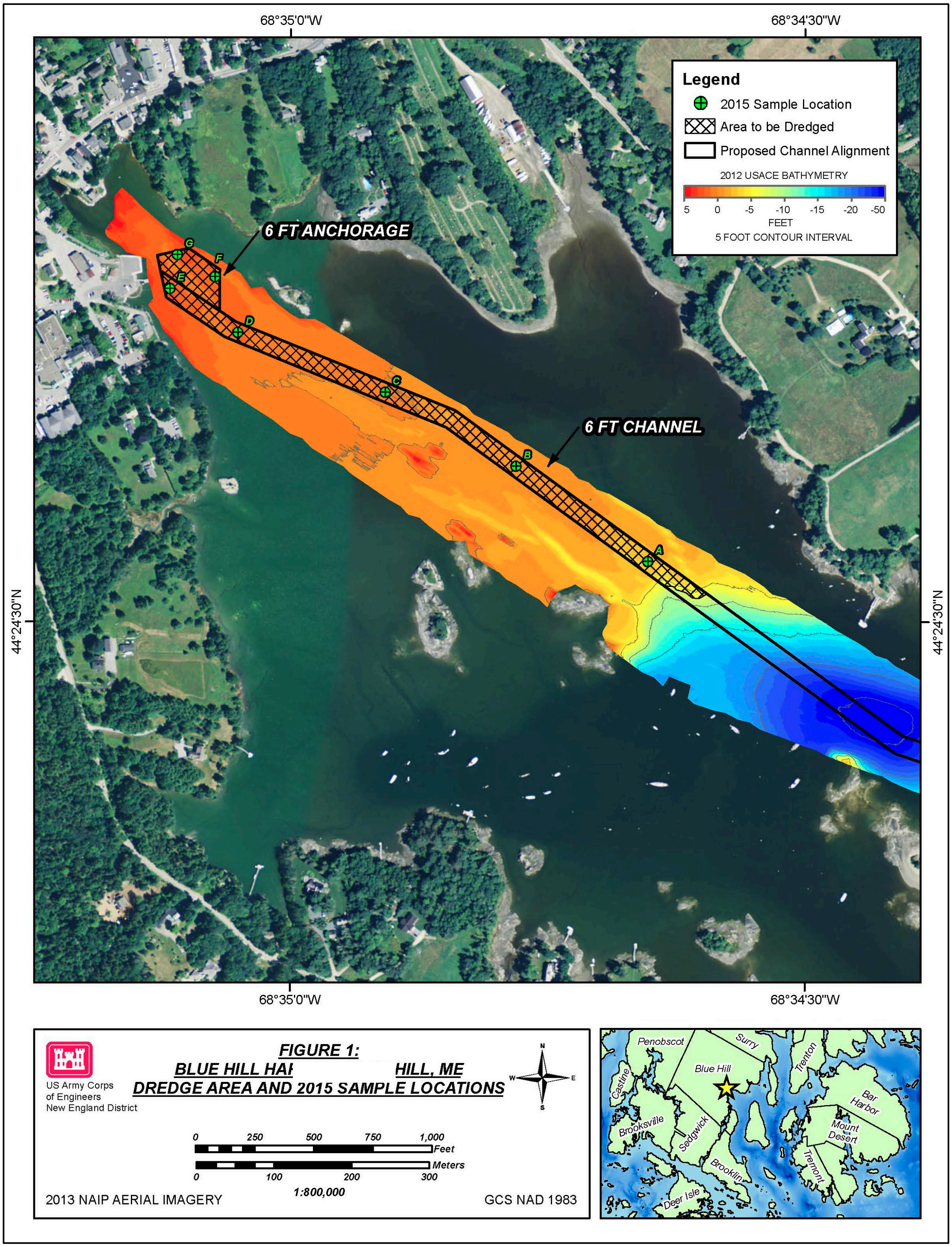

Figure 2: Blue Hill Harbor Proposed Project Area.

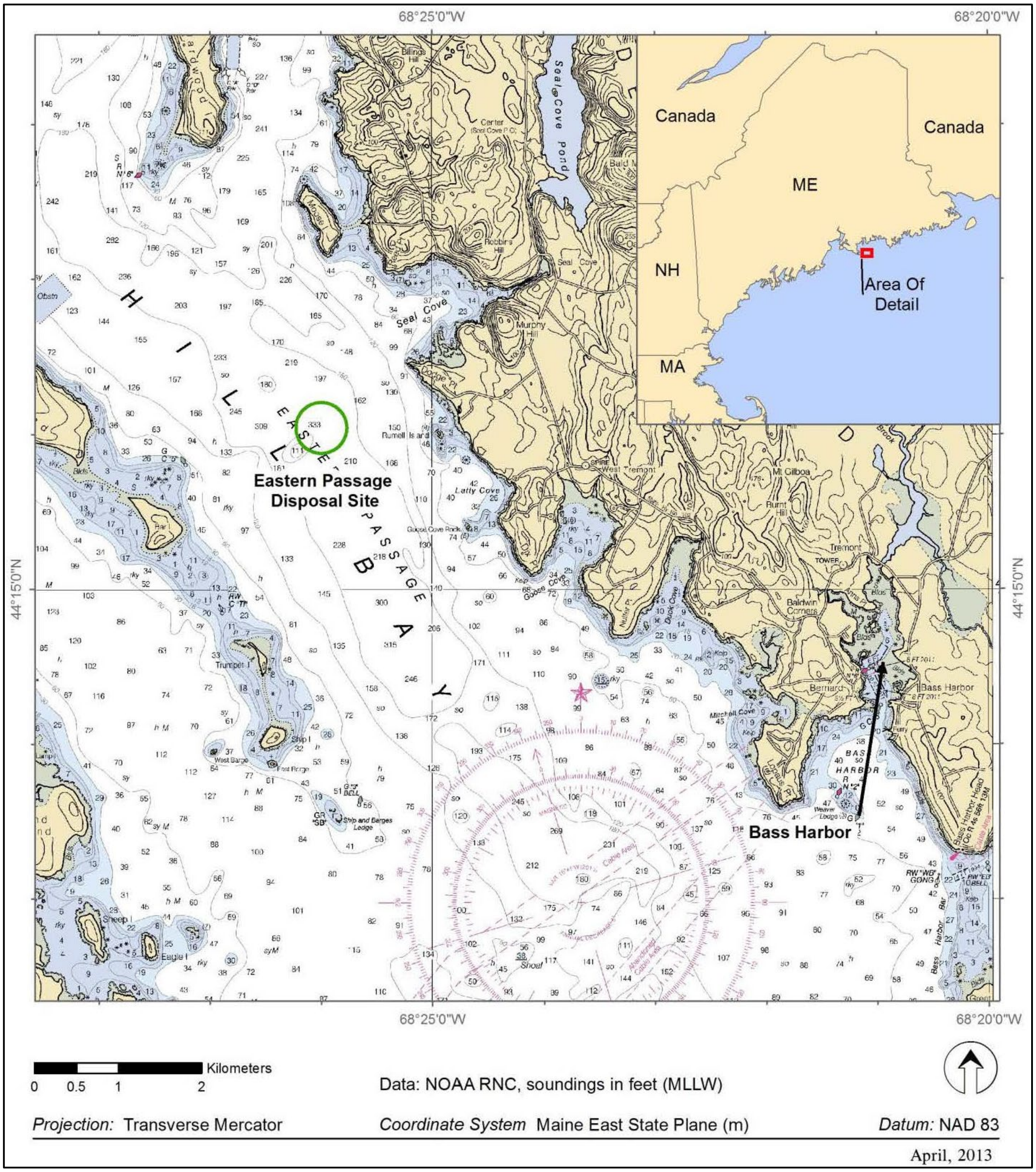

Figure 3: Eastern Passage Disposal Site.

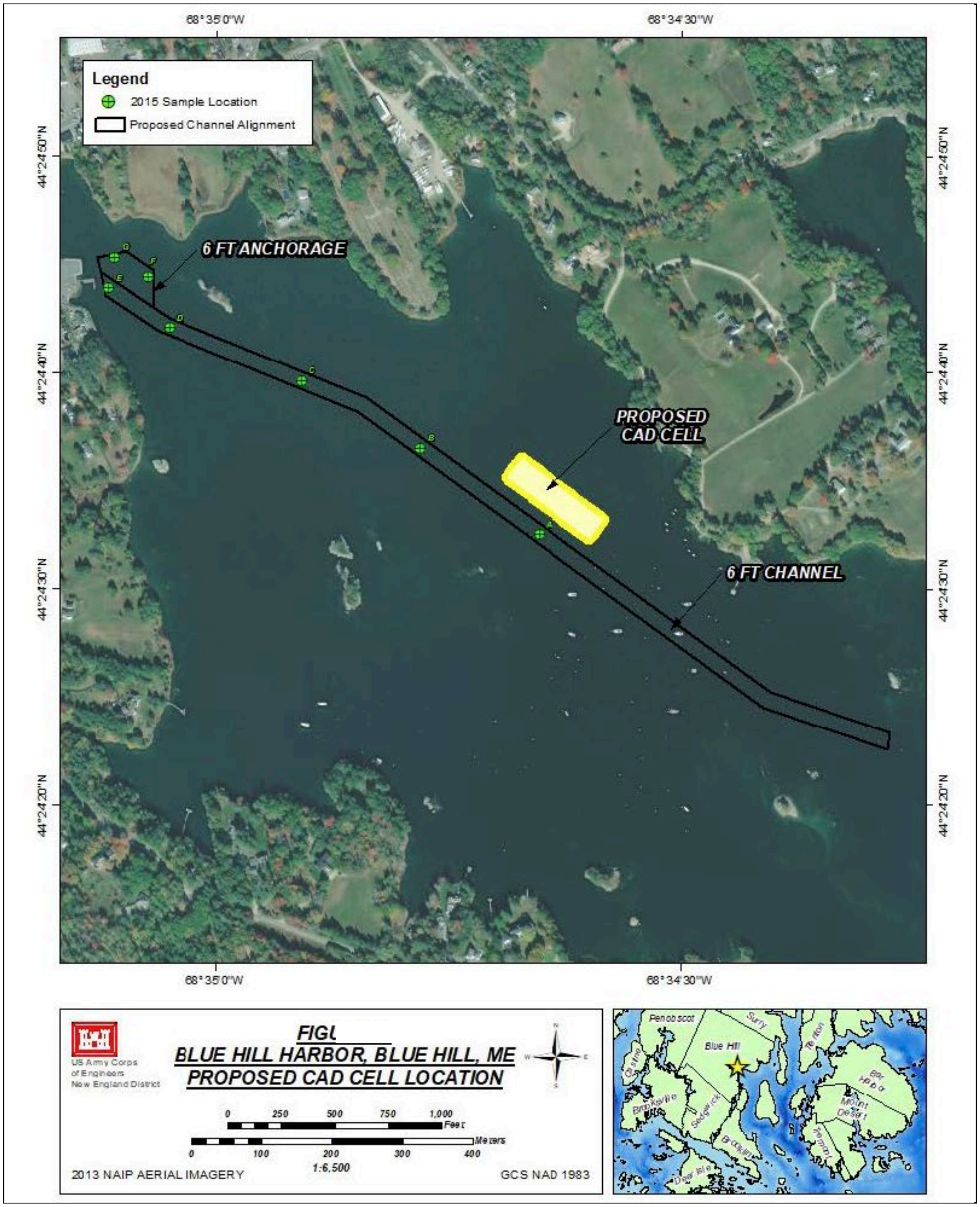

Figure 4: Blue Hill Harbor Confined Aquatic Disposal Cell

5.0 ALTERNATIVES

5.1 No Action Alternative

The No Action Alternative, not improving the navigation situation in Blue Hill Harbor in any way, would result in a continuation of existing difficulties for commercial and recreational vessels in the harbor.

Blue Hill Harbor is home to a sizeable lobster fleet as well as charter fishing boats, other inshore and offshore commercial fishing craft, and recreational boats. These vessels are served by two public landings (Central Blue Hill Harbor landing and South Blue Hill Harbor landing), a fish pier, a marina, a boat club, and rental boat facilities. Currently, the wharf in central Blue Hill Harbor is rarely used since it is accessible at only the highest tides, generally only 3 hours per day. Without the proposed navigation improvements, full time access to the town wharf is not possible and fishermen who wish to fuel or offload must use the South Blue Hill harbor landing. However, the South Blue Hill Harbor landing offers no power or water service, nor does it have a fueling station. Fuel trucks deliver fuel directly to vessels pulled up at the dock. Supplies and catch are loaded and off-loaded while vessels are pulled up at either the dock or at barges moored nearby. The South Blue Hill Harbor landing is exposed to winds and waves, particularly from the south. Vessels frequently incur damages while loading or offloading during high winds and high waves. Due to these conditions at the South Blue Hill Harbor landing, commercial vessels are often damaged by knocking against the pilings during periods of rough weather. The No Action alternative would allow these conditions to continue. This alternative is considered to be unacceptable.

5.2 Non Structural Alternatives

<u>Fleet Relocation</u>

The transfer of some of the fishing vessels to nearby harbors is contingent on the ability of these harbors to provide adequate protection, capacity, and efficiency of operation. It is not likely that any commercial operators would permanently transfer their vessel if an alternative site does not have the capacity to provide adequate features and facilities. USACE planning efforts determined that harbors in the vicinity of Blue Hill do not meet the necessary qualifications of an "adequate" fishing port. Nearby harbors, such as Bass Harbor in Tremont, Maine and Stonington Harbor in Stonington, Maine, suffer from overcrowding. These ports cannot handle the potential influx of vessels due to their lack of adequate berthing space. The only other option in Blue Hill Bay is the Union River Federal Navigation Project at Ellsworth, Maine. This harbor is seasonally restricted by ice formation and does not have shore support facilities necessary for the fishing fleet and boats operating from Blue Hill. All three alternative harbors would increase the daily haul distance by 20 to 25 miles roundtrip.

Within Blue Hill the commercial fleet has apportioned itself in the most efficient way possible given the existing conditions. Of the 50 fishing vessels that are based in Blue Hill 23 are moored at South Blue Hill, 12 moor at Steamboat Wharf, 8 moor at East Blue Hill, and 7 moor elsewhere. South Blue Hill is the most developed of the alternatives within the town, but only 23 moorings are available. The South Blue Hill landing is at maximum capacity and is abutted by privately owned residences, making expansion of the landing cost prohibitive. South Blue Hill is exposed to wind and waves from all directions. Some fishermen not moored at South Blue Hill unload their catch there, contributing to the congestion-related delays. Steamboat Wharf lacks facilities to load/unload provision and catch. The landing is completely on privately owned land and access could be rescinded at any time. East Blue Hill's shore facilities are not equipped for commercial use. The anchorage is full and primarily utilized by recreational vessels.

Tidal Navigation

Tidal navigation is presently practiced by the portion of the fleet that unload at the town wharf in Blue Hill Harbor. New England experiences a semidiurnal tide; in general there are two high tides and two low tides every 24 hours and 50 minutes. The highs and lows (and therefore range of the tide) can vary considerably from one tidal cycle to the next. Experienced fishermen understand the tides in the areas they operate and pay attention to the tide charts. Even so, the effects of storms, waves, swells, surges, currents, winds, and other factors all contribute to uncertainties in navigating shallow coastal waters and harbors. Groundings can occur when deeper draft boats are operated without sufficient underkeel clearance to account for these conditions and the effect on a boat's hull in the water and sail area (cross section exposed to the wind) above the water.

Fishing boats leave the harbor loaded down with provisions, ice, fuel, and bait, and return to the harbor loaded down with catch on ice. When loaded draft, plus a reasonable underkeel clearance for sea and channel conditions, exceeds the available controlling depth in the channel, then groundings can occur. The only solution short of dredging is to delay the channel transit, which costs the boat time, and if inbound, fuel and labor. Significant delays inbound can result in spoilage of catch and reduction in the ex-vessel value of the catch.

At Blue Hill the non-Federal Sponsor and the commercial fleet have requested the USACE to examine channel improvement in order to alleviate tidal delays and groundings. Further reliance by the fleet on tidal navigation would fail to address the problems experienced by the fleet.

5.3 Alternative Dredging Methods

Dredging methods that were considered for this project include hydraulic, hopper, and mechanical dredges. A hydraulic dredge pumps sediments via pipeline to a land or an intertidal disposal area. A hopper dredge uses a cutterhead and pump to suction sediments through an arm into hoppers within the dredge; when the hopper is full the dredge moves to the disposal site and the material is released by opening the hopper doors. A mechanical dredge excavates material with a bucket-type apparatus and deposits it into a scow for transport to the disposal site where it is released through an opening in the bottom of the scow.

A hydraulic dredge is generally used for sandy material that will be disposed of in an upland area or on a nearby beach, or for pumping any type of unconsolidated material in a confined (diked) disposal/dewatering area. As there are no practicable upland disposal sites (see discussion below), the use of a hydraulic dredge and pipeline system is impractical and cannot be used in this project.

A hopper dredge uses a suction pump similar to a hydraulic dredge to loosen and remove material from the bottom. The material is then deposited into hoppers aboard the dredge vessel. When the hoppers are full, the suction arm is raised and secured to the vessel, which then travels to the disposal site and releases or pumps off the material from the hoppers. The dredge then returns to the dredging site to begin another cycle. Hopper dredges come in various sizes from a few hundred cubic yards bin capacity to several thousand yards capacity. In New England, hopper dredges are most often used to remove sandy materials from harbor entrance channels and deposit the material offshore of beaches to nourish littoral bar systems. Hopper dredges are not efficient in the dredging of glacial tills as these sediments tend to be very compact. As the material from Blue Hill Harbor is mainly glacial till, the use of a hopper dredge was not selected for this project.

Mechanical bucket dredging involves the use of a barge-mounted crane, hoe or cable-arm with a bucket to dig the material from the harbor bottom. Typical dredging buckets come in various sizes from five cubic yards to fifty or more cubic yards. The material is placed in a scow for transport to the disposal site by tug. For open-water disposal, a split-hull scow is usually used for ease of disposal and to minimize the discharge plume. Material is typically discharged at a dump buoy, or by using preset coordinates monitored by the tug. Mechanical dredging is a slow process, as the time to fill a scow with dredge material is dependent upon the size of the bucket and the speed of the crane. However, mechanical dredging is the most efficient and practical way to remove silty material. Mechanical dredging was selected as the preferred dredging method of the Blue Hill Harbor improvement project.

5.4 Alternative Disposal Sites

General disposal site alternatives for dredging projects include open water disposal, upland disposal, intertidal or shallow water disposal with possible habitat development, and beach disposal. These alternatives are discussed below.

5.4.1 Upland Disposal

An upland disposal site was identified in collaboration with Maine Department of Environmental Protection (ME DEP). The Juniper Ridge landfill in Alton, ME was determined to be the closest acceptable site for upland placement. The site is located 56 miles north of Blue Hill, ME. The use of the identified upland site would require the material to be triple handled as the material would have to be dredged from the harbor, placed in a dewatering area adjacent to the harbor, and placed in trucks to be transported to the disposal area. Although the upland site was identified, no appropriate dewatering areas are available in the project area. Additionally, the distance to the upland site as well as the physical nature of the material prevents the possibility of hydraulically pumping the material to the upland site. Therefore, this disposal option is considered impracticable.

5.4.2 Open Water Disposal

Rockland Disposal Site: The nearest Environmental Protection Agency (EPA) approved ocean disposal site to Blue Hill Harbor is the Rockland Disposal Site (RDS), which is over 50 miles from the project area. RDS covers a 0.25 nmi^2 (0.87 km^2) area of seafloor within West Penobscot Bay and is centered at 44° 07.105' N, 69° 00.269' W. It is located approximately 3.1 nmi (5.7 km) east-southeast of Brewster Point, Glen Cove, Maine. The distance to this disposal site makes its use impracticable.

5.4.3 Nearshore Disposal

Eastern Passage Disposal Site: The nearest previously used nearshore disposal site to Blue Hill Harbor is the EPDS. This site is located approximately 14 miles southeast of Blue Hill Harbor (Figure 3). This site is the preferred disposal site for the portion of this dredging project found suitable for open water disposal.

Confined Aquatic Disposal Cell

A CAD cell is an engineered containment feature for the isolation of dredged material. CAD cells are constructed to reduce the risk from unacceptably contaminated sediments (UCSs) by storing them in a depression in the bottom of an aquatic system. CAD cells may be constructed from (1) naturally occurring bottom depressions; (2) sites from previous mining operations, such as beach nourishment borrow sites; or (3) new dredging operations created expressly for the containment structure. CAD cells can reduce the risk from UCSs by confining the sediments to a smaller footprint, increasing contaminant diffusion times, removing UCSs farther from physical processes that can result in transport, and providing a means to effectively cap the sediments.

5.4.4 Beach Disposal

Placement of the dredged material from the Blue Hill Harbor project was considered for beach nourishment. However, as noted in section 6.2, the material from the proposed project contains a substantial amount of fine material (i.e., silt). The fine material is physically incompatible with the surrounding beach areas thus rendering this alternative impracticable.

5.5 Alternative Dredging Dimensions and Depths

Based upon fleet size and fleet dimension data, it was determined that a width of 80 feet would provide proper clearance for vessels to maneuver to the offloading docks and around other vessels.

Dredging the navigation features to depths of -5 feet, -6 feet, and -7 feet were evaluated. The -6-foot alternative provides the dimensions necessary to accommodate the expected vessel use through the channel and at the town wharf. The -6-foot depth and configuration of the turning area also allows for sufficient room for maneuvering boats accessing the shore facilities.

6.0 AFFECTED ENVIRONMENT

6.1 Physical Setting

Dredging Site & CAD cell (Blue Hill Harbor)

Blue Hill Harbor is the principal commercial fishing harbor of the Town of Blue Hill, located on the western shore of Blue Hill Bay in Hancock County, Maine. The harbor is located about 30 miles southeast of Bangor and 13 miles southwest of Ellsworth, Maine. Blue Hill Harbor is located off the northwest end of Blue Hill Bay just west-northwest of Long Island and due west of Union River Bay. Mean tidal range is 12.6 feet and spring tidal range is 14.4 feet with a mean tide level of 6.3 feet.

Physical habitats of Blue Hill Harbor are typical of northeast coastal Maine, including: marine deepwater habitat, aquatic bed, unconsolidated sand and cobble-gravel shorelines, mudflats, and rocky shore of exposed bedrock. Uplands of the Blue Hill Harbor area support broad-leaved deciduous and coniferous forest and wetlands, as well as agricultural land and lawn. The National Wetlands Inventory (2019) classifies outer Blue Hill Harbor as estuarine and marine deep-water and inner Blue Hill Harbor as estuarine and marine wetland.

Disposal Site

The EPDS is located in approximately 330 feet of water between Bar Island and Dodge Point (Figure 3). EPDS is located in a trough in the tidal channel of Blue Hill Bay with hard rocky bottom to the southwest and a slope of soft sediment to the east (Carey et al. 2013). This area is approximately 4 nautical miles from Blue Hill Harbor and is located landward of the Territorial Sea Baseline. Material placement at EPDS would be limited to the area of soft sediment in the eastern portion of the site.

6.2 Sediment Quality

Dredging Site (Blue Hill Harbor) & CAD cell

On 28 October 2015 USACE New England District (NAE) collected sediment vibracores from seven locations throughout the proposed dredging area identified as Stations A through G on Figure 3. USACE-NAE personnel described each sediment core in the field and composited the length of each individual core for analysis of grain size, total solids, and water content. USACE-NAE then composited the core samples according to the plan outlined in the sampling and analysis plan for chemical analysis of the contaminants of concern (COC) specified in the Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters (RIM, USACE/EPA 2004).

The sediments in the outer portion of the proposed channel (Stations A, B, and C) were predominantly poorly graded fine to coarse sands with overlying marine silt and clay deposits. There was fine woody organic debris in all three cores from this area. Core penetration at the inner harbor stations (D, E, F, and G) was limited due to gravel and coarse sand deposits near the sediment surface and was 2.0 feet or less at Stations D, F, and G. Grain size results are presented in Table 1.

Table 1: Physical Testing Results from Blue Hill Harbor Sediment Cores (October 2015)

Sample ID	% Cobble	% Gravel	% Coarse Sand	% Medium Sand	% Fine Sand	% Total Fines	% Moisture
A	0.1 (U)	0.1	2.2	6.6	21.6	69.5	55.3
B	0.1 (U)	0.1 (U)	1.7	3.5	7.4	87.4	51.2
C	0.1 (U)	1.1	1.9	4.9	12.1	80	54.5
D	0.1 (U)	4.4	13.2	34.8	35	12.6	19.6
E	0.1 (U)	1.8	8.8	26.7	37.9	24.8	33.2
F	0.1 (U)	5	14	30.6	29.8	20.6	26.8
G	0.1 (U)	45.9	12.4	16.7	16.2	8.8	21.4
U = Non-detected analytes are reported as the Range Low and qualified with a "U".							

No polychlorinated biphenyls (PCBs) or pesticide analytes were detected above the method detection limit in the harbor samples with the exception of individual compounds in Composite DE. There were detectable concentrations of PAHs and metals in all four composite samples. To examine the harbor concentrations in an ecologically meaningful context, USACE-NAE screened the values with Sediment Quality Guidelines (SQGs). Applicable SQG screening values for marine and estuarine sediments are the National Oceanic and Atmospheric Administration (NOAA) effects-range low (ERL) and effects-range median (ERM). ERL/ERM values are empirically derived guidelines that identify contaminant levels that indicate when toxic effects are unlikely (ERL) and when an increased probability of toxic effects is evident (ERM).

No COCs in Composite A or BC exceeded the ERL value as shown on Table 2. All COCs in Composite DE and FG were also below the ERL value with the exception PAHs which were above the ERL in Composite DE and above the ERM in Composite FG (Table 2). This suggests that a toxic response from exposure to sediments from Composite A or BC would be highly unlikely but there is increased potential for a toxic response from exposure to sediments from Composites DE and FG due to elevated PAHs.

Table 2: Chemical Testing Results from Blue Hill Harbor Sediment Cores and Sediment Quality Guidelines (October 2015)

Chemical or Class	ERL	ERM	Unit	COMP A	COMP BC	COMP DE	COMP FG
Arsenic	8.2	70	mg/kg	4.5	7.7	5.2	6.3
Cadmium	1.2	9.6	mg/kg	0.6	0.8	0.1	0.2
Chromium	81	370	mg/kg	21.1	30.9	12.3	10.8
Copper	34	270	mg/kg	17.6	16.5	14.3	6.9
Lead	46.7	218	mg/kg	21.7	21.8	23.0	10.5
Mercury	0.15	0.71	mg/kg	0.03	0.03	0.02	0.02
Zinc	150	410	mg/kg	54.2	64.1	40.6	37.9
HMW PAH*	1,700	9,600	µg/kg	879	629	3,703	20,089
HMW PAH*	552	3,160	µg/kg	165	123	646	7,388
Total PCBs*	22.7	180	µg/kg	9.36	5.99	8.03	6.17
Total DDT*	1.58	46.1	µg/kg	0.8	0.7	0.9	0.5

*For total values non-detects calculated as half the reporting limit

USACE-NAE reviewed results from the initial round of testing and performed a second sampling effort on 10 May 2016 to better define the vertical and spatial extent of the elevated PAH concentrations around Composites DE and FG. USACE-NAE collected push cores at low tide from ten stations in the inner harbor and one location at the mouth of the each of the three tributaries as shown on Figure 5. Similar to the vibracore effort core penetration with this sampling method was limited to approximately 2 feet for this area of the harbor. USACE-NAE personnel described the push cores in the field and then collected discrete subsamples for PAH analysis from the top six inches and from six inches to the end of each core. Results from this analysis showed no discernable pattern for the spatial distribution of PAHs in the harbor (See Appendix I - Suitability Determination).

Due to the inability to penetrate inner harbor sediments to the design depth and determine the vertical extent of the elevated PAH concentrations, the town of Blue Hill dug four test pits in October 2016 (Figure 6). The Town's contractor placed timber mats across the harbor at low tide and used an excavator to dig 4-9 foot deep test pits at predetermined locations (Figure 7). USACE-NAE personnel were on-site to describe the lithology of the pit walls and subsample the sediment in two-foot horizons for PAH analysis. Results from this analysis are presented in Appendix A of the Suitability Determination (Appendix I) and showed that the extent of PAH contamination is limited to the upper two feet of the inner harbor sediments.

USACE-NAE evaluated the sediment from the Blue Hill Harbor Navigation Improvement Project through §230.61 of the Clean Water Act (CWA) and found the material suitable for open water placement at EPDS with the exception of 10,500 cubic yards of material from the upper two feet of the inner harbor. The sediment from this portion of the harbor is not suitable for open water placement due to elevated PAH concentrations. USACE-NAE proposes to contain the unsuitable material in a CAD cell. The material excavated to create the CAD cell is outside of the elevated PAH footprint, adjacent to Composites A and BC, and is suitable for open water placement at EPDS.

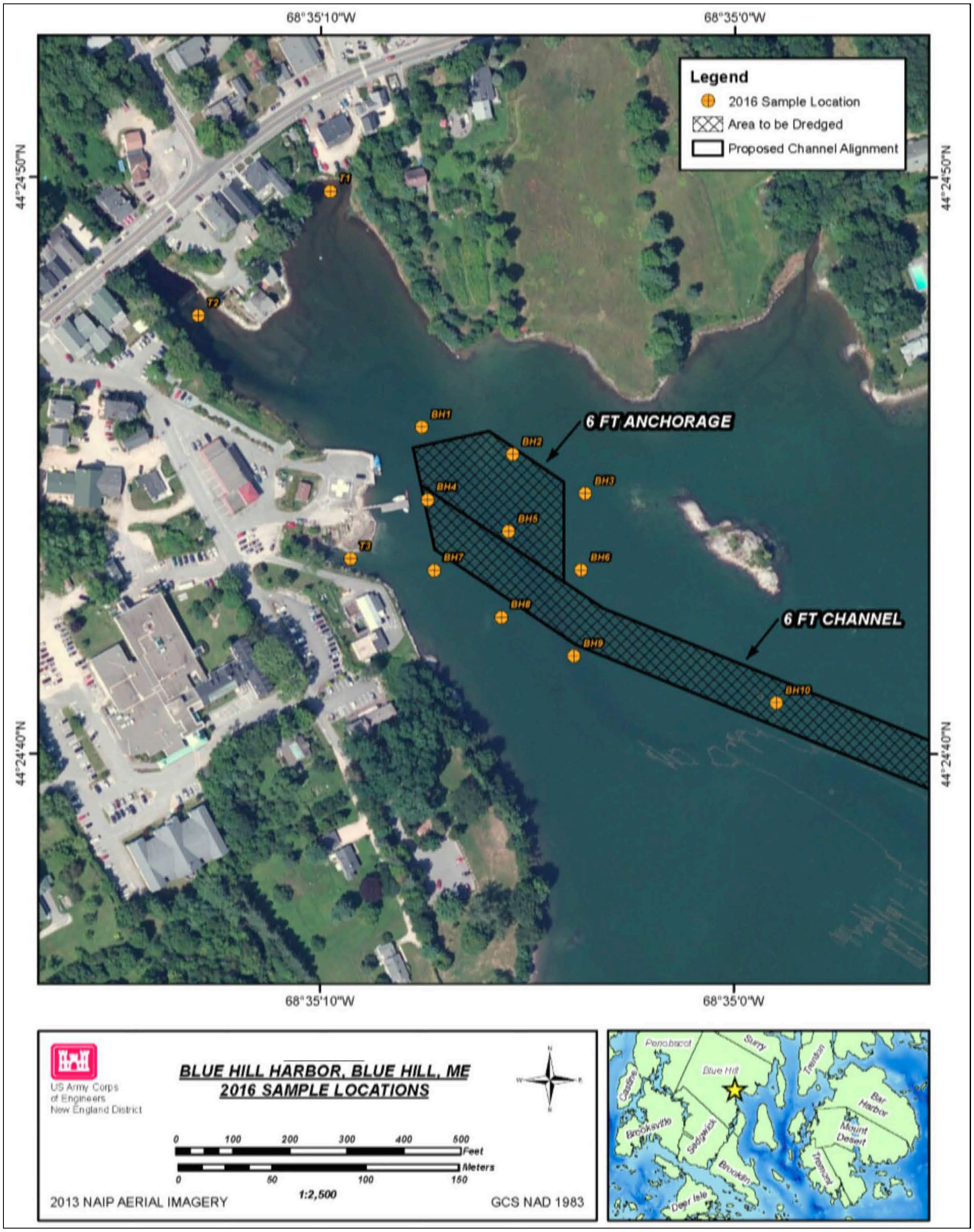

Figure 5: Location of Push Core Samples within Blue Hill Harbor

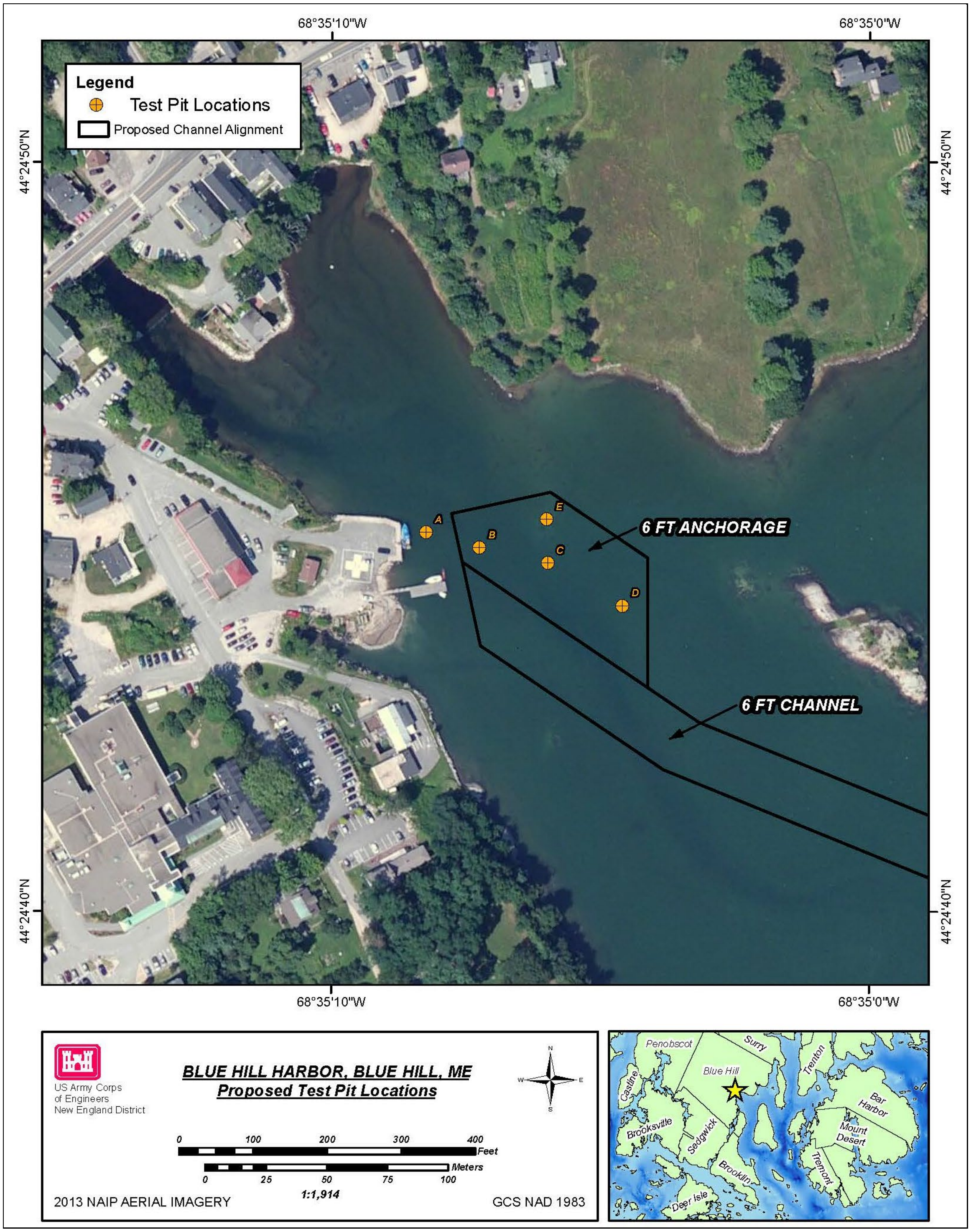

Figure 6: Location of Excavated Test Pits within Blue Hill Harbor in 2016

Test Pit B

Test Pit C

Test Pit D

Test Pit E

Figure 7: Photographs of the Test Pits in Blue Hill Harbor.

Disposal Site

The sediments at the EPDS were characterized as dark-olive, sandy silt with approximately 80-90% of the material in the silt particle size range (USACE, 2006). A 2012 Disposal Area Monitoring System (DAMOS) survey of EPDS revealed two distinct sedimentary habitats within EPDS: a fine-grained, soft-bottom habitat in the central trough and northeast shoal area, and a hard-bottom habitat in the southwest shoal area (Carey et al 2013). Dredged material placed at the site in 2011-2012, which was a combination of sandy-silt, coarse sand, and rock was placed primarily in the central trough area on fine-grained, soft-bottom substrata (Carey et al 2013).

6.3 Water Quality

The Maine Bureau of Water Quality Control classifies the waters of Blue Hill Harbor as SB. Class SB waters are suitable for water contact recreation and fishing, for the harvesting and propagation of shellfish, and for fish and wildlife habitat.

The Blue Hill waste-water treatment plant (BH-WWTP) discharges into Blue Hill Harbor.

6.4 Aquatic Resources

6.4.1 Benthos

Dredging Site & CAD cell (Blue Hill Harbor)

On October 28, 2015 and May 1, 2016, the USACE conducted benthic sampling surveys within the Blue Hill Harbor project area (Figure 8). Samples were collected with a 0.04 m^2 VanVeen grab from locations within the proposed navigation channel and turning basin in 2015 and 2016. Samples were collected from the location of the proposed CAD cell in 2016.

The overall surficial sediment type, and therefore habitat type, for the project area was categorized as a mixture of sand and silt. All stations displayed a fairly low diversity of species of macrobenthic organisms (Table 3). All the assemblages were dominated by pioneering stage and stress tolerant organisms such as the polychaetes *Capitella* sp. and *Streblospio benedicti*. Diversity (number of species present) and abundance (number of individuals present) values were extremely low in the inner harbor stations (i.e., Stations B3, B4, and C). Increases in diversity and abundance (compared to the inner harbor) were seen in the mid-harbor and outer harbor stations. The concentration of contaminants in the surficial sediments of the inner harbor are likely a contributing stressor to the low diversity and abundance values seen in the inner harbor.

Disposal Site

A 2012 survey of EPDS revealed two distinct sedimentary habitats within the site: a fine-grained, soft-bottom habitat in the central trough and northeast shoal area and a hard-bottom habitat in the southwest shoal area (Carey et al 2013). Two distinct biological communities, each associated with the different habitat types, were documented within

EPDS. A typical fine-grained, soft-bottom infaunal community was documented in the central trough and northeast shoal areas, while a hard-bottom epifaunal fouling community was documented in the southwest shoal area.

Table 3: Macrobenthic organisms collected in Blue Hill Harbor (Blue Hill, ME) navigation improvement project area. Numbers are per 0.04 m^2.

	B1	B2	B3	B4	Channel South (A)	Channel Bend (B)	Turning Basin (C)	CAD cell (D)
	10/28/15	10/28/15	10/28/15	10/28/15	5/1/16	5/1/16	5/1/16	5/1/16
Species								
Annelida								
Polychaetea								
Capitella sp.	-	-	-	-	8	1	4	1
Harmothoe imbricata	-	-	-	-	-	-	-	1
Leitoscoloplos robustus	-	-	-	-	4	-	-	-
Mediomastus ambiseta	1	6	3	-	8	-	2	-
Nereis succinea	-	-	-	-	-	3	6	-
Paraonis sp.	2	-	-	-	17	-	-	-
Polydora sp.	2	-	-	-	6	1	-	-
Scolecolepides viridis	-	-	-	-	3	-	-	-
Spio setosa	-	1	-	-	-	-	-	-
Streblospio benedicti	12	4	-	-	11	1	-	-
Unidentified Lumbrineridae	-	-	-	-	-	-	-	1
Oligochaeta								
Unidentified Oligochaete	-	2	1	1	8	-	3	-
Arthropoda								
Crustacea								
Ampelisca sp.	-	-	-	-	3	-	-	1
Carcinus maenus	-	-	-	-	1	-	-	-
Unidentified Ampeliscidae	-	1	-	-	-	-	-	-
Mollusca								
Bivalvia								
Tellina agilis	3	-	-	-	4	-	-	1
Total No. of Species	**5**	**5**	**2**	**1**	**11**	**4**	**4**	**5**
Total No. of Individuals	**20**	**14**	**4**	**1**	**69**	**6**	**15**	**5**

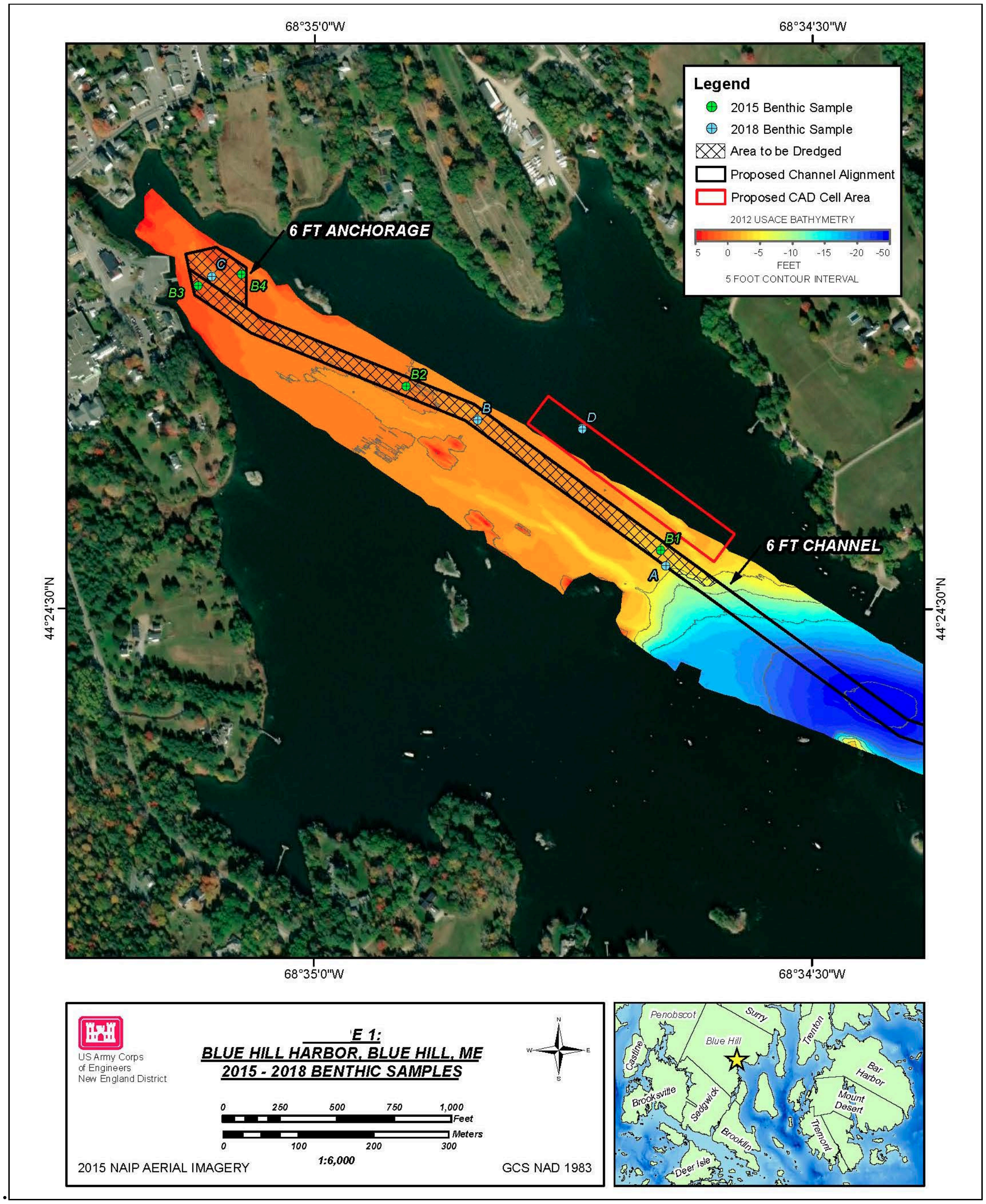

Figure 8: Location of Benthic Sample Stations in 2015 and 2016.

6.4.2 Fish

The fish assemblages found in Blue Hill Harbor and Blue Hill Bay are typical of Maine nearshore marine habitats (NOAA, 2005). A full list of managed fishery species can be found in section 6.6 of this report. In addition to managed species, a suite of forage species would be expected to occur in the harbor and at the EPDS.

6.4.3 Shellfish and Lobster

Dredging Site & CAD cell (Blue Hill Harbor)

Shellfish

According to the town of Blue Hill's 1999 comprehensive plan, the inner harbor has historically contained some of the most productive shellfish (specifically soft-shell clam) growing areas in Blue Hill, particularly the Peter's Point area, the area around the municipal landing, and the area around Parker's Point (Blue Hill, 1999). The comprehensive plan also noted that pollutants from the village and from the licensed municipal discharge from the Blue Hill WWTP resulted in the shellfish growing areas being closed to harvesting for many years and that the 1998 harvest of soft-shell clams was minimal.

Maine DMR's "2010 molluscan shellfish data" GIS data layer classifies the intertidal areas within inner Blue Hill Harbor as soft-shell clam habitat. In October 2011, the Blue Hill Shellfish Committee allowed for the harvest of approximately 500 bushels of soft shell clams from Blue Hill Harbor. Following the 2011 harvest, total densities (which included the 500 bushels removed) within the harbor area were estimated (based on the clams collected) at 800 bushels of legal sized clams (Ellsworth American, 2011). As of April 2018, the majority of inner Blue Hill Harbor was prohibited for shellfish harvesting. Visual observation for the presence of soft-shell clam burrows were made during periods of low tide during USACE's 2015 and 2016 sediment sampling efforts, however, no signs of burrows or soft-shell clam activity was observed (Todd Randall, USACE, personal observations).

During the excavation of test pits for sediment chemistry sampling in the inner harbor in 2016 (Figure 6), several soft-shell clam shells and shell fragments were observed, however, no live soft-shell clams were noted. No soft-shell clams were observed in the 2015 or 2016 benthic samples.

Lobster

Lobster resources in the project footprint are minimal. Portions of the project footprint are within intertidal areas which are not preferred lobster habitat. During the sediment sampling efforts, no lobsters were noted in the intertidal areas during low tide and no evidence of lobster fishing gear was observed during high tide periods. The subtidal areas within the project footprint may contain lobster. However, during the sediment sampling events, no evidence (i.e., the presence of lobster fishing gear) was noted in the footprint of the proposed project. The Blue Hill Harbormaster (Randall, personal communication) noted that there was generally no lobster fishing in inner Blue Hill Harbor.

Disposal Site

Shellfish

Maine DMR's "2010 molluscan shellfish data" GIS data layer does not classify the area that encompasses to EPDS as shellfish habitat. Benthic community analysis of the site did not show evidence of any commercially important bivalve species.

Lobster

Lobster resources are likely to occur in the EPDS. Several adult lobsters were observed during the 2012 DAMOS monitoring survey of the EPDS (Carey et al 2013). However, no site-specific lobster abundance data is available. Lobster resources within the footprint of the EPDS are assumed to be as abundant as the average lobster resources in Blue Hill Bay.

6.4.4 Submerged Aquatic Vegetation

Dredging Site, CAD cell (Blue Hill Harbor), and Disposal Site

According to the Maine Department of Marine Resources GIS database, no current or historic eelgrass (*Zostera marina*) resources have been documented within Blue Hill Harbor or within the EPDS (https://maine.maps.arcgis.com/apps/StorytellingSwipe/index.html?appid=e7db0b0cce6643ca8fa23bd71ce229a2).

6.5 Wildlife Resources

6.5.1 Shorebirds and Waterfowl

Coastal Maine is important for shorebirds as a feeding and resting area during migration. In addition, piping plover and spotted sandpiper breed along the coast of Maine and the purple sandpiper is a winter resident. Shorebirds feed on invertebrates in intertidal mudflats and roost on sand, gravel beaches, spits, wetlands, or near shore ledges (Schettig and Schettig 1980). The habitat of northeastern Maine, which is described by the U.S. Fish and Wildlife Service (Schettig and Schettig 1980), is generally characterized as excellent habitat for all migrating and wintering waterfowl species of Maine. The high quality of the Maine habitat is due in large part to the large tidal range, which exposes extensive mudflats in the harbor. This supplies excellent habitat for dabbler ducks, particularly black ducks (Schettig and Schettig 1980).

While the existing intertidal areas within Blue Hill Harbor provide valuable resting areas for bird species, the low diversity and low abundance of benthic invertebrate resources in the intertidal and subtidal habitats within the areas examined for this study are well below typical values (see Section 6.4.1), thus reducing the function of the area as an important wildlife feeding area. The apparent ecological stressor that is causing the reduced function and value of the Blue Hill Harbor intertidal flat as a feeding ground is PAH contamination of the sediments (see Section 6.2).

6.6 Essential Fish Habitats

The 1996 amendments to the Magnuson-Stevens Fishery Conservation Management Act strengthen the ability of the National Marine Fisheries Service (NMFS) and the New England Fishery Management Council to protect and conserve the habitat of marine, estuarine, and anadromous finfish, mollusks, and crustaceans. This habitat is termed "essential fish habitat" and is broadly defined to include "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Table 4 notes the managed species from both the dredging and disposal sites.

Table 4: List of species that have designated EFH in Blue Hill Harbor (NMFS 2017).

Species	Eggs	Larvae	Juveniles	Adults
American plaice (*Hippogloissoides platessoides*)	X	X	X	X
Atlantic Cod (*Gadus morhua*)	X	X	X	X
American wolfish (*Anarhichus lupus*)	X	X	X	X
Ocean pout (Macrozoarces americanus)	X		X	X
Pollock (*Pollachius virens*)			X	
White Hake (*Urophycis tenuis*)			X	X
Windowpane flounder (*Scophtalmus aquosus*)	X	X	X	X
Winter flounder (*Pseudopleuronectes americanus*)	X	X	X	X
Silver Hake (*Merluccius bilinearis*)	X	X	X	X
Red Hake (*Urophycis chuss*)	X	X	X	X
Smooth skate (*Malacoraja senta*)	X	X	X	X
Thorny Skate (*Amblyraja radiata*)	X	X	X	X
Little Skate (*Leucoraja erinacea*)	X	X	X	X
Winter Skate (*Leucoraja ocellata*)	X	X	X	X
Atlantic sea scallop (*Placopecten magellanicus*)	X	X	X	X
Atlantic Herring (*Clupea harengus)*	X	X	X	X
Atlantic salmon (*Salmo sala)**				X

*The project is more than 3 miles from the nearest EFH-designated river (Union River, 13 miles linear distance)

6.7 Threatened and Endangered Species

Coordination with the U.S Fish and Wildlife Service and National Marine Fisheries Service (NMFS) indicates that several threatened and endangered species have the potential to occur in the project areas.

The northern long eared bat may be found in areas adjacent to Blue Hill Harbor. However, no long-eared bats are expected to be present in the project footprint.

Atlantic salmon adults and juveniles also have the potential to occur in the project area. The Gulf of Maine Distinct Population Segment (GM-DPS) of Atlantic salmon was listed as a federally endangered DPS in November of 2000. This DPS includes all naturally reproducing remnant populations of Atlantic salmon from the Kennebec River downstream of the former Edwards Dam site northward to the mouth of the St. Croix River.

Transient Atlantic sturgeon (*Acipenser oxyrhynchus oxyrinchus*) adults and subadults belonging to the GM-DPS, which are considered federally threatened, have the potential to occur in Blue Hill Bay. To date, no data exists on the presence or absence of Atlantic sturgeon in the Blue Hill Harbor system. Additionally, transient adult short-nose sturgeon (*Acipenser brevirostrum*), which are considered federally endangered, also have the potential to occur in Blue Hill Bay during migration periods. To date, no data exists on the presence or absence of short-nose sturgeon in the project area.

Four species of federally threatened or endangered sea turtles may be found seasonally in the coastal waters of Maine: the federally threatened Northwest Atlantic Ocean distinct population segment (DPS) of loggerhead turtle (*Caretta caretta*); the federally endangered Kemp's Ridley (*Lepidochelys kempi*); the green turtle (*Chelonia mydas*); and the leatherback (*Dermochelys coriacea*) sea turtle. In general, listed sea turtles are seasonally distributed in coastal U.S. Atlantic waters, migrating to and from habitats extending from Florida to New England, with overwintering concentrations in southern waters. As water temperatures rise in the spring, these turtles begin to migrate northward. As temperatures decline rapidly in the fall, turtles in northern waters begin their southward migration. Sea turtles can be expected in the waters of the Gulf of Maine in warmer months, typically between the months of May through November. All four species of sea turtle have the potential to occur in the project area for migration and foraging.

6.8 Historic and Archeological Resources

Blue Hill is a town in Hancock County, incorporated on February 2, 1789 from Blue Hill Bay Plantation. It annexed land from Sedgwick in 1831 and ceded land to Penobscot in 1845 (Maine - An Encyclopedia: Blue Hill). The National Register nomination form for the Blue Hill Historic District (1980) provides the following history:

"Originally settled in 1762 by settlers from Andover, Massachusetts, Blue Hill emerged in the 19th Century as a thriving diversified community with important maritime ties. With the arrival of its first settled minister, the remarkable Jonathan Fisher in 1796 and the chartering of Blue Hill Academy, the community early became a remarkably cosmopolitan center in a then remote area.

Lumbering became the first major industry following the erection of the earliest sawmill in 1765 and easy access to the sea resulted in large scale export of the product to Boston and other ports. Shipbuilding was also an important part of the economy for almost exactly a century between 1792 and 1891. In 1790, a potash works at the town landing began production. The early 19th Century saw the development of varied industry along Mill Brook including a very early cotton mill, a carding and fulling mill, a tool shop, grist mill, furniture mill and a cooperage. Granite quarrying for export began in 1816 and in 1836, eighteen large cargoes were shipped for use in construction at Charlestown Navy Yard in Massachusetts.

In 1876, copper was discovered in the area and a mining boom of significant proportions began with many companies formed and large numbers of outside workers brought in. Boarding homes and more primitive dwellings sprang up and Joseph Holt's early brick block (#27) was refurbished as a mining exchange and fine hotel called the Pendleton House. Speculation was rampant and the boom collapsed in 1881 with unstable copper prices and poor management. Of 39 companies, only six survived and the last of these closed in 1919. The Pendleton House remains as the sole reminder of this brief episode.

Against this economic background is set the village of Blue Hill today with many fine residences reflecting commercial and industrial prosperity as well as some built by the numerous sea captains produced by this active port. Since the 1870s, Blue Hill has lured large numbers of summer visitors and residents who have built homes largely along the shore. The intellectual flavor of Blue Hill has been carried on by individuals such as composer Ethelbert Nevin (who built a summer house in the area) and noted Maine author Mary Ellen Chase, who was born in the Chase House.

As an intact 19th Century Maine mid-coastal community, Blue Hill conveys a remarkable sense of time and place and retains the same scale and balance in proportion between building types as it did a century ago" (Beard 1980).

The Jonathan Fisher House, designed by its namesake, is listed on the National Register of Historic Places. The old Blue Hill Academy (1833) has since been replaced by the George Stevens Academy (1898), the town's high school. The 1815 Holt House is home to the Blue Hill Historical Society. Blue Hill is a fast-growing coastal community, leaping in population by over 23% from 1990 to 2000 (Maine – An Encyclopedia: Blue Hill).

Archaeologically sensitive areas have been mapped by the town of Blue Hill and a total of twelve Native American archaeological sites are located along the coast of Blue Hill. These are shell midden sites that are the remnants of Native campsites along the shore and are primarily located in the Blue Hill village and Salt Pond areas of the town (town of Blue Hill 1999). This has also been confirmed by the Tribal Historic Preservation Officer for the Penobscot Indian Nation in a personal communication (Sockalexis 2019) and the concerns for these sites was noted and highlighted.

6.9 Air Quality and Noise

Air Quality

Ambient air quality is protected by Federal and state regulations. The U.S. EPA has developed National Ambient Air Quality Standards (NAAQS) for certain air pollutants and air quality standards for each state cannot be less stringent than the NAAQS. The NAAQS determined by the EPA set the concentration limits that determine the attainment status for each criteria pollutant. EPA has identified seven specific pollutants (called criteria pollutants) that are of concern with respect to the health and welfare of the general public. The criteria pollutants are carbon monoxide (CO), sulfur dioxide (SO2), nitrogen dioxide (NO2), ozone (O3), particulate matter 10 micrometers or less in aerodynamic diameter (PM10), particulate matter 2.5 micrometers or less in aerodynamic diameter (PM2.5), and lead (Pb). The entire state of Maine is currently designated as attainment for the air pollutants listed above.

Noise

Blue Hill Harbor is an active fishing port. The noise environment in the project area consists routinely of noise from motoring fishing and recreational vessels, noise from construction, maintenance, and loading/unloading efforts on the docks and piers immediately adjacent to the area, and typical noise associated with the marine environment (i.e., wildlife, water movement, and air movement).

6.10 Recreational Resources

Blue Hill Harbor and its associated rocky shorelines, intertidal flats, marshes, and open water areas are valuable ecological resources that are utilized by the public as recreational shell fishing and fishing areas, recreational boating areas (including boat launching), hiking areas, and public swimming areas. The aesthetic scenery provided by the areas not only benefit the residents of the Maine coastal communities but attracts tourists from around the world.

The EPDS is located in deep waters of Blue Hill Bay. Recreational uses such as fishing and boating over the site are common.

6.11 Hazardous, Toxic, and Radioactive Waste (HTRW)

The town of Blue Hill and Blue Hill Harbor are located in rural Maine. Land use around the harbor is primarily low-density residential houses along with several retail shops, restaurants, and the Blue Hill Memorial Hospital. The Blue Hill Fire Department and municipal wastewater treatment plant are located adjacent to the town wharf. There are two automotive garages on Main Street near the head of the harbor that were former gas stations. The ME DEP Environmental and Geographic Analysis Database (EGAD) documented the removal of multiple gasoline and diesel underground storage tanks (USTs) and one reported gasoline discharge from these properties.

The EPDS is located in deep waters in lower Blue Hill Bay. The presence of HTRW material and source locations for such waste were not examined.

7.0 ENVIRONMENTAL CONSEQUENCES

7.1 Physical Setting

No Action Alternative

The no action alternative would have no impact on the physical setting of Blue Hill Harbor and the EPDS.

Dredging Site & CAD cell (Blue Hill Harbor)

The proposed improvement project would deepen portions (approximately 25.5 acres) of the natural subtidal channel in Blue Hill Harbor and replace approximately 3.7 acres of intertidal area in the upstream portion of the harbor with subtidal area. This modification of Blue Hill Harbor is not anticipated to have any significant effect on the flushing characteristics or current patterns in the harbor.

The area of the CAD cell is approximately 1.8 acres and is located in an existing subtidal environment. The excavated CAD cell is proposed to be filled with unsuitable material and capped with suitable material to restore elevations within the CAD cell to within 1-foot of existing conditions.

Disposal Site

The EPDS is a previously used dredged material placement area. The placement of suitable material from the proposed project is not anticipated to change the physical characteristics of the site.

7.2 Sediment Quality

No Action Alternative

The no action alternative would have no impact on the sediment quality of Blue Hill Harbor or the EPDS.

Dredging Site, CAD cell (Blue Hill Harbor), and Disposal Site

USACE-NAE evaluated the sediment from the Blue Hill Harbor Navigation Improvement Project through §230.61 of the CWA and found the material suitable for open water placement at EPDS with the exception of 10,500 cubic yards of material from the upper two feet of the inner harbor. The sediment from this portion of the harbor is not suitable for open water placement due to elevated PAH concentrations. USACE-NAE proposes to contain the unsuitable material in a CAD cell. The material excavated to create the CAD cell is outside of the elevated PAH footprint and is suitable for open water placement at EPDS.

7.3 Water Quality

No Action Alternative

The no action alternative would have no impact on the water quality of Blue Hill Harbor or the EPDS.

Dredging Site, CAD cell (Blue Hill Harbor), and Disposal Site

The proposed project is not expected to change the SB water quality classification of Blue Hill Harbor or the waters overlaying the EPDS. Short term water quality impacts (specifically turbidity and elevated concentrations of contaminants in the water column) are anticipated to be localized to the immediate dredging area and within the CAD cell that will be created to hold the unsuitable dredged material.

Turbidity – Mechanical Dredging

The dredging efforts are proposed to be performed with a mechanical clamshell dredge. This action will remove and suspend some of the bottom sediments, causing localized increases in turbidity and sedimentation. Numerous studies (ranging over decades) have been conducted to document levels of suspended sediments and sediment plume distances associated with mechanical dredging and are discussed below.

New London Harbor Monitoring Example

Analysis of the spatial and temporal persistence of the turbidity plume from the dredging of silts was quantified in 1977 from dredging the Thames River/New London Harbor channels (Bohlen et. al., 1979). The conclusions of this study defined the measurable suspended sediment plume as extending 700 meters downstream. Analysis of the composition and concentration of the plume indicated the majority of material suspended occurred within 300 meters of the dredge. Suspended material concentrations closest to the dredge ranged from 200 mg/l to 400 mg/l resulting from suspension of approximately 1.5 to 3.0% of the substrate in each bucket load. Suspended material concentrations were reduced by a factor of ten within the first 200 meters downstream of the dredge. Surface concentrations returned to normal 250 meters downstream of the dredge. Mid-water and near bottom concentrations returned to background levels 700 meters downstream of the dredge.

New Haven Harbor Monitoring

Sediment plumes were monitored during a maintenance dredging effort of the New Haven Harbor FNP between October 1993 and January 1994 (USACE, 1996). Dredging of silty material from New Haven Harbor was conducted with an enclosed mechanical bucket. The two major objectives of the New Haven monitoring were to: 1) establish the background suspended solids concentration before and after dredging, and 2) document the movement of the dredge plume relative to fisheries resource areas. The results of the survey revealed that background suspended sediments in the harbor average 8 mg/l prior to dredging efforts, and that during dredging, numerous aperiodic short duration spikes of 100 mg/l were seen.

The study also concluded that there were dredge-induced sediment plumes, and that the plumes did travel outside of the navigation channel. However, these excursions onto the shoal areas outside the channel only occurred when the dredge was in the immediate vicinity (i.e., dredging the side of the channel directly adjacent to the shoal areas).

The study also noted that monitoring detected several long duration (1-3 days) - high suspended sediment perturbations (concentrations reaching 700 mg/l) that could not be related to dredging operations. Evidence from meteorological data and wastewater effluent records indicate that these high suspended sediment events were likely the result of winds and wind-generated waves, alone or in combination with discharges from wastewater treatment plant outfalls.

The study concluded that dredged induced sediment resuspension was found to be a minor perturbation to the much longer duration, larger amplitude events associated with wind, wind-waves, and effluent discharges from outfalls. The effects of dredge related spikes in suspended sediments on the winter flounder spawning grounds (i.e., the shoal areas outside the channel), and the regional water quality in general, appear to have been limited in duration and of relatively low amplitude (USACE, 1996).

Boston Harbor Monitoring Example

Monitoring was conducted in 1996 for dredging of the surface silty material during construction of a CAD cell for the Boston Harbor Navigation Improvement Project. This monitoring included: 1) documentation of the spatial and temporal distribution of the sediment plume for the four extremes of tidal currents (high water slack, maximum ebb, low water slack, maximum flood) on two days within the first week of dredging; 2) collection of water samples from the lower half of the water column at two locations – 1,000 feet up current of the dredging and 500 feet down current from the dredging; and 3) analysis of water samples for total suspended solids (TSS).

During dredging, turbidity measurements ranged from 3-5 NTU (Nephelometric Turbidity Units) at the reference station 1,000 feet up current from dredging the silty surface material using an environmental bucket. Turbidity was only slightly elevated at the station 500 feet down current of the dredging ranging from 4-11 NTU. TSS ranged from 4-5 mg/l at the reference station and from 5-9 mg/l at the down current station. No plume was visible at the surface outside the immediate area of the dredging operation, and no significant plume was detected in the water column (ENSR, 1997).

Monitoring of turbidity plumes in 1998 associated with the dredging of silty maintenance material from Boston Harbor was also performed (USACE/Normandeau, 1998b). Mapping of the turbidity associated with use of a closed mechanical bucket (i.e., an environmental bucket) to dredge silty material in Boston Harbor was performed during periods of high and low water slack and during maximum flood and ebb tides. The mapping required generation of plan views of turbidity at mid-depth and near bottom extending from 300 feet up current to 1,000 feet down current of continuous dredging operations. Generation of a cross section of turbidity located 300 feet down current of the dredging was also required. Near bottom turbidity values were highest for all measurements with values no higher than 100 NTU approximately 300 feet down current of the dredging operation. Mid-depth turbidity was much less, and all values returned to background levels (10-20 NTU) between 600 and 1,000 feet down current (ENSR, 2002).

The monitoring studies noted above show that turbidity plumes associated with mechanical bucket dredges are produced during dredging, however, they are generally limited to the immediate vicinity of the dredge. Therefore, while suspended sediment plumes will be produced during the construction of the proposed project, they are not anticipated to significantly impact water quality.

Water Quality Chemical Concentrations

USACE-NAE evaluated potential water quality effects by modeling the release of contaminants from dredged sediments during the disposal process at EPDS. To determine if the discharge of dredged material would attain compliance with Water Quality Standards, USACE-NAE performed a Tier II evaluation following the protocols outlined in the RIM. This evaluation utilizes the Short-Term Fate (STFATE) numerical model to analyze the physical behavior of a disposal cloud as it descends through the water column after release from a barge. Results of the STFATE evaluation predicted that the water column would attain state of Maine Water Quality Standards within four hours of disposal and therefore meet the criteria in the testing protocol.

7.4 Aquatic Resources

No Action Alternative

The no action alternative would allow the existing conditions in the proposed project area to remain as documented in Section 6.4.

7.4.1 Benthos

Dredging Site & CAD cell (Blue Hill Harbor)

Dredging in the proposed channel and turning basin area would result in both permanent and temporary impacts to the benthic communities in Blue Hill Harbor. Permanent impacts include the conversion of 3.7 acres of intertidal habitat to subtidal habitat which in turn will permanently change the benthic community structure of those areas. Temporary impacts include short-term loss of benthos within the direct footprint of the dredging areas and CAD cell area and localized increases in turbidity in areas adjacent to the dredging.

Dredging in the inner harbor area will displace some intertidal habitat. Approximately 3.7 acres of intertidal habitat would be permanently converted to subtidal habitat. The ecological functions of existing 3.7 acres of intertidal area, as related to benthic invertebrate communities, is currently impaired. Surveys of the benthic communities in these areas show very low diversity and abundance numbers which suggest the habitat is being subject to some stressor beyond naturally occurring ecological pressure. As the material in these areas contains elevated concentrations of contaminants (predominantly PAHs) which have been determined to be unsuitable for open water placement, it has been concluded that the contamination is the cause of the diminished benthic community. The removal and sequestering of the contaminated material should allow the newly created subtidal areas to be contaminant free and allow for the colonization of the area by adjacent benthic populations. Community structure in the new subtidal habitat is expected to be similar to that in the outer harbor subtidal areas. Mitigation is not being proposed for the loss of intertidal habitat as the area is currently impaired and will be replaced with a habitat that will provide higher quality ecological value to the Blue Hill Harbor system.

The benthic community in the proposed project area will be eliminated by direct removal from improvement efforts. Once dredging is completed, the benthic community of the channel, turning basin, and side slope areas are expected to begin recolonization by recruitment from benthic species in other areas of Blue Hill Harbor. As the benthic community throughout the existing channel and side slopes is a mix of opportunistic early-successional stage benthic communities and mid-successional stage benthic communities, a return to a similar community following dredging is expected within approximately 1-3 years.

Turbidity impacts to benthos are dependent on the concentration and the duration of the suspended sediments (Clarke and Wilber, 2000; Suedel 2015). Motile benthic organisms (e.g., lobster and crab) can generally avoid unsuitable conditions in the field and, under most dredging scenarios, encounter localized suspended sediment plumes for exposure durations of minutes to hours, unless the organism is attracted to the plume and follows its location. Although adult bivalve mollusks are silt-tolerant organisms (Sherk, 1972 in Clarke and Wilber, 2000), they can be affected by high suspended sediment concentrations. Hard clams (Pratt and Campbell, 1956 in Clarke and Wilber, 2000), and oysters (Kirby, 1994 in Clarke and Wilber, 2000), exposed to fine silty-clay sediments have exhibited reduced growth and survival, respectively. Suspended sediment concentrations required to elicit these responses and mortality, however, are extremely high, i.e., beyond the upper limits of concentrations reported for most estuarine systems under natural conditions, as well as typical concentrations associated with dredging operations (See Section 7.3). Therefore, the temporary increases in turbidity associated with the proposed project are not anticipated to significantly adversely impact the benthic communities adjacent to the dredge areas.

Disposal Site

The physical impacts of dredged material disposal to benthic communities have been well studied (Diaz and Boesch, 1977; McCall, 1977; Wright, 1978). Burial during disposal would result in direct mortality of organisms at the disposal site. Organisms in the immediate vicinity of the disposal-mound would be impacted by the fluid mud which spreads out when the material impacts the bottom. Initial recolonization by opportunistic polychaete species would occur within a matter of weeks. These species, which are capable of rapid population increases, rework the sediments through their feeding and burrowing activities. This biological mixing of the sediments homogenizes and aerates the upper few centimeters of the sediment, making the area more favorable for later successional stages to colonize. Community structure can be expected to return to background within a 1 to 2 year period following disposal.

7.4.2 Fish

The proposed project would impact fish species in the project area. Effects of the proposed project include possible death and injury of fish, interference with fish movements, disruption of the forage base, and changes in water quality during dredging operations. As noted in Section 7.4.1, direct removal of bottom habitats will occur in the dredging areas and direct covering of bottom habitats will occur in the placement area. As noted in section 7.3, indirect impacts due to changes in water quality will occur, however, they are anticipated to be short-term and localized to within hundreds of feet of the dredging and disposal efforts.

Intermittent, short-term impacts to fish also include disturbance of fish throughout the water column within the localized area during dredging and disposal efforts. Due to their mobility, most fish would be expected to move out of an active dredging area or a dredged material burial area. The sediment plume associated with dredging and the plume following material placement would also have potential short-term water quality impacts that may also have indirect impacts on fish by temporarily altering certain finfish behaviors, such as migration, spawning, foraging, schooling, and predator evasion (O'Connor, 1991). Increased turbidity has also been associated with potential gill abrasion and respiratory damage (Saila, et al. (1971); Wilber & Clark (2001)).

Sediment characteristics and the life stage of species affect how sensitive species are to suspended sediment, with egg and larval stages tending to be the most sensitive (Johnson, et al., (2008); Berry *et al*. (2003), Wilber & Clark (2001)). During material placement, these impacts are limited both in duration and spatially due to the short time needed for dredged material to reach the bottom (Kraus (1991); Dragos & Lewis (1993); Dragos & Peven (1994)). Saila, et al. (1971) also point out that "aquatic animals are able to tolerate high concentrations of suspended sediments for short periods." Since the tolerance level for suspended solids is high in shallow and mid-depth coastal waters, and fish and lobster may experience major changes in turbidity during storms, Saila, et al. (1971) conclude that mortality due to elevated sediment concentrations in the water column resulting from dredged material placement is not likely.

As noted through this document, concentrations of sediments and the duration needed to cause impacts to fish resources are expected to be short-term and localized and as such, effects to fish resources in the proposed project areas should be minimal.

As noted in Section 7.4.1, dredging in the inner harbor area will displace approximately 3.7 acres of intertidal habitat and permanently convert it to subtidal habitat. The ecological functions of the existing 3.7 acres of intertidal area is currently impaired by contamination, which will be removed and sequestered by the proposed project. The subtidal habitat that will be created is anticipated to provide higher quality habitat for fish resources in the Blue Hill Harbor system than the existing habitat.

7.4.3 Shellfish

Dredging Site & CAD cell (Blue Hill Harbor)

Shellfish in the direct footprint of the dredging effort will be removed and would not be expected to survive relocation to a placement area. In areas where the dredging is occurring in existing subtidal waters, a temporary loss of shellfish resources is expected. However, natural recruitment for subtidal areas that will not be dredged will provide a seed source to recolonize the areas disturbed by dredging. The loss of shellfish in intertidal areas that are being converted to subtidal habitat is also expected. However, observations of shellfish resources in the intertidal areas during sediment sampling for the project and an analysis of the benthic communities in the intertidal areas show that the intertidal areas are experiencing stressors that are resulting in a diminished (i.e., low diversity and low abundance) benthic assemblage. The extent of the impaired benthic community correlates with the extent of an approximately 2-foot layer of sediments contaminated by PAHs (see section. The removal and sequestering of the contaminated material will allow for the newly created subtidal areas to be colonized through recruitment from adjacent subtidal shellfish resources.

Disposal Site

Any shellfish species present at EPDS in the direct footprint of placement activities would be buried by sediments and would be expected to perish. Recruitment of shellfish species from adjacent areas not affected by placement would be expected. No significant commercially important shellfish resources are known to occur within the EPDS.

7.4.4 Submerged Aquatic Vegetation (SAV)

No SAV will be impacted by the proposed project. According to the state of Maine GIS data layers for SAV, there is no SAV within the project footprint or in areas adjacent to Blue Hill Harbor or the EPDS.

7.5 Wildlife

No Action Alternative

The no action alternative would have no impact on the wildlife of Blue Hill Harbor or the EPDS.

Dredging Site, CAD cell (Blue Hill Harbor), and Disposal Site

The proposed project will have negative effects on wildlife in the project area. Construction activities associated with dredging and disposal (i.e., presence of dredges, scows, and tending vessels) could temporarily displace wildlife species during construction activities. However, these impacts will be temporary, as following completion of dredging, the equipment will be removed. Therefore, construction activities should not significantly affect the long-term use of Blue Hill Harbor by wildlife resources.

The conversion of 3.7 acres of intertidal habitat to subtidal habitat may affect wildlife by removing resting habitat for birds. Under pristine conditions, the removal of intertidal habitat would also remove foraging habitat for wildlife, however as noted in throughout Section 7.4, the intertidal areas to be dredged are currently impaired by PAH contamination. As a result of elevated concentrations of PAHs in the sediments, the benthic communities of the intertidal flats are depressed (i.e., have low diversity and low abundance) and are not functioning as typical Maine intertidal habitat. While the conversion of the intertidal habitat to subtidal habitat will eliminate access to the habitat by some wildlife resources (i.e., birds that do not dive and mammals), it is expected that the removal and sequestering of the contaminated material in the system will provide more ecosystem functions and values than currently exist.

7.6 Essential Fish Habitat Assessment

No Action Alternative

The no action alternative would allow existing EFH conditions in Blue Hill Harbor and the EPDS to persist as described in Section 6.0.

Dredging Site, CAD cell (Blue Hill Harbor), and Disposal Site

The proposed project would impact EFH for managed species. The habitats affected include shallow subtidal soft bottom habitat, intertidal flat habitat, and water column habitat. Effects of the proposed project include death and injury of fishes and forage during dredging operations and subsequent maintenance dredging operations. Direct removal of soft bottom habitats will occur in the dredging areas and direct covering of soft bottom habitats will occur in the placement areas. Indirect impacts due to changes in water quality will occur, however, they are anticipated to be short-term and localized to within hundreds of feet of the dredging and disposal efforts. These effects have been documented in Sections 7.3 and 7.4. The list below summarizes potential effects of the proposed project on EFH and managed species. Details on the effects to specific groups of managed species associated with certain essential fish habitats can be found in Appendix G.

1. Directly affecting mortality or injury of individual fishes (adults, subadults, juveniles, larvae, and/or eggs, depending on species, time of year, location, etc.) due to dredge equipment during construction dredging (an effect temporary in duration).

2. Indirectly affecting foraging behavior of individuals through production of turbidity at dredging and disposal sites (an effect temporary in duration).

3. Indirectly affecting movements of individuals around/away from dredging sites due to construction equipment and related disturbed benthic habitats (an effect temporary in duration).

4. Indirectly affecting foraging and refuge habitats by removal of benthic habitat (i.e., soft bottom) (an effect temporary in duration).

5. Conversion of 3.7 acres of intertidal habitat with impaired functions (due to contamination) to 3.7 acres of subtidal habitat (with no contamination).

Many of the dredging related effects (i.e., increases in turbidity, changes in fish movement behavior) are common temporary occurrences in estuarine systems. Therefore, these temporary effects normally occur under existing conditions (i.e., in the No Action alternative). However, the proposed project involves a longer duration of these temporary effects. Individually or in sum, the above effects are not anticipated to significantly adversely affect managed species or most species EFHs. Where possible, the above effects have been minimized via project design.

Future maintenance dredging efforts in the proposed channel and turning basin areas will produce effects to EFH that are similar to those described for the improvement dredging. The frequency of USACE navigation project maintenance of the channel and turning basin is expected to be minimal due to the strong tidal flushing in Blue Hill Bay and comparison with similar projects along the Maine coast. The town landing at Blue Hill is located on the island's protected lee shore and erosion on the adjacent shoreline is minimal. Other non-riverine harbors on the Maine coast such as Bass Harbor and Bucks Harbor did not require maintenance for more than 40 to 50 years after their initial construction. Maintenance of the proposed channel and turning basin would be required when shoaling has compromised the underkeel clearance needed for all-tide operation, for a shoal volume of about 40% of the initial improvement volume. Regardless of depth, maintenance would likely be on at least a 20 to 40-year frequency, or about once or twice during the 50-year project life. An EFH Assessment has been prepared for this project and is presented in Appendix G.

7.7 Threatened and Endangered Species

No Action Alternative

The no action alternative would have no impacts to threatened or endangered species in Blue Hill Harbor or the EPDS.

Dredging Site, CAD cell (Blue Hill Harbor), and Disposal Site

Dredging activities are not likely to adversely affect any Federally listed threatened or endangered species within Blue Hill Harbor or at the EPDS. Based on the information from U.S. Fish and Wildlife Service and NMFS databases (IPAC and ESA mapper, respectively) Federally listed species under the jurisdiction of the two Services are known to occur in the project area. However, using time of year restrictions, the proposed construction efforts would occur outside of the periods when the listed species would be present in the project area.

7.8 Historic and Archaeological Resources

No Action Alternative

The no action alternative would have no impact on any historic or archaeological resources in Blue Hill Harbor or the EPDS.

Dredging Site, CAD cell (Blue Hill Harbor), and Disposal Site

A review of the NOAA Coast Survey's Automated Wreck and Obstruction Information System (AWOIS) and Electronic Navigation Charts (ENC) identified no potential submerged archaeological sites or shipwrecks within the project area and proposed disposal locations. Sediment cores were collected to project depth throughout the channel from seven sample stations (see sample locations figure). Sediments in the outer portion of the channel were predominantly gray, poorly graded medium to coarse sands overlying marine silt and clay deposits with mixtures of fine, woody organic debris. Sediments within the inner harbor were composed of medium to coarse sands overlain by a thin layer of loose fine sand and silt with shell and wood fragments. The area surrounding the town dock was composed of mixed sand, gravel, and silt over a cobble and gravel substrate.

Sanborn Fire Insurance maps of Blue Hill (1925) depict the G.M. Allen and Son sawmill adjacent to the dam in the inner harbor area (Main Street). Earlier historic maps (Walling 1860 and Colby 1881 - Map of Blue Hill Village) indicate a dense concentration of commercial and industrial development in the inner harbor area. The Blue Hill Historic District is centered on and around Main Street. However, dredging of the harbor will commence from the town wharf south, well outside of the inner harbor area. Historic and archaeological properties are not expected within this area.

Native American archaeological sites in the form of shell middens are located along the coast and in the Salt Pond area. However, these site locations are outside of the proposed harbor dredging and disposal activities. As discussed in Section 6.8 above impacts to archaeological resources are not expected. Coordination letters were sent to the Penobscot Nation and Passamaquoddy Nation Tribal Historic Preservation Officers (THPO) on 4 December 2018. No reply was received from the Passamaquoddy Nation. The Penobscot THPO replied by form letter of 15 January 2019, stating. "This project appears to have no impact on a structure or site of historic, architectural or archaeological significance to the Penobscot Nation as defined by the National Historic Preservation Act of 1966, as amended." If any resources are encountered during construction state and tribal coordination will be re-initiated.

Therefore, dredging of Blue Hill Harbor with disposal within a CAD cell adjacent to the channel, at the EPDS, or via transport to the Juniper Ridge landfill will have no effect upon any site or structure of historic, architectural or archaeological significance as defined by Section 106 of the NHPA and implementing regulations 36 CFR 800. The Maine Historic Preservation Commission, by letter dated December 11, 2018, has concurred with this determination. If unanticipated historic properties are identified during project construction, we will follow the procedures for post-review discoveries at 36 CFR 800.13.

7.9 Air Quality Statement of Conformity & Noise Impacts

No Action Alternative

The no action alternative would have no impact on the air quality or noise environment of Blue Hill Harbor or the Eastern Passage Disposal Site.

Dredging Site, CAD cell (Blue Hill Harbor), and Disposal Site

Air Quality: The improvement dredging of Blue Hill Harbor is subject to Clean Air Act requirements. However, since the project is located in an attainment area (Washington County) this project is not subject to the general conformity rule and an air quality conformity analysis is not needed.

The project should have no long-term impacts on air quality. During construction equipment operating on the site would emit pollutants including nitrogen oxides that can lead to the formation of ozone. In order to minimize air quality effects during construction, construction activities would comply with applicable provisions of the Maine Air Quality Control Regulations pertaining to dust, odors, construction, noise, and motor vehicle emissions.

Noise: Minor increases in noise are expected as dredging operations will utilize dredges, scows, and support vessels. Noise sources will be from the engines, generators, and other machinery associated with the afore mentioned equipment. An increase in noise in the project area will be temporary and noise levels will return to preconstruction levels following construction of the project.

7.10 Recreational Resources

Minor impacts to recreation in the area may occur as a result of dredging activities. Recreational and commercial boating traffic may experience delays during periods of low tide as navigable water may be limited in the areas surrounding the dredge. Every effort will be made to accommodate vessel traffic in the harbor. Dredging and construction activities will occur during the late fall and winter months when vessel traffic is at a minimum. The creation of a channel that accesses the Blue Hill town landing at all tides may increase recreational boating traffic in the harbor.

The EPDS was used previously with no significant impacts to recreation. Placement activities at the EPDS will occur in the fall and winter months. Therefore, no impacts to the recreation use of the site are anticipated.

7.11 Hazardous, Toxic, and Radioactive Waste

The sediment testing and analysis for the proposed project revealed that a portion of the material to be dredged is contaminated with PAHs (see Section 6.2). This material is unsuitable to be placed unconfined in open water. A CAD cell will be constructed to contain the unsuitable dredged material.

8.0 ENVIRONMENTAL JUSTICE AND OTHER CONSIDERATIONS

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, " require federal agencies to identify and address disproportionately high and adverse human health or environmental effects of its program, policies, and activities on minority and low-income populations in the U.S., including Native Americans.

The U.S. Census American Community Survey data for 2019 show the following for the town of Blue Hill: Median household income was $69,087 (mean $90,098) more than 19% above the state median. Rate of home ownership was 73.9%. Population of 2,658 with 97.3% white. Unemployment rate of 4.2%. Native born population of 99.1%. Education level – high school graduates or college 98.5%. The Proposed Action will not have any disproportionately high or adverse impacts on minority or low-income populations, or any adverse short or long-term environmental justice impacts because the project is not located near any areas with these populations.

Executive Order 13045, "Protection of Children from Environmental Health Risks and Safety Risks," requires federal agencies to identify and assess environmental health risks and safety risks that may disproportionately affect children. The Proposed Action will not pose any significant or adverse short or long-term health and safety risks to children because access to the project area during construction will be limited as it will be occurring within Blue Hill Harbor and therefore should not pose a risk to children.

9.0 MEASURES TAKEN TO MINIMIZE ENVIRONMENTAL CONSEQUECES

The following actions would minimize potential adverse impacts associated with this project.

1. The dredging contractor will be required to fully accommodate vessel traffic during dredging operations.

2. Contractors will be responsible for complying with any special conditions and/or stipulations incorporated into the appropriate Federal and state regulatory approvals.

3. Dredging and disposal activities will be limited to a period between November 8th and April 8th to avoid impacts to biological resources (fisheries/shellfish).

10.0 COORDINATION

Coordination has been conducted with the appropriate state and Federal agencies. Copies of the public notice and coordination letters received are contained in Appendix A. Coordination has occurred with the following agencies and officials:

US Environmental Protection Agency

National Marine Fisheries Services

Maine Department of Environmental Protection

Maine State Historic Preservation Commission

Maine Department of Marine Resources

Penobscot Indian Nation

Town of Blue Hill Harbor Master

US Fish and Wildlife Service

United States Coast Guard

Maine Coastal Program

Maine Geologic Survey

Passamaquoddy Tribal Nation

Town of Blue Hill Town Manager

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12.0 COMPLIANCE WITH ENVIRONMENTAL FEDERAL STATUTES AND EXECUTIVE ORDERS

Federal Statutes

1. *Clean Water Act of 1977 (Federal Water Pollution Control Act Amendments of 1972) 33 U.S.C. 1251 et seq.*

Compliance: A Section 404(b)(1) Evaluation and Compliance Review have been incorporated into this report. A state Water Quality Certification, pursuant to Section 401 of the Clean Water Act, was issued by the Maine Department of Environmental Protection on 10 March 2021.

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

Compliance: Not applicable. This project is being evaluated under Section 404 (b) (1) of the Clean Water Act, not 103 of the MPRSA, as disposal is in the nearshore (33 CFR Part 338).

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

Compliance: Coordination with the Maine Historic Preservation Office determined that no historic or archaeological resources would be affected by the proposed. See letter of 11 December 2018.

4. *Preservation of Historic and Archaeological Data Act of 1974, as amended, 16 U.S.C. 469 et seq. This amends the Reservoir Salvage Act of 1960 (16 U.S.C. 469).*

Compliance: Not applicable. Project does not require mitigation of historic or archaeological resources.

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

Compliance: Coordination with the U.S. Fish and Wildlife Service (FWS) and National Marine Fisheries Service (NMFS) has been concluded. The determination that impacts associated with the proposed project are not likely to adversely affect threatened or endangered species under the jurisdiction of the FWS or NMFS was concurred with in letters dated 8 May 2020 and 20 November 2020, respectively.

6. *The Estuary Protection Act (16 U.S.C. 1221).*

Compliance: Not applicable, as this report is not being submitted to Congress.

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

Compliance: Coordination with the FWS, NMFS, the Maine Department of Environmental Protection and the Maine Department of Marine Resources signifies compliance with the Fish and Wildlife Coordination Act. FWCA letter from FWS received 8 May 2020. Coordination with Maine DMR was performed through the state's coastal zone management review and all comments have been addressed.

8. National Environmental Policy Act of 1969, as amended, 42 U.S.C. 4321 et seq.

Compliance: Preparation of this report signifies partial compliance with NEPA. Full compliance shall be noted at the time the Finding of No Significant Impact is issued.

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

Compliance: Not applicable.

10. Coastal Zone Management Act of 1972, as amended, 16 U.S.C. 1431 et seq.

Compliance: A CZM consistency determination was provided to the Maine Coastal Program and the State concurred on 16 March 2021 that the proposed project is consistent, to the maximum extent practicable, with the approved State CZM program.

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

Compliance: Public notice of the availability of this report to the Regional Administrator of the Environmental Protection Agency for review pursuant to Sections 176c and 309 of the Clean Air Act signifies compliance.

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

Compliance: Not applicable.

13. Land and Water Conservation Fund Act of 1965, as amended, 16 U.S.C. 4601-1.

Compliance: Public notice of the availability of this report to the National Park Service and the Office of Statewide Planning relative to the Federal and State comprehensive outdoor recreation plans signifies compliance with this Act.

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

Compliance: No requirements for Corps of Engineers projects or programs authorized by Congress. The proposed navigation improvement project is included under the continuing authority of the Rivers and Harbors Act.

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

Compliance: Not applicable.

16. Magnuson-Stevens Act, as amended, 16 U.S.C. 1801 et seq.

Compliance: Coordination with the National Marine Fisheries Service and preparation of an EFH Assessment signifies compliance with the EFH provisions of the Magnuson-Stevens Act. A revised EFH Assessment addressing the Service's comments was sent to them on 12 April 2021. NMFS EFH Recommendations were received 15 September 2021 and a response sent on 21 September 2021.

17. Archaeological Resources Protection Act of 1979, as amended, 16 USC 470 et seq.

Compliance: Not applicable. No archaeological resources are located in the project area.

18. American Indian Religious Freedom Act of 1978, 42 U.S.C. 1996.

Compliance: Must ensure access by Native Americans to sacred sites, possession of sacred objects, and the freedom to worship through ceremonials and traditional rites. Coordination revealed no conflicts.

19. Native American Graves Protection and Repatriation Act (NAGPRA), 25 U.S.C. 3000-3013, 18 U.S.C. 1170.

Compliance: Regulations implementing NAGPRA will be followed if discovery of human remains and/or funerary items occur during implementation of this project.

20. Coastal Barrier Resources Act, 16 USC 3501 et seq.

Compliance: Not applicable, no coastal barrier resource areas will be affected by the proposed project.

21. Bald and Golden Eagle Protection Act, 16 U.S.C. 688 et seq.

Compliance: No bald or golden eagles or their habitats will be impacted by the proposed project.

Executive Orders

1. *Executive Order 11593, Protection and Enhancement of the Cultural Environment, 13 May 1971.*

Compliance: Coordination with the State Historic Preservation Officer signifies compliance.

2. *Executive Order 11988, Floodplain Management, 24 May 1977 amended by Executive Order 12148, 20 July 1979.*

Compliance: Public notice of the availability of this report or public review fulfills the requirements of Executive Order 11988, Section 2(a)(2).

3. *Executive Order 11990, Protection of Wetlands, 24 May 1977.*

Compliance: Public notice of the availability if this report for public review fulfills the requirements of Executive Order 11990, Section 2 (b).

4. *Executive Order 12114, Environmental Effects Abroad of Major Federal Actions, 4* January 1979.

Compliance: Not applicable to projects located within the United States.

5. *Executive Order 12898, Environmental Justice, 11 February 1994.*

Compliance: Not applicable, the project is not expected to have a significant impact on minority or low-income population, or any other population in the United States.

6. *Executive 13007, Accommodation of Sacred Sites, 24 May 1996*

Compliance: Not applicable unless on Federal lands, then agencies must accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, and avoid adversely affecting the physical integrity of such sacred sites.

7. *Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks. 21 April, 1997.*

Compliance: This project would not create a disproportionate environmental health or safety risk for children and is therefore compliant with this Order.

8. *Executive Order 13175, Consultation and Coordination with Indian Tribal Governments, 6 November 2000.*

Compliance: Consultation with Indian Tribal Governments, where applicable, and consistent with executive memoranda, DoD Indian policy, and USACE Tribal Policy principles (Chief of Engineers, 1 November 2012) signifies compliance.

9. *Executive Order 13112, Invasive Species Control, 3 February 1999.*

Compliance: This project will not introduce invasive species into Blue Hill Harbor.

10. *Executive Order 13061, and Amendments – Federal Support of Community Efforts Along American Heritage Rivers.*

Compliance: Not applicable, the project is not located on an American Heritage River.

Executive Memorandum

1. *Analysis of Impacts on Prime or Unique Agricultural Lands in Implementing NEPA, 11 August 1980.*

Compliance: Not applicable. This project does not involve or impact agricultural lands.

2. *White House Memorandum, Government-to-Government Relations with Indian Tribes, 29 April 1994.*

Compliance: Consultation with Federally Recognized Indian Tribes, where appropriate, signifies compliance.

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CLEAN WATER ACT SECTION 404(b)(1) EVALUATION

U.S. ARMY CORPS OF ENGINEERS, NEW ENGLAND DISTRICT
CONCORD, MA

PROJECT: Blue Hill Harbor, Blue Hill, Maine, Improvement Dredging.

PROJECT MANAGER: Mr. Mark Habel   Phone: (978) 318-8871

FORM COMPLETED BY: Mr. Todd Randall   Phone: (978) 318-8518

PROJECT DESCRIPTION:

The proposed Blue Hill Harbor project will dredge a 6-foot-deep mean lower low water (MLLW), 80-foot-wide channel from the outer harbor, extending 5,600 feet northwest to the town wharf. Only the upper 2,600 feet of the project will require dredging, with channel limits in the lower reaches declared for jurisdictional purposes. This channel will be widened at its upper end to form a turning basin, 160 feet wide (0.6 acres), adjacent to the town wharf. Approximately 71,500 cubic yards (CY) of mixed gravel, sand, and silt will be removed from the proposed project area using a mechanical dredge. The 60,900 CY of dredged material deemed suitable for open water disposal will be loaded onto scows and towed about 11 miles to the Eastern Passage Disposal Site (EPDS), a previously used disposal site near Dodge Island, for placement. Approximately 10,600 CY of material from the upper two feet of the inner harbor, which was deemed unsuitable for open water placement due to the presence of polycyclic aromatic hydrocarbons (PAHs) and metals, will be placed in a confined aquatic disposal (CAD) cell within Blue Hill Harbor. The CAD cell will be constructed by removing approximately 19,500 CY of suitable of mixed gravel, sand, and silt material from an area adjacent to the designated channel. Material generated from the CAD cell creation will be placed at the EPDS. All dredging will be by mechanical dredge and scow that will be able to operate in shallow draft areas in the channel. Construction will occur between November 8th and April 8th and is expected to take about four months to complete.

NEW ENGLAND DISTRICT
U.S. ARMY CORPS OF ENGINEERS, CONCORD, MA

EVALUATION OF CLEAN WATER ACT SECTION 404(b)(1) GUIDELINES

PROJECT: Blue Hill Harbor Federal Navigation Improvement Project

1. Review of Compliance (Section 230.10(a)-(d))

	YES	NO
a. The discharge represents the least environmentally damaging practicable alternative and if in a special aquatic site, the activity associated with the discharge must have direct access or proximity to, or be located in the aquatic ecosystem to fulfill its basic purpose;	X	
b. The activity does not appear to: 1) violate applicable state water quality standards or effluent standards prohibited under Section 307 of the CWA; 2) jeopardize the existence of Federally listed threatened and endangered species or their critical habitat; and 3) violate requirements of any Federally designated marine sanctuary (if no, see section 2b and check responses from resource and water quality certifying agencies);	X	
c. The activity will not cause or contribute to significant degradation of waters of the U.S. including adverse effects on human health, life stages of organisms dependent on the aquatic ecosystem, ecosystem diversity, productivity and stability, and recreational, aesthetic, and economic values (if no, see section 2);	X	
d. Appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem (if no, see section 5).	X	

2. Technical Evaluation Factors (Subparts C-F)	NA	Not Significant	Significant
a. Potential Impacts on Physical and Chemical Characteristics of the Aquatic Ecosystem (Subpart C).			
1) Substrate		X	
2) Suspended particulates/turbidity		X	
3) Water		X	
4) Current patterns and water circulation		X	
5) Normal water fluctuations		X	
6) Salinity gradients		X	
b. Potential Impacts on Biological Characteristics of the Aquatic Ecosystem (Subpart D).			
1) Threatened/ endangered species		X	
2) Fish, crustaceans, mollusks and other aquatic organisms in the food web		X	
3) Other wildlife		X	
c. Potential Impacts on Special Aquatic Sites (Subpart E).			
1) Sanctuaries and Refuges	X		
2) Wetlands		X	
3) Mud Flats		X	
4) Vegetated Shallows	X		
5) Coral Reefs	X		
6) Riffle and Pool Complexes	X		
d. Potential Effects on Human Use Characteristics (Subpart F).			
1) Municipal and Private Water Supplies	X		
2) Recreational and Commercial Fisheries		X	
3) Water-Related Recreation		X	
4) Aesthetics		X	
5) Parks, national and historic monuments, national seashores, wilderness areas, research sites, and similar preserves		X	

3. **<u>Evaluation and Testing (Subpart G)</u>**

a. The following information has been considered in evaluating the biological availability of possible contaminants in dredged or fill material. (Check only those appropriate.)

1) Physical Characteristics	X
2) Hydrography in relation to known or anticipated sources of contaminants	X
3) Results from previous testing of the material or similar material in the vicinity of the project	X
4) Known, significant sources of persistent pesticides from land runoff or percolation	-
5) Spill records for petroleum products or designated hazardous substances (Section 311 of CWA)	X
6) Public records of significant introduction of contaminants from industries, municipalities, or other sources	-
7) Known existence of substantial material deposits of substances which could be released in harmful quantities to the aquatic environment by man-induced discharge activities	-
8) Other sources (specify)	-

<u>List Appropriate References</u>:

Environmental Assessment for the Improvement Dredging of Blue Hill Harbor, Blue Hill, Maine, February 2022

	YES	NO
b. An evaluation of the appropriate information in 3a above indicates that there is reason to believe the proposed dredge or fill material is not a carrier of contaminants, or that levels of contaminants are substantively similar at extraction and disposal sites and not likely to require constraints. The material meets the testing exclusion criteria.	X	

4. Disposal Site Delineation (Section 230.11(f))

a. The following factors, as appropriate, have been considered in evaluating the disposal site.

1) Depth of water at disposal site	X
2) Current velocity, direction, and variability at disposal site	X
3) Degree of turbulence	X
4) Water column stratification	X
5) Discharge vessel speed and direction	X
6) Rate of discharge	X
7) Dredged material characteristics (constituents, amount, and type of material, settling velocities)	X
8) Number of discharges per unit of time	-
9) Other factors affecting rates and patterns of mixing (specify)	-

List Appropriate References:

Environmental Assessment for the Improvement Dredging of Blue Hill Harbor, Blue Hill, Maine, February 2022

b. An evaluation of the appropriate factors in 4a above indicates that the disposal site and/or size of mixing zone are acceptable.	X YES	______ NO

5. Actions To Minimize Adverse Effects (Subpart H)

All appropriate and practicable steps have been taken through application of recommendation of Section 230.70-230.77 to ensure minimal adverse effects of the proposed discharge.	X YES	______ NO

6. **Factual Determination (Section 230.11)**

A review of appropriate information as identified in items 2 - 5 above indicates that there is minimal potential for short or long term environmental effects of the proposed discharge as related to:

a. Physical substrate (review sections 2a, 3, 4, and 5 above).	X YES	NO
b. Water circulation, fluctuation and salinity (review sections 2a, 3, 4, and 5).	X YES	NO
c. Suspended particulates/turbidity (review sections 2a, 3, 4, and 5).	X YES	NO
d. Contaminant availability (review sections 2a, 3, and 4).	X YES	NO
e. Aquatic ecosystem structure, function and organisms(review sections 2b and c, 3, and 5)	X YES	NO
f. Proposed disposal site (review sections 2, 4, and 5).	X YES	NO
g. Cumulative effects on the aquatic ecosystem.	X YES	NO
h. Secondary effects on the aquatic ecosystem.	X YES	NO

7. **Findings of Compliance or Noncompliance**

a. The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) guidelines.	X YES	NO

28 February 2022
Date

J.A. Atilano II

John A. Atilano II
Colonel, Corps of Engineers
District Engineer

BLUE HILL HARBOR
MAINE
NAVIGATION IMPROVEMENT PROJECT

APPENDIX A

PERTINENT CORRESPONDENCE

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BLUE HILL HARBOR, MAINE
DETAILED PROJECT REPORT
AND ENVIRONMENTAL ASSESSMENT

APPENDIX A
PERTINENT CORRESPONDENCE

LIST OF PERTINENT CORRESPONENCE

Part 1. Correspondence during Review of the Draft Report/Environmental Assessment and Preparation of the Final Report/Environmental Assessment

North Atlantic Division – Final Report Review Memo to NAE – 28 January 2022
New England District – Final Report Transmittal Memo to NAD – 2 December 2021
Town of Blue Hill – Sponsor Support Letter and Financial Certification – 8 November 2021
New England District – EFH Response to NMFS – 21 September 2021
National Marine Fisheries Service – EFH Recommendations – 15 September 2021
North Atlantic Division – Draft Report Review Memo to NAE – 20 May 2021
New England District – Draft Report Submittal Memo to NAD – 8 April 2021
New England District – Real Estate Risk Letter to Town – 6 April 2021
Town of Blue Hill – Sponsor Support Letter to NAE – 17 March 2021
Maine Coastal Program – Federal Consistency Determination Concurrence – 16 March 2021
ME Department of Environmental Protection – Water Quality Certification – 10 March 2021
New England District – Letter to U.S. EPA – 28 January 2021
New England District – CZM/WQC Request to Maine Agencies – 3 December 2020
NOAA Fisheries GARFO ESA NLAA Form and Concurrence – 20 November 2020
U.S. EPA – Letter to NAE – 27 May 2020
U.S. Fish and Wildlife Service – ESA/FWCA Letter to NAE – 8 May 2020
New England District – Letter to U.S. EPA – 24 April 2020
New England District – Letter to NMFS – 24 April 2020
New England District – Letter to U.S. F&WS – 24 April 2020
Public Notice – Draft Report and EA Review – 23 March 2020
Notice of Intent to File Maine NRPA – Newspaper – 20 February 2020

Part 2. Correspondence during Preparation of the Draft Detailed Project Report and Draft Environmental Assessment

New England District – Additional Funds Request to Town of Blue Hill – 11 July 2019
Penobscot Nation THPO – Letter to NAE – 15 January 2019
Maine Historical Preservation Commission – Letter to NAE – 11 December 2018
New England District – Coordination Letter to MESHPO – 4 December 2018
New England District – Letter to Passamaquoddy THPO – 4 December 2018
New England District – Letter to Penobscot THPO – 4 December 2018
New England District – Funds Request to Town of Blue Hill – 25 September 2018
Town of Blue Hill – Letter to NAE – No Upland Disposal Sites – 16 March 2017

Town of Blue Hill – Funds Limitation Letter – 17 June 2015
with Sponsor's Self Certification – 17 March 2015
New England District – Funds Request to Town of Blue Hill – 30 June 2015
New England District – FCSA Transmittal to Town of Blue Hill – 13 May 2015
North Atlantic Division – FCSA Approval Memo – 5 May 2015
New England District – FCSA Execution Request Memo to NAD – 18 March 2015
Assistant Secretary of the Army (Civil Works) – Fact Sheet Approval – 21 November 2014
New England District –Memorandum – FID DQC Certification – 11 June 2014
Town of Blue Hill – Study Support Letter – 18 November 2013
North Atlantic Division – IAR Approval Memo – 29 October 2013
North Atlantic Division – PSD Concurrence Memo – 24 October 2013
New England District – Memo Transmitting Initial Appraisal to NAD – 13 August 2013
Maine DOT Program Letter to Congressional Delegation – 20 March 2013
Town of Blue Hill – Preliminary Data to NAE – 30 August 2012
NAE Trip Report – Environmental Baseline – 4 August 2012
Town of Blue Hill – Initial Study Request – 4 September 2009

Appendix A

Part 1

Correspondence during Review of the Draft Detailed Project Report and Environmental Assessment and Preparation of the Final Detailed Project Report and Environmental Assessment

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DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, NORTH ATLANTIC DIVISION
FORT HAMILTON MILITARY COMMUNITY
302 GENERAL LEE AVENUE
BROOKLYN, NY 11252-6700

CENAD-PD-P (800B-11-2-220a) 28 January 2022

MEMORANDUM FOR Chief, Civil Works Integration Division (Mr. Joseph Forcina)

SUBJECT: Final Detailed Project Report and Environmental Assessment (DPR & EA) for Blue Hill Harbor, ME Section 107 Project (PWI 328230) for Approval

1. References:

a. Pre-brief for the final DPR & EA conducted on 16 December 2021.

b. CENAD-PD-C Email dated 11 December 2021 transmitting the subject Blue Hill DPR and EA package and requesting review.

c. CENAE-PD-P Memorandum dated 2 December 2021 transmitting the final DPR and EA for the Blue Hill Harbor, ME Section 107 Project.

d. CENAD-PD-P Memorandum dated 12 May 2021 transmitting comments on review of draft report to CENAD-PD-C.

2. Following the pre-brief (Reference 1a) the Policy & Legal Compliance Review (P&LCR) Team led by the North Atlantic Division Planning and Policy Division (CENAD-PD-P) conducted a review of the final DPR, EA, and other documentation of September 2021 for the subject study (References 1b and 1c).

3. P&LCR team has conducted the backcheck review of the final documents and determined that the comments on the Draft Report (Reference 1d) have been adequately addressed. The Executive Summary of the final report should be modified to be consistent in the use of price levels. All costs shown needed to be shown in consistent FY22 price level and indicate the current discount rate of 2.25% is utilized. It is understood that comparison of alternatives was undertaken earlier and that the selected alternative will not change. A few editorial comments have been transmitted to the NAE PDT via email. Therefore, the team will recommend for approval of final DPR & EA once these changes are made and the report resubmitted.

4. Please direct any questions to Ms. Naomi Fraenkel, AICP, Navigation Planning Program Lead at (917) 359-2819 or Mr. Young Kim, P.E., Planning Program/CAP Manager at (347) 370-4514.

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JOSEPH R. VIETRI
Chief, Planning and Policy Division
Programs Directorate

CF: Christopher Ricciardi, Ph.D./CWID DST

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD MA 01742-2751

CENAE-PDP 02 December 2021

MEMORANDUM FOR Commander, North Atlantic Division, U.S. Army Corps of Engineers, (ATTN: CENAD-PD-CID-P, Mr. Christopher Ricciardi), Fort Hamilton Military Community, 301 General Lee Avenue, Brooklyn, NY 11252-8400

SUBJECT: Submittal of Final Detailed Project Report and Environmental Assessment (DPR and EA) for Blue Hill Harbor, ME Section 107 Project (PWI 328230) for Approval

1. Public Review of this report was concluded in May 2020. MSC review of the draft report was completed 12 May 2021. ATR was certified 11 August 2021. The project addresses the need for commercial navigation improvements at Blue Hill Harbor, located in Hancock County, in the Town of Blue Hill, Maine, the project Sponsor. The recommended plan consists of a 6-foot channel and turning basin to access the town wharf in the inner harbor to principally benefit the town's commercial lobstering fleet.

2. NAE hereby requests NAD approve the enclosed Final DPR and EA. As discussed at the 14 September 2021 pre-brief, the report was prepared using FY21 price levels, and an updated FY22 estimate will be provided when the PPA package is submitted.

3. The non-federal sponsor, the Town of Blue Hill, has provided a letter of support for the project and a Self-Certification of Financial Capability.

4. Additional information on this investigation can be obtained by contacting the Project Manager, Mr. Mark Habel, at (978) 318-8871 or Mark.L.Habel@usace.army.mil.

J. A. Atilano II

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See Attached Submittal List

JOHN A. ATILANO II
COL, EN
Commanding

**MSC Review of Final Detailed Project Report (DPR)
and Environmental Assessment (EA)**

Section 107 Feasibility Phase Decision Document

Submittal Pre-Brief Held with NAD and District: 14 September 2021

List of Final Report Submittal Items	
00	Transmittal Memo from NAE Commander to NAD Commander (With Copy to CWID) transmitting the Final report
01	Final DPR/EA and Appendices, Including:
	Main Report
	Environmental Assessment and FONSI
	Appendix A – Correspondence Appendix B – Economics Appendix C – Engineering Design Appendix D – Cost Engineering Appendix E – Real Estate Appendix F – Sediment Testing Appendix G – EFH Assessment Appendix H – Suitability Determination
02	Track Change Version of DPR and EA and Economics Appendix Showing Edits made Since the Draft Report
03	Response to Comments Document – Draft PGM (Word File)
04	Certification of District Quality Control Review – 14 September 2021
05	Certification of Agency Technical Review – 11 August 2021
06	Updated Certification of Legal Sufficiency – 24 September 2021
07	Updated CAP Project Fact Sheet – 14 September 2021
08	Non-Federal Sponsor Letter of Support and Self-Certification of Financial Capability for Decision Documents – 8 November 2021

Town of Blue Hill, Maine

18 Union Street
Blue Hill, Maine 04614
TELEPHONE 207-374-2281 FAX 207-374-9935

November 8, 2021

John Kennelly
Chief of Planning
US Army Corps of Engineers New England District
696 Virginia Road
Concord, MA 01742

Dear Mr. Kennelly,

The Select Board of the Town of Blue Hill, Maine has reviewed the draft Section 107 Navigation Improvement Project Detailed Project Report and Environmental Assessment, and looks forward to the public hearings on the project to provide comments and feedback on the report.

As you probably know, all significant financial decisions made on behalf of the Town of Blue Hill must be approved by the town's voters. To date, Blue Hill voters have approved approximately $124,000 of direct and indirect financial support for the preparation of the Detailed Project Report and Environmental Assessment.

After the final report is made available to the public and discussed in one or more public hearings, we hereby confirm that the Town of Blue Hill would have the capability to provide the required cost-sharing funds, subject to approval and appropriation by Town voters at a Town Meeting.

Please let me know if there is anything else we can do to help with this process.

Sincerely,

Shawna Ambrose
Town Administrator

NON-FEDERAL SPONSOR'S
SELF-CERTIFICATION OF FINANCIAL CAPABILITY
FOR DECISION DOCUMENTS

I, Rebecca Wilber, do hereby certify that I am the Chief Financial Officer of the Town of Blue Hill, Maine (the "Non-Federal Sponsor"); that I am aware of the financial obligations of the Non-Federal Sponsor for the Blue Hill Harbor Navigation Improvement Project; and that the Non-Federal Sponsor will have the financial capability to satisfy the Non-Federal Sponsor's obligations for that project. I understand that the Government's acceptance of this self-certification shall not be construed as obligating either the Government or the Non-Federal Sponsor to implement a project.

IN WITNESS WHEREOF, I have made and executed this certification this 9th day of November, 2021.

BY: Rebecca J. Wilber

TITLE: Treasurer

DATE: 11/09/2021

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD MA 01742-2751

September 21, 2021

Planning Division
Environmental Branch

Mr. Louis Chiarella
National Marine Fisheries Service
55 Great Republic Drive
Gloucester, MA 01930

Dear Mr. Chiarella:

Thank you for your letter of September 15, 2021 regarding the US Army Corps of Engineers (USACE) proposed Blue Hill Harbor Navigation Improvement Project in Blue Hill, Maine. This letter serves to address the Essential Fish Habitat Conservation Recommendations (EFHCR) that were provided. Each of the EFHCRs are noted below along with our following responses.

EFHCR 1: No dredging should occur from March 15 to June 30, of any calendar year, to protect sensitive life history stage [egg and larvae] winter flounder EFH.

Response: Consultation with the Maine Department of Marine Resources (ME-DMR) has concluded that an April 8 date to end construction activities would be appropriate for the proposed project. ME-DMR noted that winter flounder resources are not likely to be present in the proposed project area; however, if flounder were present, the proposed window would be protective of impacts to flounder eggs and larvae (personal communication with Mr. Denis Nault, February 2021). As such, we will not be implementing this EFH conservation recommendation fully. We will apply a time-of-year restriction of November 8 to April 8 as conditioned by the state's water quality certification.

EFHCR #2: Compensatory mitigation should be provided for the permanent conversion of 3.7 acres of intertidal habitat. Given the difficulty in replicating intertidal habitat, mitigation plans should be coordinated with NOAA NMFS Habitat and Ecosystem Services Division staff.

Response: During the initial stages of the feasibility study for the proposed Blue Hill Harbor project, we considered the need for compensatory mitigation for the loss of intertidal habitat. However, initial sediment testing revealed the presence of contamination in those intertidal portions of the project area that would have driven the need for mitigation. We performed additional rounds of chemical testing to define the spatial extent of the contamination and conducted a macrobenthic community survey within the intertidal area to aid in the determination of the intertidal area's functions and values. Based upon the concentrations of contaminants and the corresponding low abundance and diversity of the benthic fauna, we concluded that the removal of the contaminated sediments would allow a more productive subtidal benthic community to establish and therefore compensatory mitigation was unwarranted.

We attempted to identify environmentally acceptable, practicable placement sites, including beneficial uses of dredged material to create or restore coastal habitat within the general project area. Neither we, nor any of the agencies that participated in the early formulation process, were able to identify suitable sites to use dredged material to restore or create intertidal habitats. We also attempted to identify additional impacted intertidal areas within Blue Hill Harbor while looking for the contaminant source. However, neither we, nor any of our agency partners, were able to identify suitable mitigation sites.

Given the contaminated condition and low value of the affected intertidal flats, the environmental benefit of the project in reducing the contamination at the site, and the lack of practicable sites to provide intertidal habitat through beneficial use of the dredged material, we will not be implementing this EFH conservation recommendation.

If you or your staff have any questions or require additional information, please feel free to contact Mr. Todd Randall, the Environmental Resources Team Member at (978) 318-8518 or Mr. Mark Habel, the Project Manager, at (978) 318-8871.

Sincerely,

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John Kennelly
Chief, Planning Division

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
GREATER ATLANTIC REGIONAL FISHERIES OFFICE
55 Great Republic Drive
Gloucester, MA 01930-2276

September 15, 2021

Mr. John Kennelly
Chief, Planning Division
U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742-2751

Re: Blue Hill Harbor Navigation Improvement Project, Blue Hill, ME

Dear Mr. Kennelly:

We have reviewed the essential fish habitat (EFH) assessment dated July 2021, the Public Notice dated March 23, 2020, the Blue Hill Harbor sampling summary dated October 2016 and the Section 107 Navigation Improvement Project Environmental Assessment dated February 2020 for the proposed Federal Navigation Project (FNP) located within Blue Hill Harbor, Blue Hill, Maine. The proposed Blue Hill Harbor project will dredge a new 6-foot deep mean lower low water (MLLW), 80-foot wide channel from the outer harbor, extending 5,600 feet northwest to the town wharf. The channel will be widened at its upper end to form a turning basin, 160 feet by 80 feet, adjacent to the town wharf. 62,500 cubic yards (CY) of mixed gravel, sand, and silt will be removed from the proposed project area using a mechanical dredge. 52,100 CY of suitable material will be disposed of in the Eastern Passage Disposal Site (EPDS) which is a deep hole, approximately 330 feet deep, located 6 miles northwest of Bass Harbor between Dodge Point and Bar Island. Approximately 10,600 CY of contaminated material will be disposed of in a CAD cell in Blue Hill Harbor, adjacent to the FNP footprint. No mitigation for intertidal resource impacts is currently proposed.

The purpose of this FNP project is to increase access for the commercial and recreational fishing industries at the Central Blue Hill Harbor landing. The commercial fleet consists of 50 boats which currently use other landings and when feasible, use tidal navigation to access the Central Blue Hill landing. The South Blue Hill landing is at capacity and adjacent to private residences, the Steam Boat Wharf facility is on private land and lacks unloading facilities, while the East Blue Hill Shores facility is primarily a recreational facility and is at capacity. PAH and metal concentrations were elevated closest to the Central Blue Hill Harbor landing.

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) and the Fish and Wildlife Coordination Act require federal agencies to consult with one another on projects such as this. Insofar as a project involves EFH, as this project does, this process is guided by the requirements of our EFH regulation at 50 CFR 600.920, which mandates the preparation of EFH assessments and generally outlines each agency's obligations in the relevant consultation procedure.

The EFH assessment indicates you have made a preliminary determination that the proposed project activities will impact EFH for several managed species in both the dredging and placement areas. We agree with this determination. Specifically, our preliminary determination is that the project would result in substantial adverse impacts to EFH through conversion of 3.7 acres of intertidal habitat to subtidal habitat

General Comments

Marine resources and impacts

The EA and EFH assessments describe the proposed dredge footprints as a mix of silty-sandy-gravel intertidal mudflats and subtidal areas. Specifically page 7 of the EFH assessment notes, "the surficial sediments in the proposed turning basin are composed of a mix of gravels, sands, and silt". Sediment adjacent to the town wharf contains elevated PAH and metal concentrations.

The EPDS is located in a trough in the tidal channel of Blue Hill Bay with hard rocky bottom to the southwest and a slope of soft sediment to the east (Carey et al. 2013). The site was last used for Bass Harbor dredged material disposal. The sediments at the EPDS were characterized as dark-olive, sandy silt with approximately 80-90% of the material in the silt particle size range (USACE, 2006). A 2012 Disposal Area Monitoring System (DAMOS) survey of EPDS revealed two distinct sedimentary habitats within EPDS: a fine-grained, soft-bottom habitat in the central trough and northeast shoal area, and a hard-bottom habitat in the southwest shoal area (Carey et al. 2013). Dredged material placed at the site in 2011-2012, was a combination of sandy-silt, coarse sand, and rock placed primarily in the central trough area on fine grained, soft-bottom substrata (Carey et al 2013). The 2012 acoustic relief bathymetry and bottom features reveal two hard bottom knobs but project documents specify that "material will be placed in the portions of the site that contain soft bottom (i.e., silty sediments) habitat".

The project is located in an important area for a number of marine and estuarine finfish and shellfish species, and is likely to result in direct and indirect adverse impacts to managed fish species and EFH. The area has been identified as EFH for 20 federally-managed species including, but not limited to, winter flounder, Atlantic cod, pollock, ocean pout, silver hake, red hake, white hake, windowpane flounder, smooth skate, little skate, winter skate, thorny skate, and Atlantic sea scallop. Soft-shell clam beds are located adjacent to the proposed project footprints.

Intertidal and inshore subtidal mixed sand, gravel, cobble, and boulder habitats serve as important shelter and forage habitat for a variety of species including Atlantic cod, pollock, black sea bass, ocean pout, red hake, white hake, windowpane flounder, winter skate, little skate, striped bass, cunner, tautog, and scup. The structural complexity of rocky habitats are important for fish in that they provide shelter and refuge from predators (Auster 1998; Auster and Langton 1999; NRC 2002; Stevenson et al. 2004). It is also well established that intertidal zones serve as areas of refuge from predation and foraging habitat for juvenile fish during periods of high tide (Helfman et al. 2009). Recent literature regarding the importance of shallow water habitats for managed fish species was reviewed and discussed in "Shallow Water Benthic Habitats in the Gulf of Maine: A Summary of Habitat Use by Common Fish and Shellfish Species in the Gulf of Maine" (Stevenson et al. 2014). The turning basin portion of the proposed FNP contains intertidal areas with sand-gravel-cobble features, and represent juvenile Atlantic cod EFH. Based on the sediment grain size analyses provided, the turning basin cores and test pits are described as "a mix of gravels, sands, and silt". While the 2015 sediment cores are not broken up into fractions by depth and do not include pebble size classes, core G contained 45.9% gravel and all test pit text descriptions contain combinations of sand, gravel and cobble in the visual descriptions of the top 2 feet each sample. The EFH assessment identifies the area as contaminated due to PAH's and metals, therefore compensatory mitigation is not being provided. However, sand-pebble-gravel sediment size classes do not adsorb PAH's and metals to the extent that finer material does, which indicates that a lesser degree of the material is contaminated than described in project documentation. While we recognize that this larger material cannot be easily separated from the dredged material as a whole, it is not accurate to categorize the entire 10,600 CY as contaminated material.

Intertidal and subtidal mud and sand habitats support distinct benthic communities that serve as EFH for managed fish species by directly providing prey and foraging habitat, or through emergent fauna providing increased structural complexity and shelter from predation. Intertidal mud and sand substrates serve as EFH for multiple managed fish species during spawning, juvenile and/or adult life history stages, including juvenile pollock, juvenile little skate, juvenile hake species, juvenile and adult windowpane flounder, and juvenile and adult life stages of winter flounder (Cargnelli et al. 1999; Chang et al. 1999; Pereira et al. 1999). Habitat attributes within fine grained substrates also provide important functions for managed fish species including shelter, foraging, and prey. Permanent conversion of intertidal habitat to subtidal habitat will remove the foraging and shelter components of this region for juvenile species and prey to federally managed species.

Furthermore, the U.S. Environmental Protection Agency has designated mudflats as "special aquatic sites" under the Section 404(b)(1) of the federal Clean Water Act, due to their important role in the marine ecosystem for spawning, nursery cover and forage areas for fish and wildlife. Juvenile fish and invertebrates seek shelter by burrowing into the soft sediments. Juvenile and adult fish utilize mudflats for foraging, and provide important post-spawn feeding areas for winter flounder. Mudflats are particularly susceptible to anthropogenic disturbances as they are found in sheltered, low-energy environments subject to a minimal natural disturbance regime. Mitigation for impacts to intertidal mudflat habitat can be difficult, making this habitat especially vulnerable to permanent loss.

The project area also provides habitat for winter flounder spawning and juvenile development. Winter flounder eggs, once deposited on the substrate, are vulnerable to sedimentation effects in less than 1 mm of sediment. Decreased hatching success of winter flounder eggs is observed when covered in as little as 1 mm of sediment and burial in sediments greater than 2.5 mm may cause no hatch (Berry et al. 2011). Elevated turbidity can also impact fish species through greater utilization of energy, gill tissue damage and mortality. Egg and larval life stages may be more sensitive to suspended sediments, resulting in both lethal and sub-lethal impacts (Newcombe and Jensen 1996). To avoid such impacts, turbidity producing activities should be suspended during periods when these sensitive life stages are present.

Essential Fish Habitat

Blue Hill Harbor is designated as EFH under the MSA for multiple managed fish species, including Atlantic cod, and hake. In addition, this area contains juvenile Atlantic cod EFH and mudflat habitat. As described above, the proposed project will substantially affect EFH by converting intertidal habitat into subtidal habitat, and permanently deepening subtidal habitats. We recommend pursuant to Section 305(b)(4)(A) of the MSA that you adopt the following EFH conservation recommendations:

1. No dredging should occur from March 15 to June 30, of any calendar year, to protect sensitive life history stage winter flounder EFH.
2. Compensatory mitigation should be provided for the permanent conversion of 3.7 acres of intertidal habitat. Given the difficulty in replicating intertidal habitat, mitigation plans should be coordinated with NOAA NMFS Habitat and Ecosystem Services Division staff.

Please note that Section 305(b)(4)(B) of the MSA requires you to provide us with a detailed written response to these EFH conservation recommendations, including a description of measures you adopt for avoiding, mitigating or offsetting the impact of the project on EFH. In the case of a response that is inconsistent with our recommendations, Section 305(b)(4)(B) of the MSA also indicates that you must explain your reasons for not following the recommendations. Included in such reasoning would be the scientific justification for any disagreements with us over the anticipated effects of the proposed action and the measures needed to avoid, minimize, mitigate or offset such effects pursuant to 50 CFR

600.920(k). Please also note that a distinct and further EFH consultation must be reinitiated pursuant to 50 CFR 600.920(l) if new information becomes available or the project is revised in such a manner that affects the basis for the above EFH conservation recommendations.

Endangered Species Act

Threatened and endangered species under our jurisdiction may be present in the action area, and consultation pursuant to section 7 of the Endangered Species Act of 1973 is required. If you have any questions regarding the status of this consultation, please contact Roosevelt Mesa at 978-281-9186 or roosevelt.mesa@noaa.gov.

Conclusion

In summary, we recommend that no dredging should occur from March 15 to June 30, of any calendar year, to protect sensitive life history stage winter flounder EFH. We also recommend mitigation be provided for the permanent loss of 3.7 acres of intertidal habitat. We look forward to your response to our EFH conservation recommendations, and continued coordination on this project. Please contact Kaitlyn Shaw at 978-282-8457 or kaitlyn.shaw@noaa.gov if you would like to discuss this further.

Sincerely,

Louis A. Chiarella
Assistant Regional Administrator
for Habitat Conservation

cc: Todd Randall, USACE
Roosevelt Mesa, PRD
Tom Nies, NEFMC
Chris Moore, MAFMC
Lisa Havel, ASMFC

References

Able, K. W. and Fahay, M. P. 1998. First year in the life of estuarine fishes in the middle Atlantic Bight; 342 p.

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DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NORTH ATLANTIC DIVISION
FORT HAMILTON MILITARY COMMUNITY
302 GENERAL LEE AVENUE
BROOKLYN, NY 11252-6700

CENAD-PD-C (800B-11-2-220a)

MEMORANDUM FOR Commander, US Army Corps of Engineers, New England District (CENAE-PDP/Mr. Kennelly), 696 Virginia Rd, Concord, MA 01742

SUBJECT: Draft Detailed Project Report and Environmental Assessment (DPR & EA) for Blue Hill Harbor, ME CAP Section 107 Project (P2# 328230)

1. References:

a. Memorandum, New England District, CENAE-PD-P, 08 Apr 21, subject: Submittal of Draft Detailed Project Report and Environmental Assessment (DPR & EA) for Blue Hill Harbor, ME Section 107 Project (PWI 328230)

b. Memorandum, North Atlantic Division, CENAD-PD-P, 12 May 21, subject: Draft Detailed Project Report and Environmental Assessment (DPR & EA) for Blue Hill Harbor, ME Section 107 Project (PWI 328230) (enclosed)

2. The New England District requested review and comments for the Draft Detailed Project Report (DPR) and Environmental Assessment (EA) for Blue Hill Harbor, ME CAP Section 107 Project (Reference 1.a.).

3. The North Atlantic Division has reviewed the DPR and EA and provides the following comments that must be addressed. (Reference 1.b.). Please provide a response to all of the comments and include a track changes version of the revisions to ensure that the comments are adequately addressed.

4. The point of contact is Mr. John O'Connor, CAP Program Manager, Civil Works Integration Division, at 347-370-4565 or John.A.OConnor@usace.army.mil.

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Encl.

JOSEPH FORCINA, P.E., P.M.P.
Chief, Civil Works Integration Division

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD MA 01742-2751

CENAE-PD-P 8 April 2021

MEMORANDUM FOR Commander, North Atlantic Division, U.S. Army Corps of Engineers, (CENAD-PD-CID-P/Mr. Christopher Ricciardi), Fort Hamilton Military Community, 301 General Lee Avenue, Brooklyn, NY 11252-8400

SUBJECT: Submittal of Draft Detailed Project Report and Environmental Assessment (DPR & EA) for Blue Hill Harbor, ME Section 107 Project (PWI 328230) for Review.

1. Public Review of this report was concluded in May 2020. ATR of the revised report is being initiated in April 2021. The project addresses the need for commercial navigation improvements at Blue Hill Harbor, located in Hancock County, in the Town of Blue Hill, Maine, the project Sponsor. The recommended plan consists of a 6-foot channel and turning basin to access the town wharf in the inner harbor to principally benefit the town's commercial lobstering fleet.

2. NAE hereby requests NAD review of the enclosed draft DPR and EA.

3. The non-Federal sponsor has provided a letter of support for the project which is included in the enclosed submittal package.

4. Additional information on this investigation can be obtained by contacting the Project Manager, Mr. Mark Habel at (978) 318-8871 or Mark.L.Habel@usace.army.mil.

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JOHN R. KENNELLY
CHIEF OF PLANNING

8 Encls
See Attached Submittal List

Draft Detailed Project Report (DPR) and Planning and Design Analysis (PDA)

Section 107 Feasibility Phase Decision Document

Submittal Pre-Brief Held with NAD and District: 10 February 2021

List of Final Report Submittal Items	
00	Transmittal Memo from NAE Commander to NAD Commander (Copy to CWID) CWID transmitting Draft report currently under ATR and Public Review
01	Draft DPR/EA and Appendices, Including:
	Main Report
	Environmental Assessment and FONSI
	Appendix A – Correspondence, Appendix B – Engineering Design, Appendix C – Cost Estimates, Appendix D – Economics, Appendix E – Real Estate, Appendix F – Sediment Testing, Appendix G – SAV Surveys, Appendix H – Suitability Determination, Appendix I – Mitigation Plan, Appendix J – EFH, and Appendix K – Benthos
02	MFR from MDM
03	EA Public Notice
04	Certification of District Quality Control Review
05	Agency Technical Review Team Roster
06	Certification of Legal Sufficiency
07	CAP Project Fact Sheet
08	Non-Federal Sponsor Letter of Support

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD MA 01742-2751

April 6, 2021

Ms. Shawna Ambrose
Town Administrator
Town of Blue Hill
18 Union Street
Blue Hill, Maine 04614

Dear Ms. Ambrose:

I am writing about the Section 107 Navigation Improvement Project – Blue Hill Harbor, Maine Feasibility Study recommended plan ("Project"). This Project is pending further analysis, U.S. Army Corps of Engineers approval and federal and non-federal funding. If the Project is approved, we will provide you with information about the extent of the non-federal sponsor's responsibility for acquiring the real estate for the Project.

Although at this time we anticipate no acquisitions, we are required by our regulations to inform you in writing of the risks associated with advance land acquisition. If the Town of Blue Hill acquires real estate interests for the Project prior to the signing of the Project Partnership Agreement (PPA), it does so at its own risk. These risks include, but are not limited to, acquiring the wrong land, as well as acquiring too much or too little land, with regards to tracts and estates. This may result in paying additional value that could have been avoided by delaying acquisition. In addition, until the PPA is signed there is not an agreement to construct the Project or to share costs (or give credit for lands acquired in anticipation of the PPA). Also, the Town of Blue Hill may incur liability and expense if it owns or has interests in contaminated lands. The Town of Blue Hill will assume full and sole responsibility for any and all costs, responsibility, or liability arising out of acquisition efforts prior to execution of the PPA or prior to the Government's formal notice to proceed with acquisition after PPA execution.

If you have any questions, please do not hesitate to contact Pamela Bradstreet of this office by telephone at 978-318-8025 or by email at

Pamela.S.Bradstreet@usace.army.mil. You may also contact Project Manager, Mark Habel by telephone at 978-318-8871 or by email at Mark.L.Habel@usace.army.mil.

Your continued cooperation in support of this project is greatly appreciated.

Sincerely,

SHUGERT.TIMOTHY.W.1238587243 Digitally signed by SHUGERT.TIMOTHY.W.1238587243 Date: 2021.04.06 11:59:16 -04'00'

Timothy W. Shugert
Chief, Real Estate Division

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION AUGUSTA, MAINE 04333-0017

DEPARTMENT ORDER

IN THE MATTER OF

UNITED STATES ARMY CORPS	) NATURAL RESOURCES PROTECTION ACT
OF ENGINEERS/TOWN OF BLUE HILL	) COASTAL WETLAND ALTERATION
Blue Hill, County	) SIGNIFICANT WILDLIFE HABITAT
HARBOR DREDGE	) WATER QUALITY CERTIFICATION
L-28747-4E-A-N (approval)	)
L-28747-TW-B-N (approval)	) FINDINGS OF FACT AND ORDER

Pursuant to the provisions of 38 M.R.S. §§ 480-A–480-JJ, Section 401 of the CleanWater Act (33 U.S.C. § 1341), and Chapters 310, 315, and 335 of Department rules, the Department of Environmental Protection has considered the application of UNITED STATES ARMY CORPS OF ENGINEERS/TOWN OF BLUE HILL with the supportive data, agency review comments, and other related materials on file and FINDS THE FOLLOWING FACTS:

1. PROJECT DESCRIPTION:

A. Summary: The applicants propose navigation improvement to the Blue Hill Harbor in order to increase safe and efficient vessel transportation in the harbor. The applicants propose to dredge a 6-foot deep Mean Lower Low Water (MLLW), 80-foot wide channel from the outer harbor, extending 5,600 feet northwest to the town wharf. The channel will be widened at its upper end to form a turning basin, 160-feet by 80-feet, adjacent to the town wharf, as shown on a set of plan prepared by the United States Army Corps of Engineers, the first of which is entitled, "Blue Hill Harbor Project Area," and dated November 2020. Approximately 71,500 cubic yards (CY) of mixed gravel, sand and silt will be removed from the project area using a mechanical dredge. The 61,000 CY of dredged material that was deemed suitable for open water disposal will be disposed of at the Eastern Passage Disposal Site (EPDS). Approximately 10,500 CY of material from the upper two feet of the inner harbor were deemed unsuitable for open water placement and will be placed in a confined aquatic disposal (CAD) cell within Blue Hill Harbor. The project is located in a mapped Tidal Waterfowl and Wading Bird Habitat (TWWH). The project is located in the Blue Hill Harbor.

B. Current Use of the Site: The site is currently intertidal and subtidal habitat located in the Blue Hill Harbor.

2. EXISTING SCENIC, AESTHETIC, RECREATIONAL OR NAVIGATIONAL USES:

The Natural Resources Protection Act (NRPA), in 38 M.R.S. § 480-D(1), requires the applicants to demonstrate that the proposed project will not unreasonably interfere with existing scenic, aesthetic, recreational and navigational uses.

In accordance with Chapter 315, *Assessing and Mitigating Impacts to Scenic and Aesthetic Uses* (06-096 C.M.R. ch. 315, effective June 29, 2003), the applicants submitted a copy of the Department's Visual Evaluation Field Survey Checklist as Appendix A to the application along with a description of the property and the proposed project. The applicants also submitted several photographs of the proposed project site and surroundings. Department staff visited the project site on May 10, 2016.

The proposed project is located in the Blue Hill Harbor, which is a scenic resource visited by the general public, in part, for the use, observation, enjoyment and appreciation of its natural and cultural visual qualities. The proposed project should not have any visual impacts on the project site.

The Department staff utilized the Department's Visual Impact Assessment Matrix in its evaluation of the proposed project and the Matrix showed an acceptable potential visual impact rating for the proposed project. Based on the information submitted in the application and the visual impact rating and the site visit, the Department determined that the location and scale of the proposed activity is compatible with the existing visual quality and landscape characteristics found within the viewshed of the scenic resource in the project area.

The Department of Marine Resources (DMR) reviewed the project and stated that the proposed project should not cause any significant adverse impact to navigation or recreation based on the nature of the project and its location.

The Department finds that the proposed activity will not unreasonably interfere with existing scenic, aesthetic, recreational or navigational uses of the coastal wetland.

3. SOIL EROSION:

The NRPA, in 38 M.R.S. § 480-D(2), requires the applicants to demonstrate that the proposed project will not cause unreasonable erosion of soil or sediment nor unreasonably inhibit the natural transfer of soil from the terrestrial to the marine or freshwater environment.

The dredge will be completed with a mechanical clamshell dredge. The dredging will result in minimal localized increases in turbidity and sedimentation. The applicants included monitoring studies documenting that turbidity plumes associated with mechanical bucket dredges are produced during dredging, however, they are generally limited to the immediate vicinity of the dredge. The proposed work was reviewed by the Division of Environmental Assessment (DEA). DEA found the proposed work acceptable and did not have any concerns about sedimentation.

The Department finds that the activity will not cause unreasonable erosion of soil or sediment nor unreasonably inhibit the natural transfer of soil from the terrestrial to the marine or freshwater environment.

4. HABITAT CONSIDERATIONS:

The NRPA, in 38 M.R.S. § 480-D(3), requires the applicants to demonstrate that the proposed project will not unreasonably harm significant wildlife habitat, freshwater wetland plant habitat, threatened or endangered plant habitat, aquatic or adjacent upland habitat, travel corridor, freshwater, estuarine or marine fisheries or other aquatic life.

In its review, the Department of Marine Resources (DMR) stated that the proposed dredging window is requested to begin November 1 and run through April 1. There is potential for significant conflict with several fisheries in the haul route area including the scallop, urchin, and lobster fisheries. An earlier start to this project will potentially increase the interaction with lobster gear on the transportation route as well as diminish access to fishing bottom for scallop and urchin fishermen. DMR recommends a work window of November 8th to April 8th.

The project is located in mapped TWWH. The Maine Department of Inland Fisheries and Wildlife (MDIFW) reviewed the proposed project and stated that given the degraded nature of the benthic community, minimal impacts are anticipated.

The project was reviewed by DEA. They commented that disposal of sediments deemed suitable for open water disposal at the Eastern Passage Disposal Site appears to be appropriate, including additional suitable sediments from construction of the CAD cell. Disposal of the top two feet of inner harbor sediments via sequestration within the proposed CAD cell adjacent/north of the dredged channel appears appropriate. Capping with the cleaner sediments from outside the contaminated area has been noted in the plans and should be conducted to seal the PAH contaminated sediments from bioturbation and physical disturbance. DEA further commented that care should be taken that none of the surficial two feet of PAH contaminated sediment be allowed to remain such that any remainder would be taken for disposal at the Eastern Passage Disposal Site. All contaminated sediment must be removed and placed in confinement within the CAD cell. No eelgrass was found at the site and DEA commented that the relatively short duration of the sediment plume should only have a short duration of impact on benthic species that the plume passes over (less than 4 hours). The STFATE model was used to explore this potential exposure. DEA had no concern and determined that the proposed project was reasonable.

The Department finds that the activity will not unreasonably harm any significant wildlife habitat, freshwater wetland plant habitat, threatened or endangered plant habitat, aquatic or adjacent upland habitat, travel corridor, freshwater, estuarine or marine fisheries or other aquatic life provided that the work is completed between November 8 and April 8.

5. WATER QUALITY CONSIDERATIONS:

The NRPA, in 38 M.R.S. § 480-D(5), requires the applicants to demonstrate that the proposed project will not violate any state water quality law, including those governing the classification of the State's waters. The waters that are or may be affected by the proposed project are classified as Class SB. 38 M.R.S. § 469(7).

Class SB waters must be of such quality that they are suitable for the designated uses of recreation in and on the water, fishing, aquaculture, propagation and harvesting of shellfish, industrial process and cooling water supply, hydroelectric power generation, navigation and as habitat for fish and other estuarine and marine life.

The waters affected by the proposed project are used by fish, and as habitat for such populations. They are also used for recreation and fishing. Based on the location of the proposed project, the construction methods proposed, and project's design, the Department finds that the proposed project will maintain and protect existing uses and the level of water quality necessary to protect those existing uses, will protect the existing water quality of affected waters, will not significantly impair the viability of the existing population of fish, and will not result in a significant degradation of existing recreation, fishing.

6. WETLANDS AND WATERBODIES PROTECTION RULES:

The applicants propose to directly dredge 1,350,360 square feet of subtidal and intertidal area in the Blue Hill Harbor in order to improve navigation. Approximately 161,172 square feet will convert intertidal habitat to subtidal habitat. Coastal wetlands are considered wetlands of special significance.

The *Wetlands and Waterbodies Protection Rules*, 06-096 C.M.R. ch. 310 (last amended November 11, 2018), interpret and elaborate on the Natural Resources Protection Act (NRPA) criteria for obtaining a permit. The rules guide the Department in its determination of whether a project's impacts would be unreasonable. A proposed project would generally be found to be unreasonable if it would cause a loss in wetland area, functions and values and there is a practicable alternative to the project that would be less damaging to the environment. Each application for a NRPA permit that involves a coastal wetland alteration must provide an analysis of alternatives in order to demonstrate that a practicable alternative does not exist.

A. Avoidance. An applicant must submit an analysis of whether there is a practicable alternative to the project that would be less damaging to the environment and this analysis is considered by the Department in its assessment of the reasonableness of any impacts. Additionally, for activities proposed in, on, or over wetlands of special significance the activity must be among the types listed in Chapter 310, § 5(A) or a practicable alternative less damaging to the environment is considered to exist and the impact is unreasonable. The proposed dredge is necessary for the safety of the harbor and is a water dependent use; both are provided for in Chapter 310, § 5(A)(1)(a), (c). The applicants submitted an alternatives analysis for the proposed project completed by the U.S. Army Corps of Engineers and dated November 2020. The purpose of the project is to provide safe and efficient vessel transportation in the Blue Hill Harbor. Currently, the lack of channel depth and turning area limits the use of the landing to periods of high tide. This causes a portion of the Blue Hill fleet to operate out of more exposed coves and harbor areas. This exposure limits the time periods that the fleet can effectively operate safely and has the potential to damage vessels that choose to operate in adverse conditions. The proposed improvements will allow for all-tide access to the Blue Hill landing. If the applicants do nothing, there will continue to be difficulties for commercial and recreational vessels in the harbor. Currently, the central wharf in the harbor is only accessible during high tide (about 3 hours a day). Without the proposed navigation improvements, full time access to the town wharf is not possible and fishermen who wish to fuel or offload at the wharf. The applicants looked at the option of moving some of the fishing fleet to nearby harbors but determined that this would not work due to overcrowding. The applicants also looked at alternative dredging options but determined that the mechanical dredging is the most efficient and practical way to remove silty material. There is no way to meet the project goal without some impacts to the coastal wetland.

B. Minimal Alteration. In support of an application and to address the analysis of the reasonableness of any impacts of a proposed project, an applicant must demonstrate that the amount of waterbody to be altered will be kept to the minimum amount necessary for meeting the overall purpose of the project. The applicants have designed the project to impact the minimal amount of coastal wetlands possible to meet the project goal of creating a safe and efficient harbor. The applicants propose to dispose of the contaminated sediments in a CAD cell in order to minimize any impacts associated with the contamination.

C. Compensation. In accordance with Chapter 310, compensation may be required to achieve the goal of no net loss of coastal wetland functions and values. The applicants propose to convert approximately 3.7 acres of intertidal habitat to subtidal habitat. The applicants documented that the ecological functions of existing 3.7 acres of intertidal area, as related to benthic invertebrate communities, is currently impaired. Surveys of the benthic communities in these areas show very low diversity and abundance numbers which suggest the habitat is being subject to some stressor beyond naturally occurring ecological pressure. As the material in these area contains elevated concentrations of contaminants (predominantly PAHs) which have been determined to be unsuitable for open water placement, the contamination is the main the cause of the diminished benthic community. The removal and sequestering of the contaminated material should allow the newly created subtidal areas to be contaminant free and allow for the colonization of the area by adjacent benthic populations. Community structure in the new subtidal habitat is expected to be similar to that in the outer harbor subtidal areas. The applicants did not propose mitigation for the loss of intertidal habitat as the area is currently impaired and will be replaced with a habitat that will provide higher quality ecological value to the Blue Hill Harbor system. Further, the proposed project will not have an adverse impact on marine resources or wildlife habitat as determined by DMR and MDIFW. For these reasons, the Department determined that compensation is not required.

The Department finds that the applicants have avoided and minimized waterbody impacts to the greatest extent practicable, and that the proposed project represents the least environmentally damaging alternative that meets the overall purpose of the project.

7. <u>DREDGE SPOILS TRANSPORTATION CONSIDERATIONS:</u>

DMR requests the applicants or contractor conduct outreach via written notice thirty days in advance of the project start date to the local Lobster Zone Councils B and C via coordination with DMR staff[i] who will send email notification to all Zone B and C members as well as all appropriate scallop and urchin harvesters. Notice should include specific nautical bearings of the haul route and width for the safe travel of the spoils barge to avoid entanglement with fishing gear. DMR also requests the dredge company contracted by the ACOE equip their barge with a Vessel Monitoring System to track its transit activity along the haul route from the proposed project location to the two proposed disposal sites in State waters and provide a mechanism by which area fishermen may seek compensation for lost gear should the barge deviate from the specified haul route. DMR requested that the applicants publish a notice to fisherman in the Commercial Fisheries News and a notice to mariners via local marine radio prior to the dredging operation. The notice must describe the barge route for the dredge spoils disposal and identify the procedure for responding to inquiries regarding the loss of fishing gear during the dredging operations. As required by 38 M.R.S.A. Section 480-D(9), DMR provided an assessment of the proposed project and its impact on the fishing industry as stated in Finding 4. To minimize this impact, the Department finds that the applicants must:

a. Clearly mark and designate the dredging area and the transportation route from dredge sites to Eastern Passage Disposal Site (EPDS).

b. Publish in a newspaper of general circulation in the area adjacent to the route the approved transportation route of the dredge spoils.

c. Publish in a newspaper of general circulation in the area adjacent to the route a procedure that the applicants will use to respond to inquiries regarding the loss of fishing gear during the dredging operation.

Provided the applicants meet the requirements outlined above, the Department finds that the dredge transportation route minimizes impacts on the fishing industry.

8. <u>OTHER CONSIDERATIONS</u>:

The Department finds, based on the design, proposed construction methods, and location, the proposed project will not inhibit the natural transfer of soil from the terrestrial to the marine environment, will not interfere with the natural flow of any surface or subsurface waters, and will not cause or increase flooding. The proposed project is not located in a coastal sand dune system, is not a crossing of an outstanding river segment, and does not involve dredge spoils disposal or the transport of dredge spoils by water.

BASED on the above findings of fact, and subject to the conditions listed below, the Department makes the following conclusions pursuant to 38 M.R.S. §§ 480-A–480-JJ and Section 401 of the Clean Water Act (33 U.S.C. § 1341):

A. The proposed activity will not unreasonably interfere with existing scenic, aesthetic, recreational, or navigational uses.

B. The proposed activity will not cause unreasonable erosion of soil or sediment.

C. The proposed activity will not unreasonably inhibit the natural transfer of soil from the terrestrial to the marine or freshwater environment.

D. The proposed activity will not unreasonably harm any significant wildlife habitat, freshwater wetland plant habitat, threatened or endangered plant habitat, aquatic or adjacent upland habitat, travel corridor, freshwater, estuarine, or marine fisheries or other aquatic life provided the applicants meets the requirements outlined in Finding 4 and 7.

E. The proposed activity will not unreasonably interfere with the natural flow of any surface or subsurface waters.

F. The proposed activity will not violate any state water quality law including those governing the classifications of the State's waters.

G. The proposed activity will not unreasonably cause or increase the flooding of the alteration area or adjacent properties.

H. The proposed activity is not on or adjacent to a sand dune.

I. The proposed activity is not on an outstanding river segment as noted in 38 M.R.S. § 480-P.

THEREFORE, the Department APPROVES the above noted application of U.S. ARMY CORPS OF ENGINEERS/TOWN OF BLUE HILL to dredge the Blue Hill Harbor as described in Finding 1, SUBJECT TO THE ATTACHED CONDITIONS, and all applicable standards and regulations:

1. Standard Conditions of Approval, a copy attached.

2. The applicants shall take all necessary measures to ensure that their activities or those of their agents do not result in measurable erosion of soil on the site during the construction of the project covered by this approval.

3. Severability. The invalidity or unenforceability of any provision, or part thereof, of this License shall not affect the remainder of the provision or any other provisions. This License shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

4. All work shall be completed between November 8 and April 8.

5. The applicants shall:

   a. Clearly mark and designate the dredging area and the transportation route from dredge sites to Eastern Passage Disposal Site (EPDS).

   b. Publish in a newspaper of general circulation in the area adjacent to the route the approved transportation route of the dredge spoils.

   c. Publish in a newspaper of general circulation in the area adjacent to the route a procedure that the applicants will use to respond to inquiries regarding the loss of fishing gear during the dredging operation.

6. The applicants or contractor shall conduct outreach via written notice thirty days in advance of the project start date to the local Lobster Zone Councils B and C via coordination with DMR staff. Notice shall include specific nautical bearings of the haul route and width for the safe travel of the spoils barge to avoid entanglement with fishing gear.

7. The dredge company contracted by the applicants shall equip their barge with a Vessel Monitoring System to track its transit activity along the haul route from the proposed project location to the two proposed disposal sites in State waters and provide a mechanism by which area fishermen may seek compensation for lost gear should the barge deviate from the specified haul route.

8. The applicants shall publish a notice to fisherman in the Commercial Fisheries News and a notice to mariners via local marine radio prior to the dredging operation. The notice must describe the barge route for the dredge spoils disposal and identify the procedure for responding to inquiries regarding the loss of fishing gear during the dredging operations.

THIS APPROVAL DOES NOT CONSTITUTE OR SUBSTITUTE FOR ANY OTHER REQUIRED STATE, FEDERAL OR LOCAL APPROVALS NOR DOES IT VERIFY COMPLIANCE WITH ANY APPLICABLE SHORELAND ZONING ORDINANCES.

DONE AND DATED IN AUGUSTA, MAINE, THIS 10TH DAY OF MARCH, 2021.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY:____
For: Melanie Loyzim, Commissioner

FILED
March 10, 2021
State of Maine
Board of Environmental Protection

PLEASE NOTE THE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES.
JD/L28747ANBN/ATS#87285/86886

Natural Resources Protection Act (NRPA)
Standard Conditions

THE FOLLOWING STANDARD CONDITIONS SHALL APPLY TO ALL PERMITS GRANTED UNDER THE NATURAL RESOURCES PROTECTION ACT, 38 M.R.S. §§ 480-A ET SEQ., UNLESS OTHERWISE SPECIFICALLY STATED IN THE PERMIT.

A. Approval of Variations From Plans. The granting of this permit is dependent upon and limited to the proposals and plans contained in the application and supporting documents submitted and affirmed to by the applicant. Any variation from these plans, proposals, and supporting documents is subject to review and approval prior to implementation.

B. Compliance With All Applicable Laws. The applicant shall secure and comply with all applicable federal, state, and local licenses, permits, authorizations, conditions, agreements, and orders prior to or during construction and operation, as appropriate.

C. Erosion Control. The applicant shall take all necessary measures to ensure that his activities or those of his agents do not result in measurable erosion of soils on the site during the construction and operation of the project covered by this Approval.

D. Compliance With Conditions. Should the project be found, at any time, not to be in compliance with any of the Conditions of this Approval, or should the applicant construct or operate this development in any way other the specified in the Application or Supporting Documents, as modified by the Conditions of this Approval, then the terms of this Approval shall be considered to have been violated.

E. Time frame for approvals. If construction or operation of the activity is not begun within four years, this permit shall lapse and the applicant shall reapply to the Board for a new permit. The applicant may not begin construction or operation of the activity until a new permit is granted. Reapplications for permits may include information submitted in the initial application by reference. This approval, if construction is begun within the four-year time frame, is valid for seven years. If construction is not completed within the seven-year time frame, the applicant must reapply for, and receive, approval prior to continuing construction.

F. No Construction Equipment Below High Water. No construction equipment used in the undertaking of an approved activity is allowed below the mean high water line unless otherwise specified by this permit.

G. Permit Included In Contract Bids. A copy of this permit must be included in or attached to all contract bid specifications for the approved activity.

H. Permit Shown To Contractor. Work done by a contractor pursuant to this permit shall not begin before the contractor has been shown by the applicant a copy of this permit.

Revised September 2016

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION, AUGUSTA, MAINE 04333

Erosion Control for Homeowners

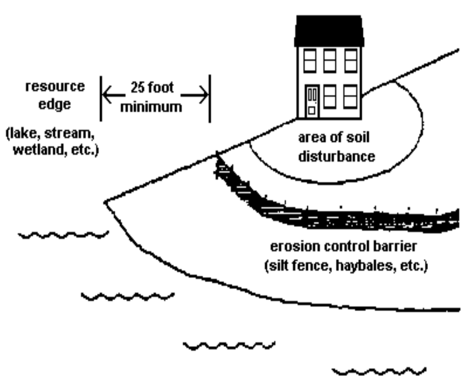
Before Construction

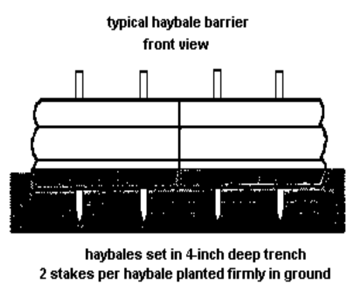
1. If you have hired a contractor, make sure you discuss your permit with them. Talk about what measures they plan to take to control erosion. Everybody involved should understand what the resource is, and where it is located. Most people can identify the edge of a lake or river. However, the edges of wetlands are often not so obvious. Your contractor may be the person actually pushing dirt around, but <u>you are both responsible</u> for complying with the permit.

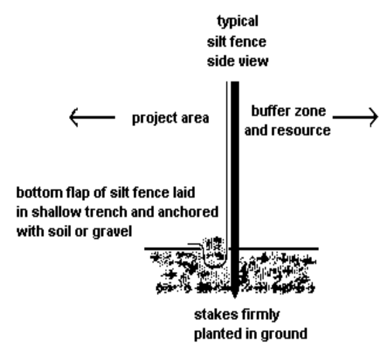
2. Call around to find where erosion control materials are available. Chances are your contractor has these materials already on hand. You probably will need silt fence, hay bales, wooden stakes, grass seed (or conservation mix), and perhaps filter fabric. Places to check for these items include farm & feed supply stores, garden & lawn suppliers, and landscaping companies. It is not always easy to find hay or straw during late winter and early spring. It also may be more expensive during those times of year. Plan ahead – buy a supply early and keep it under a tarp.

3. Before any soil is disturbed, make sure an erosion control barrier has been installed. The barrier can be either a silt fence, a row of staked hay bales, or both. Use the drawings below as a guide for correct installation and placement. The barrier should be placed as close as possible to the soil-disturbance activity.

4. If a contractor is installing the erosion control barrier, double check it as a precaution. Erosion control barriers should be installed "on the contour", meaning at the same level or elevation across the land slope, whenever possible. This keeps stormwater from flowing to the lowest point along the barrier where it can build up and overflow or destroy the barrier.







During Construction

1. Use lots of hay or straw mulch on disturbed soil. The idea behind mulch is to prevent rain from striking the soil directly. It is the force of raindrops hitting the bare ground that makes the soil begin to move downslope with the runoff water, and cause erosion. More than 90% of erosion is prevented by keeping the soil covered.

2. Inspect your erosion control barriers frequently. This is especially important after a rainfall. If there is muddy water leaving the project site, then your erosion controls are not working as intended. You or your contractor then need to figure out what can be done to prevent more soil from getting past the barrier.

3. Keep your erosion control barrier up and maintained until you get a good and healthy growth of grass and the area is permanently stabilized.

After Construction

1. After your project is finished, seed the area. Note that all ground covers are not equal. For example, a mix of creeping red fescue and Kentucky bluegrass is a good choice for lawns and other high-maintenance areas. But this same seed mix is a poor selection for stabilizing a road shoulder or a cut bank that you don't intend to mow. Your contractor may have experience with different seed mixes, or you might contact a seed supplier for advice.

2. Do not spread grass seed after September 15. There is the likelihood that germinating seedlings could be killed by a frost before they have a chance to become established. Instead, mulch the area with a thick layer of hay or straw. In the spring, rake off the mulch and then seed the area. Don't forget to mulch again to hold in moisture and prevent the seed from washing away or being eaten by birds or other animals.

3. Keep your erosion control barrier up and maintained until you get a good and healthy growth of grass and the area is permanently stabilized.

Why Control Erosion?

To Protect Water Quality

When soil erodes into protected resources such as streams, rivers, wetlands, and lakes, it has many bad effects. Eroding soil particles carry phosphorus to the water. An excess of phosphorus can lead to explosions of algae growth in lakes and ponds called blooms. The water will look green and can have green slime in it. If you are near a lake or pond, this is not pleasant for swimming, and when the soil settles out on the bottom, it smothers fish eggs and small animals eaten by fish. There many other effects as well, which are all bad.

To Protect the Soil

It has taken thousands of years for our soil to develop. It usefulness is evident all around us, from sustaining forests and growing our garden vegetables, to even treating our septic wastewater! We cannot afford to waste this valuable resource.

To Save Money ($$)

Replacing topsoil or gravel washed off your property can be expensive. You end up paying twice because State and local governments wind up spending your tax dollars to dig out ditches and storm drains that have become choked with sediment from soil erosion.

DEP INFORMATION SHEET

Appealing a Department Licensing Decision

Dated: November 2018 **Contact: (207) 287-2452**

SUMMARY

There are two methods available to an aggrieved person seeking to appeal a licensing decision made by the Department of Environmental Protection's (DEP) Commissioner: (1) an administrative process before the Board of Environmental Protection (Board); or (2) a judicial process before Maine's Superior Court. An aggrieved person seeking review of a licensing decision over which the Board had original jurisdiction may seek judicial review in Maine's Superior Court.

A judicial appeal of final action by the Commissioner or the Board regarding an application for an expedited wind energy development (35-A M.R.S. § 3451(4)) or a general permit for an offshore wind energy demonstration project (38 M.R.S. § 480-HH(1)) or a general permit for a tidal energy demonstration project (38 M.R.S. § 636-A) must be taken to the Supreme Judicial Court sitting as the Law Court.

This information sheet, in conjunction with a review of the statutory and regulatory provisions referred to herein, can help a person to understand his or her rights and obligations in filing an administrative or judicial appeal.

I. ADMINISTRATIVE APPEALS TO THE BOARD

LEGAL REFERENCES

The laws concerning the DEP's *Organization and Powers*, 38 M.R.S. §§ 341-D(4) & 346; the *Maine Administrative Procedure Act*, 5 M.R.S. § 11001; and the DEP's *Rules Concerning the Processing of Applications and Other Administrative Matters* ("Chapter 2"), 06-096 C.M.R. ch. 2.

DEADLINE TO SUBMIT AN APPEAL TO THE BOARD

The Board must receive a written appeal within 30 days of the date on which the Commissioner's decision was filed with the Board. Appeals filed more than 30 calendar days after the date on which the Commissioner's decision was filed with the Board will be dismissed unless notice of the Commissioner's license decision was required to be given to the person filing an appeal (appellant) and the notice was not given as required.

HOW TO SUBMIT AN APPEAL TO THE BOARD

Signed original appeal documents must be sent to: Chair, Board of Environmental Protection, 17 State House Station, Augusta, ME 04333-0017. An appeal may be submitted by fax or e-mail if it contains a scanned original signature. It is recommended that a faxed or e-mailed appeal be followed by the submittal of mailed original paper documents. The complete appeal, including any attachments, must be received at DEP's offices in Augusta on or before 5:00 PM on the due date; materials received after 5:00 pm are not considered received until the following day. The risk of material not being received in a timely manner is on the sender, regardless of the method used. The appellant must also send a copy of the appeal documents to the Commissioner of the DEP; the applicant (if the appellant is not the applicant in the license proceeding at issue); and if a hearing was held on the application, any intervenor in that hearing process. All of the information listed in the next section of this information sheet must be submitted at the time the appeal is filed.

INFORMATION APPEAL PAPERWORK MUST CONTAIN

Appeal materials must contain the following information at the time the appeal is submitted:

1. *Aggrieved Status*. The appeal must explain how the appellant has standing to maintain an appeal. This requires an explanation of how the appellant may suffer a particularized injury as a result of the Commissioner's decision.
2. *The findings, conclusions, or conditions objected to or believed to be in error.* The appeal must identify the specific findings of fact, conclusions regarding compliance with the law, license conditions, or other aspects of the written license decision or of the license review process that the appellant objects to or believes to be in error.
3. *The basis of the objections or challenge.* For the objections identified in Item #2, the appeal must state why the appellant believes that the license decision is incorrect and should be modified or reversed. If possible, the appeal should cite specific evidence in the record or specific licensing requirements that the appellant believes were not properly considered or fully addressed.
4. *The remedy sought.* This can range from reversal of the Commissioner's decision on the license or permit to changes in specific permit conditions.
5. *All the matters to be contested*. The Board will limit its consideration to those matters specifically raised in the written notice of appeal.
6. *Request for hearing.* If the appellant wishes the Board to hold a public hearing on the appeal, a request for public hearing must be filed as part of the notice of appeal, and must include an offer of proof in accordance with Chapter 2. The Board will hear the arguments in favor of and in opposition to a hearing on the appeal and the presentations on the merits of an appeal at a regularly scheduled meeting. If the Board decides to hold a public hearing on an appeal, that hearing will then be scheduled for a later date.
7. *New or additional evidence to be offered.* If an appellant wants to provide evidence not previously provided to DEP staff during the DEP's review of the application, the request and the proposed evidence must be submitted with the appeal. The Board may allow new or additional evidence, referred to as supplemental evidence, to be considered in an appeal only under very limited circumstances. The proposed evidence must be relevant and material, and (a) the person seeking to add information to the record must show due diligence in bringing the evidence to the DEP's attention at the earliest possible time in the licensing process; <u>or</u> (b) the evidence itself must be newly discovered and therefore unable to have been presented earlier in the process. Specific requirements for supplemental evidence are found in Chapter 2 § 24.

OTHER CONSIDERATIONS IN APPEALING A DECISION TO THE BOARD

1. *Be familiar with all relevant material in the DEP record.* A license application file is public information, subject to any applicable statutory exceptions, and is made easily accessible by the DEP. Upon request, the DEP will make application materials available during normal working hours, provide space to review the file, and provide an opportunity for photocopying materials. There is a charge for copies or copying services.
2. *Be familiar with the regulations and laws under which the application was processed, and the procedural rules governing your appeal.* DEP staff will provide this information on request and answer general questions regarding the appeal process.
3. *The filing of an appeal does not operate as a stay to any decision.* If a license has been granted and it has been appealed, the license normally remains in effect pending the processing of the appeal. Unless a stay of the decision is requested and granted, a license holder may proceed with a project pending the outcome of an appeal, but the license holder runs the risk of the decision being reversed or modified as a result of the appeal.

WHAT TO EXPECT ONCE YOU FILE A TIMELY APPEAL WITH THE BOARD

The Board will formally acknowledge receipt of an appeal, and will provide the name of the DEP project manager assigned to the specific appeal. The notice of appeal, any materials accepted by the Board Chair as supplementary evidence, any materials submitted in response to the appeal, and relevant excerpts from the DEP's application review file will be sent to Board members with a recommended decision from DEP staff. The appellant, the license holder if different from the appellant, and any interested persons are notified in advance of the date set for Board consideration of an appeal or request for public hearing. The appellant and the license holder will have an opportunity to address the Board at the Board meeting. With or without holding a public hearing, the Board may affirm, amend, or reverse a Commissioner decision or remand the matter to the Commissioner for further proceedings. The Board will notify the appellant, the license holder, and interested persons of its decision.

II. JUDICIAL APPEALS

Maine law generally allows aggrieved persons to appeal final Commissioner or Board licensing decisions to Maine's Superior Court (see 38 M.R.S. § 346(1); 06-096 C.M.R. ch. 2; 5 M.R.S. § 11001; and M.R. Civ. P. 80C). A party's appeal must be filed with the Superior Court within 30 days of receipt of notice of the Board's or the Commissioner's decision. For any other person, an appeal must be filed within 40 days of the date the decision was rendered. An appeal to court of a license decision regarding an expedited wind energy development, a general permit for an offshore wind energy demonstration project, or a general permit for a tidal energy demonstration project may only be taken directly to the Maine Supreme Judicial Court. See 38 M.R.S. § 346(4).

Maine's Administrative Procedure Act, DEP statutes governing a particular matter, and the Maine Rules of Civil Procedure must be consulted for the substantive and procedural details applicable to judicial appeals.

ADDITIONAL INFORMATION

If you have questions or need additional information on the appeal process, for administrative appeals contact the Board's Executive Analyst at (207) 287-2452, or for judicial appeals contact the court clerk's office in which your appeal will be filed.

Note: The DEP provides this INFORMATION SHEET for general guidance only; it is not intended for use as a legal reference. Maine law governs an appellant's rights.

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[i] Zone Council member contact information is available at: http://www.maine.gov/dmr/council/lobsterzonecouncils/addresses.pdf. In order to coordinate email notification to harvesters via DMR, please contact Sarah Cotnoir, Lobster Resource Management Coordinator, at sarah.cotnoir@maine.gov or (207) 624-6596 and Melissa Smith, Scallop Resource Management Coordinator, at melissa.smith@maine.gov or (207) 441-5040.

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD MA 01742-2751

January 28, 2020

Planning Division
Environmental Branch

Mr. Timothy Timmermann
Office of Environmental Review
EPA New England-Region 1
5 Post Office Square, Suite 100
Mail Code OEP 06-3
Boston, MA 02109-3912

Dear Mr. Timmermann:

Thank you for your letter of May 27, 2020 regarding the US Army Corps of Engineers (USACE) proposed Blue Hill Harbor Navigation Improvement Project in Blue Hill, Maine. This letter serves to address the comments that were provided. Each of EPA's comments are noted below with our responses following.

Comment 1: We recommend that intertidal or shallow water disposal be more fully considered in the final EA. For example, properly designed disposal of clean dredged material at impaired intertidal or shallow subtidal sites (following removal of existing contaminated sediments as warranted), either in the vicinity of the Blue Hill Harbor project or at appropriate off site locations, could serve to restore or enhance these degraded areas and provide habitat development. We recommend that the final EA analyze the availability and practicability of this disposal alternative, which could also serve to minimize impacts and provide compensatory mitigation for the permanent loss of 3.7 acres of intertidal mudflat habitat resulting from the proposed project.

Response: During the initial stages of the feasibility study for the proposed Blue Hill Harbor project, we considered the need for compensatory mitigation for the loss of intertidal habitat. However, initial sediment testing revealed the presence of contamination in those intertidal portions of the project area that would have driven the need for mitigation. We performed additional rounds of chemical testing to define the spatial extent of the contamination and conducted a macrobenthic community survey within the intertidal area to aid in the determination of the intertidal area's functions and values. Based upon the concentrations of contaminants and the corresponding low abundance and diversity of the benthic fauna, we concluded that the removal of the contaminated sediments would allow a more productive subtidal benthic community to establish and therefore compensatory mitigation was unwarranted.

We attempted to identify environmentally acceptable, practicable placement sites, including beneficial uses of dredged material to create or restore coastal habitat. Neither we, nor any of the agencies that participated in the early formulation process, were able to identify suitable sites to use dredged material to restore intertidal habitats. We did attempt to identify additional impacted intertidal areas within Blue Hill Harbor while looking for the contaminant source. However, none were found. This is not a sediment remediation project and efforts to identify other impaired intertidal or shallow subtidal sites through additional sampling and testing at offsite locations as suggested are not within the scope of this feasibility study.

Given the contaminated condition of the affected intertidal flats, the environmental benefit of the project in reducing the contamination at the site, and the lack of practicable sites to provide intertidal habitat, we are not proposing additional mitigation for the intertidal impacts or beneficial use of dredged material to restore intertidal habitat.

Comment 2: We recommend that the final EA provide more detailed information on the design methodology for the channel turn configuration.

Response: We re-examined the width of the channel bend (about mid-way between the wharf and deep water) where a bend widener had been used to ease the turn for vessels underway in the harbor and determined that a bend widener of lesser width could be used at this point given the angle of the turn. The widener at this point has been reduced to a total of 100 feet including the 80-foot channel width and limited to the south side of the turn.

Comment 3: We recommend that the final EA provide more detailed information to better explain the rationale for the turning basin design, to show that reduced dimensions or alternate configurations of the turning basin to lessen aquatic impacts are not practicable, and to demonstrate that the impacts of the selected design have been minimized. As part of this discussion we recommend that the analysis explain why a non-deep draft project would require a greater turning basin width than the width recommended for deep draft projects. Specific town needs that influenced the turning basin design (as referenced in the DEA) should also be clarified.

Response: You requested that we re-examine our determination on appropriate size of the turning basin at the Town Wharf. We have determined that the basin as originally designed is the proper dimension for this feature. Your letter discuses design for deep draft navigation project turning basins. In deep draft projects turning basin design is typically a minimum of 1.5 times the length of the largest vessels using the turning basin with increases to account for currents and other factors. This is possible because vessels of those sizes, several hundred to more than 1000 feet in length, are typically operating with the assistance of a number of tugs, have multiple screws, multiple rudders, and bow thrusters. Deep draft turning basins are also only used by one vessel at a time. These factors allow for a much smaller basin relative to vessel size than is possible for small craft. Small harbor turning basins are located and sized to provide access to a public landing and are often located at the head of a navigable waterway, and such is the case at Blue Hill and many other New England Harbors. The typical design for a small harbor turning basin is twice the channel width. At Blue Hill the 80-foot channel has a 160-foot wide turning basin at its head along the wharf. The basin serves as the channel access to the wharf, the turning area along the wharf, area for launching of vessels from the ramp, and the waiting area for fishing boats and other users to anchor or hold position while awaiting their turn at the wharf to provision, fuel, ramp out, or offload. Based on these requirements, no changes have been made to the basin dimensions.

Comment 4: We recommend that the final EA provide a description of compensatory mitigation for the project to address unavoidable, minimized impacts. In this case, the goal of compensatory mitigation is to restore or enhance intertidal habitat, either in the vicinity of the Blue Hill Harbor project, or at offsite locations. In the absence of adequate available intertidal mitigation sites, restoration of shallow subtidal habitat should be considered. As noted above, properly designed disposal of clean dredged material at impaired intertidal or shallow subtidal sites (following removal of contaminated sediments as warranted) could serve to restore or enhance these degraded areas and provide habitat development.

Other compensatory mitigation options that could be considered include but are not limited to restoration of former borrow sites to appropriate intertidal or shallow subtidal elevations; removal of derelict coastal infrastructure and restoration of habitat at those sites; and installation of conservation moorings at appropriate locations to restore or enhance impaired aquatic resources. EPA is willing to work with the USACE to help develop a compensatory mitigation plan for the project.

Response: Please see response to Comment #2. Due to the fact that the existing intertidal habitat is adversely affected by high concentrations of contaminants and, therefore, supports a low-quality benthic community, the dredging project itself will result in the removal of contaminated sediment and restoration of shallow subtidal habitat (6 ft MLLW) as recommended in Comment 4.

If you or your staff have any questions or require additional information, please feel free to contact Mr. Todd Randall, the Environmental Resources Team Member at (978) 318-8518 or Mr. Mark Habel, the Project Manager, at (978) 318-8871.

Sincerely,

KENNELLY.JOHN.R.1228532939 Digitally signed by KENNELLY.JOHN.R.1228532939 Date: 2021.01.29 10:55:20 -05'00'

John Kennelly
Chief, Planning Division

Enclosures (via electronic transfer)

Copies furnished (via email):

Ms. Regina Lyons: lyons.regina@epa.gov
Mr. Mike Marsh (EPA)
Mr. Steven Wolf (EPA)

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD MA 01742-2751

December 3, 2020

Planning Division
Environmental Branch

Ms. Jessica Damon
Maine Department of Environmental Protection
106 Hogan Road
Bangor, Maine 04401

Mr. Todd Burrowes
Maine Coastal Program
Department of Marine Resources
93 State House Station
Augusta, ME 04333

Dear Ms. Damon and Mr. Burrowes:

This letter is to request a Water Quality Certification and the State's concurrence with the US Army Corps of Engineers (USACE) Coastal Zone Management Consistency Determination (CZMCD) for the Blue Hill Harbor, Blue Hill, Maine Navigation Improvement Project. The project would provide improved access to the town landing for the town's fishing fleet and other users of the landing. The project is being recommended under the authority of Section 107 of the River and Harbor Act of 1960, as amended. The Town of Blue Hill is the non-Federal sponsor and cost-sharing partner for this project.

The proposed Federal Navigation Project (FNP) would consist of a 6-foot deep at mean lower low water (MLLW), by 80-foot-wide channel extending about 5,600 feet northwesterly from deep water in outer Blue Hill Harbor to the town landing at Blue Hill. Only the upper 2,600 feet of the project will require dredging, with channel limits in the lower reaches declared for jurisdictional purposes. This channel will be widened at its upper end to form a turning basin, 160 feet wide, adjacent to the town wharf.

Approximately 71,500 cubic yards (CY) of mixed gravel, sand, and silt will be removed from the proposed project area using a mechanical dredge. The 57,600 CY of dredged material deemed suitable for open water disposal will be loaded onto scows and towed about 14 miles to the Eastern Passage Disposal Site (EPDS), a previously used disposal site near Dodge Island, for placement. Approximately 10,600 CY of material from the upper two feet of the inner harbor, which was deemed unsuitable for open water placement due to the presence of polycyclic aromatic hydrocarbons (PAHs) and metals, will be placed in a confined aquatic disposal (CAD) cell within Blue Hill Harbor. The CAD cell will be constructed by removing approximately 15,500 CY of suitable of mixed gravel, sand, and silt material from a 1.8-acre area adjacent to the designated channel. Material generated from the CAD cell creation will be placed at the EPDS. A small amount of the suitable dredged material from the lower channel reaches, about 3,300 CY, would be used to cap the CAD cell after it is filled. All remaining suitable material, including material dredged to create the CAD cell (a total of 73,100 CY) would be placed at the previously used Eastern Passage Disposal Site.

All dredging will be by mechanical dredge and scow that will be able to operate in shallow draft areas in the channel. Construction would be done using private contractor, under contract to the government. Construction will occur between November 1 and April 1 in the year in which funding becomes available and is expected to take three to four months to complete.

Attached are the Natural Resources Protection Act (NRPA) form and associated appendices that USACE has agreed to use as a mechanism to request a water quality certificate and concurrence of our CZMCD with Maine's Coastal Zone Management Program. A copy of the Draft Environmental Assessment, which is referenced in the NRPA form, is also being sent via file transfer.

USACE has determined that this proposal is consistent with the Maine Coastal Zone Management Program to the maximum extent practicable and request your concurrence with this determination as well as 401 Water Quality Certification (WQC) for this action.

Please feel free to contact me at (978) 318-8505 or Mr. Todd Randall, the Environmental Resources Team Member at (978) 318-8518 if you have any questions or require additional information.

Sincerely,

KENNELLY.JOHN.R.1228532939
Digitally signed by KENNELLY.JOHN.R.1228532939
Date: 2020.12.03 12:11:27 -05'00'

John R. Kennelly
Chief of Planning

Enclosures

CF: Town of Blue Hill, Maine

GARFO ESA Section 7: NLAA Program Verification Form

(Please submit a signed version of this form, together with any project plans, maps, supporting analyses, etc., to nmfs.gar.esa.section7@noaa.gov with "**USACE NLAA Program: [Application Number]**" in the subject line)

Section 1: General Project Details

Application Number:			
Reinitiation:	No		
Applicant(s):	US Army Corps of Engineers		
Permit Type:	Civil Works/Federal Navigation		
Anticipated project start date (e.g., 10/1/2020)	11/01/2022		
Anticipated project end date (e.g., 12/31/2022 – if there is no permit expiration date, write "N/A")	04/01/2023		
Project Type/Category (check all that apply to entire action):			
☐	Aquaculture (shellfish) and artificial reef creation	☐	Mitigation (fish/wildlife enhancement or restoration)
☑	Dredging and disposal/beach nourishment	☐	Bank stabilization
☐	Piers, ramps, floats, and other structures	☐	If other, describe project type category:
Town/City:	Blue Hill	Zip:	04614
State:	Maine	Water body:	Blue Hill Harbor

Project/Action Description **and** Purpose (*include relevant permit conditions that are not captured elsewhere on form*):		
The proposed Federal Navigation Project was studied and would be implemented in response to a request from the non-Federal sponsor and cost-sharing partner, the Town of Blue Hill. The proposed project includes dredging a 6-foot deep mean lower low water (MLLW), 80-foot wide channel from the outer harbor, extending 5,600 feet northwest to the town wharf. Only the upper 2,600 feet of the project will require dredging, with channel limits in the lower reaches declared for jurisdictional purposes. This channel would be widened at its upper end to form a turning basin, 160 feet by 80 feet, adjacent to the town wharf. Approximately 62,500 cubic yards (CY) of mixed gravel, sand, and silt would be removed from the proposed project area using a mechanical dredge. The 52,000 CY of dredged material deemed suitable for open water disposal would be loaded onto scows and towed about 11 miles to the Eastern Passage Disposal Site (EPDS), a previously used disposal site near Dodge Island, for placement. Approximately 10,500 CY of material from the upper two feet of the inner harbor, were deemed unsuitable for open water placement due to the presence of polycyclic aromatic hydrocarbons (PAHs) and metals, and will be		
Type of Bottom Habitat Modified:	Permanent/Temporary:	Area (acres):
Silt/Mud/Clay (saline)	Temporary	25.50
Silt/Mud/Clay (saline)	Permanent	3.70
Select Type of Bottom Habitat	Select Permanent or Temporary	
Project Latitude (e.g., 42.625884)	44.409033	
Project Longitude (e.g., -70.646114)	-68.577540	
Mean Low Water (MLW)(m)	0.00	
Mean High Water (MHW)(m)	4.00	

Width (m) of water body in action area:	Stressor Category (stressor that extends furthest distance into water body – e.g., turbidity plume; sound pressure wave):	Max extent (m) of stressor into the water body:
500.00	Turbidity around dredge plant	732.00

Section 2: ESA-listed species and/or critical habitat in the action area:

✔	Atlantic sturgeon (all DPSs)	✔	Kemp's ridley sea turtle
☐	Atlantic sturgeon critical habitat Indicate which DPS : Select DPS	✔	Loggerhead sea turtle (NW Atlantic DPS)
✔	Shortnose sturgeon	✔	Leatherback sea turtle
✔	Atlantic salmon (GOM DPS)	☐	North Atlantic right whale
☐	Atlantic salmon critical habitat (GOM DPS)	☐	North Atlantic right whale critical habitat
✔	Green sea turtle (N. Atlantic DPS)	☐	Fin whale

* Please consult GARFO PRD's ESA Section 7 Mapper for ESA-listed species and critical habitat information for your action area at: https://www.fisheries.noaa.gov/new-england-mid-atlantic/consultations/section-7-species-critical-habitat-information-maps-greater.

Section 3: NLAA Determination (check all applicable fields):
If the Project Design Criteria (PDC) is met, select Yes. If the PDC is not applicable (N/A) for your project (e.g., the stressor category is not included for your project activity, or for PDC 2, your project does not occur within the range of the GOM DPS of Atlantic salmon), select N/A. If the PDC is applicable, but is not met, leave both boxes blank and provide a justification for that PDC in Section 4.

a) GENERAL PDC			
Yes	N/A	PDC #	PDC Description
☑	☐	1.	No portion of the proposed action will individually or cumulatively have an adverse effect on ESA-listed species or designated critical habitat.
☑	☐	2.	No portion of the proposed action will occur in the tidally influenced portion of rivers/streams where Atlantic salmon presence is possible from April 10–November 7. **Note**: If the project will occur within the geographic range of the GOM DPS Atlantic salmon but their presence is not expected following the best available commercial scientific data, the work window does not need to be applied (include reference in project description).
☑	☐	3.	No portion of the proposed action that may affect shortnose or Atlantic sturgeon will occur in areas identified as spawning grounds as follows: i. Gulf of Maine: April 1–Aug. 31 ii. Southern New England/New York Bight: Mar. 15–Aug. 31 iii. Chesapeake Bay: March 15–July 1 and Sept. 15–Nov. 1 **Note**: If river specific information exists that provides better or more refined time of year information, those dates may be substituted with NMFS approval (include reference in project description).
☑	☐	4.	No portion of the proposed action that may affect shortnose or Atlantic sturgeon will occur in areas identified as overwintering grounds, where dense aggregations are known to occur, as follows: i. Gulf of Maine: Oct. 15–April 30 ii. Southern New England/ New York Bight: Nov. 1–Mar. 15 iii. Chesapeake Bay: Nov. 1–Mar. 15 **Note**: If river specific information exists that provides better or more refined time of year information, those dates may be substituted with NMFS approval (include reference in project description).
☐	☑	5.	Within designated Atlantic salmon critical habitat, no portion of the proposed action will affect spawning and rearing areas (PBFs 1-7).
☐	☑	6.	Within designated Atlantic sturgeon critical habitat, no work will affect hard bottom substrate (e.g., rock, cobble, gravel, limestone, boulder, etc.) in low salinity waters (i.e., 0.0-0.5 parts per thousand) (PBF 1).

Yes	N/A	PDC #	PDC Description
☑	☐	7.	Work will result in no or only temporary/short-term changes in water temperature, water flow, salinity, or dissolved oxygen levels.
☐	☐	8.	If ESA-listed species are (a) likely to pass through the action area at the time of year when project activities occur; and/or (b) the project will create an obstruction to passage when in-water work is completed, then a zone of passage (~50% of water body) with appropriate habitat for ESA-listed species (e.g., depth, water velocity, etc.) must be maintained (i.e., physical or biological stressors such as turbidity and sound pressure must not create barrier to passage).
☐	☑	9.	Any work in designated North Atlantic right whale critical habitat must have no effect on the physical and biological features (PBFs).
☑	☐	10.	The project will not adversely impact any submerged aquatic vegetation (SAV).
☑	☐	11.	No blasting or use of explosives will occur.

b) The following stressors are applicable to the action (check all that apply – use Stressor Category Table for guidance):	
☐	Sound Pressure
☑	Impingement/Entrapment/Capture
☑	Turbidity/Water Quality
☐	Entanglement (Aquaculture)
☑	Habitat Modification
☑	Vessel Traffic

	Stressor Category					
Activity Category	Sound Pressure	Impingement/ Entrapment/ Capture	Turbidity/ Water Quality	Entanglement	Habitat Mod.	Vessel Traffic
Aquaculture (shellfish) and artificial reef creation	N	N	Y	Y	Y	Y
Dredging and disposal/beach nourishment	N	Y	Y	N	Y	Y

Activity Category	Stressor Category					
	Sound Pressure	Impingement/ Entrapment/ Capture	Turbidity/ Water Quality	Entanglement	Habitat Mod.	Vessel Traffic
Piers, ramps, floats, and other structures	Y	N	Y	N	Y	Y
Transportation and development (e.g., culvert construction, bridge repair)	Y	N	Y	N	Y	Y
Mitigation (fish/wildlife enhancement or restoration)	N	N	Y	N	Y	Y
Bank stabilization and dam maintenance	Y	N	Y	N	Y	Y

c) SOUND PRESSURE PDC

Information for Pile Driving:
If your project includes non-timber piles*, please attach your calculation to this verification form showing that the noise is below the injury thresholds of ESA-listed species in the action area. The GARFO Acoustic Tool is available as one source, should you not have other information:

https://www.fisheries.noaa.gov/new-england-mid-atlantic/consultations/section-7-consultation-technical-guidance-greater-atlantic

*Sound pressure effects from timber and steel sheet piles were analyzed in the NLAA programmatic consultation, so no additional acoustic information is necessary.

	Pile material	Pile diameter/width (inches)	Number of piles	Installation method
a)	Select pile material			Select installation method
b)	Select pile material			Select installation method
c)	Select pile material			Select installation method
d)	Select pile material			Select installation method

Yes	N/A	PDC #	PDC Description
☐	☑	12.	If pile driving is occurring during a time of year when ESA-listed species may be present, and the anticipated noise is above the behavioral noise threshold, a "soft start" is required to allow animals an opportunity to leave the project vicinity before sound pressure levels increase. *In addition to using a soft start at the beginning of the work day for pile driving, one must also be used at any time following cessation of pile driving for a period of 30 minutes or longer.* <u>For impact pile driving</u>: pile driving will commence with an initial set of three strikes by the hammer at 40% energy, followed by a one minute wait period, then two subsequent 3-strike sets at 40% energy, with one-minute waiting periods, before initiating continuous impact driving. <u>For vibratory pile installation</u>: pile driving will be initiated for 15 seconds at reduced energy followed by a one-minute waiting period. This sequence of 15 seconds of reduced energy driving, one-minute waiting period will be repeated two additional times, followed immediately by pile-driving at full rate and energy.
☐	☑	13.	Any new pile supported structure must involve the installation of ≤ 50 piles (below MHW).
☐	☑	14.	All underwater noise (pressure) is below (<) the physiological/injury noise threshold for ESA-species in the action area.

d) IMPINGEMENT/ENTRAINMENT/CAPTURE PDC

Information for Dredging/Disposal:			
Type of dredge:	Mechanical		
Maintenance dredging?:	No	If "Yes", how many acres?	
If maintenance, when was the last dredge cycle?			
New dredging:	Yes	If "Yes", how many acres?	30.00
Estimated number of dredging events covered by permit:	1		
ESA-species exclusion measures required (e.g., cofferdam, turbidity curtain):	No		
If no exclusion measures required, explain why:	Presence of ESA-listed species limited to rare, transient individuals		
Information for Intake Structures:			
Mesh screen size (mm) for temporary intake:			

Yes	N/A	PDC #	PDC Description
✔	☐	15.	Only mechanical, cutterhead, and low volume hopper (e.g., CURRITUCK, ~300 cubic yard maximum bin capacity) dredges may be used.
✔	☐	16.	No new dredging in Atlantic sturgeon or Atlantic salmon critical habitat (maintenance dredging still must meet all other PDCs). New dredging outside Atlantic sturgeon or salmon critical habitat is limited to one time dredge events (e.g., burying a utility line) and minor (≤ 2 acres) expansions of areas already subject to maintenance dredging (e.g., marina/harbor expansion).
✔	☐	17.	Work behind cofferdams, turbidity curtains, or other methods to block access of animals to dredge footprint is required when operationally feasible or beneficial and ESA-listed species are likely to be present (if presence is limited to rare, transient individuals, exclusion methods are not necessary).
☐	✔	18.	Temporary intakes related to construction must be equipped with appropriate sized mesh screening (as determined by GARFO section 7 biologist and/or according to Chapter 11 of the NOAA Fisheries Anadromous Salmonid Passage Facility Design) and must not have greater than 0.5 fps intake velocities, to prevent impingement or entrainment of any ESA-listed species life stage.
☐	✔	19.	No new permanent intake structures related to cooling water, or any other inflow at facilities (e.g. water treatment plants, power plants, etc.).

e) TURBIDITY/WATER QUALITY PDC

Information for Turbidity Producing Activity (excluding disposal):	
ESA-species turbidity control measures required (e.g., turbidity curtain):	No
If no turbidity control measures required, explain why:	Presence of ESA-listed species limited to rare, transient individuals
Information for Dredged Material Disposal:	
Disposal site:	Eastern Passage Disposal Site (EPDS)
Estimated number of trips to disposal site:	25
Relevant disposal site permit/special conditions required (NAE: for offshore disposal, include Group A, B, C, or relevant Long Island Sound consultation):	Group B

Yes	N/A	PDC #	PDC Description
✔	☐	20.	Work behind cofferdams, turbidity curtains, or other methods to control turbidity is required when operationally feasible or beneficial and ESA-listed species are likely to be present (if presence is limited to rare, transient individuals, turbidity control methods are not necessary).
✔	☐	21.	In-water offshore disposal may only occur at designated disposal sites that have been the subject of ESA section 7 consultation with NMFS, where a valid consultation is in place and appropriate permit/special conditions are included.

Yes	N/A	PDC #	PDC Description
✔	☐	22.	Any temporary discharges must meet state water quality standards (e.g., no discharges of substances in concentrations that may cause acute or chronic adverse reactions, as defined by EPA water quality standards criteria).
☐	✔	23.	Only repair, upgrades, relocations and improvements of existing discharge pipes or replacement in-kind are allowed; no new construction of untreated discharges.

f) ENTANGLEMENT PDC

Information for Aquaculture Projects:

Approximate distance from shore (MHW)(m):	
Grow season begins (approximate):	
Grow season ends (approximate):	
Total number of vertical lines:	
Total number of horizontal lines:	
Is any gear seasonally removed from the water? If yes, which parts and when?	

	Aquaculture Gear	Acreage (total permit footprint)	Type of Shellfish Cultivated
a)	Select aquaculture gear		Select type of shellfish cultivated
b)	Select aquaculture gear		Select type of shellfish cultivated
c)	Select aquaculture gear		Select type of shellfish cultivated

Yes	N/A	PDC #	PDC Description
☐	✔	24.	Shell on bottom <50 acres with maximum of 4 corner marker buoys;
☐	✔	25.	Cage on bottom with no loose floating lines <5 acres and minimal vertical lines (1 per string of cages, 4 corner marker buoys);
☐	✔	26.	Floating cages in <3 acres in waters and shallower than -10 feet MLLW with no loose lines and minimal vertical lines (1 per string of cages, 4 corner marker buoys);
☐	✔	27.	Floating upweller docks in >10 feet MLLW.
☐	✔	28.	Any in-water lines, ropes, or chains must be made of materials and installed in a manner to minimize or avoid the risk of entanglement by using thick, heavy, and taut lines that do not loop or entangle. Lines can be enclosed in a rigid sleeve.

g) HABITAT MODIFICATION PDC

Yes	N/A	PDC #	PDC Description
✔	☐	29.	No conversion of habitat type (soft bottom to hard, or vice versa) for aquaculture or reef creation.

	h) VESSEL TRAFFIC PDC

Information for Vessel Traffic:

	Temporary Project Vessel Type	Number of Vessels
a)	Dredge vessel	1
b)	Scow	2
c)	Crew support vessel	2
	Type of Non-Commercial or Aquaculture Vessels Added – *only include if there is a net increase directly/indirectly resulting from project*)	Number of Vessels (*if sum > 2, PDC 33 is not met and justification required in Section 4*)
a)	Select type of non-commercial or aquaculture vessels	
b)	Select type of non-commercial or aquaculture vessels	
	Type of Commercial Vessels Added (*only include if there is a net increase directly/indirectly resulting from project*)	Number of Vessels (*if > 0, PDC 33 is not met and justification required in Section 4*)
a)		
b)		

If no temporary/permanent vessel traffic, briefly explain (e.g., all land-based work, no net increase in vessel traffic)	

Yes	N/A	PDC #	PDC Description
✔	☐	30.	Maintain project vessels operating within the action area to speed limits below 10 knots and dredge vessel speeds of 4 knots maximum, while dredging.
✔	☐	31.	Maintain a 1,500-foot buffer between project vessels and ESA-listed whales and a 150-foot buffer between project vessels and sea turtles unless the vessel is navigating to an in-water disposal site/activity. If the vessel is navigating to an in-water disposal site/activity, refer to and include the conditions contained in the appropriate GARFO-USACE/EPA consultation for the disposal site.
✔	☐	32.	The number of project vessels must be limited to the greatest extent possible, as appropriate to size and scale of project.
✔	☐	33.	The permanent net increase in vessels resulting from a project (e.g., dock/float/pier/boating facility) must not exceed two non-commercial vessels. A project must not result in the permanent net increase of any commercial vessels (e.g., a ferry terminal).

Section 4: Justification for Review under the NLAA Program

If the action is not in compliance with all of the General PDC and appropriate stressor PDC, but you can provide justification and/or special conditions to demonstrate why the project still meets the NLAA determination and is consistent with the aggregate effects considered in the programmatic consultation, you may still certify your project through the NLAA program using this verification form. Please identify which PDC your project does not meet (e.g., PDC 9, PDC 15, PDC 22, etc.) and provide your rationale and justification for why the project is still eligible for the verification form.

To demonstrate that the project is still NLAA, you must explain why the effects on ESA-listed species or critical habitat are **insignificant** (i.e., too small to be meaningfully measured or detected) or **discountable** (i.e., extremely unlikely to occur). **Please use this language in your justification.**

PDC#	Justification
8	The extent of the stressor is greater than the width of the waterway in the area. The project area is a channel within Blue Hill Harbor. The channel is a marginal habitat for any ESA-listed species. Fish or turtles passing through the action area would have alternate ingress/egress routes available and it is unlikely the work would become a passage barrier. The narrowest point of the waterway in the harbor is 500m. The material is a mix of gravel, sand, and silt and is expected to settle quickly once disturbed. The Total Suspended Sediment (TSS) levels expected for mechanical dredging (up to 445 mg/L) are below those shown to have adverse effect on fish (580.0 mg/L for the most sensitive species, with 1,000.0 mg/L more typical; see summary of scientific literature in Burton 1993). Sea turtles breathe air, and would be able to swim away from the turbidity plume and would not be adversely affected by passing through the temporary increase in TSS. TSS is most likely to affect sturgeon and sea turtles if a plume causes a barrier to normal behaviors. However, we expect sturgeon and sea turtles to swim through the plume with
PDC #	
PDC #	

PDC #	

Section 5: USACE Verification of Determination

☐	In accordance with the NLAA Program, USACE has determined that the action complies with all applicable PDC and is not likely to adversely affect listed species.
☑	In accordance with the NLAA Program, the USACE has determined that the action is not likely to adversely affect listed species per the justification and/or special conditions provided in Section 4.

USACE Signature:	Date:
RANDALL.TODD.A.1241930480 Digitally signed by RANDALL.TODD.A.1241930480 Date: 2020.11.20 12:17:58 -05'00'	11/20/2020

Section 6: GARFO Concurrence

☐	In accordance with the NLAA Program, GARFO PRD concurs with USACE's determination that the action complies with all applicable PDC and is not likely to adversely affect listed species or critical habitat.
☑	In accordance with the NLAA Program, GARFO PRD concurs with USACE's determination that the action is not likely to adversely affect listed species or critical habitat per the justification and/or special conditions provided in Section 4.
☐	GARFO PRD does not concur with USACE's determination that the action complies with the applicable PDC (with or without justification), and recommends an individual Section 7 consultation to be completed independent from the NLAA Program.

GARFO Signature:	Date:
MESA GUTIERREZ.ROOSEVELT.ANDRES.1586982881 Digitally signed by MESA GUTIERREZ.ROOSEVELT.ANDRES.1586982881 Date: 2020.11.20 14:49:04 -05'00'	11/20/2020

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1
5 POST OFFICE SQUARE, SUITE 100
BOSTON, MA 02109-3912

OFFICE OF THE
REGIONAL ADMINISTRATOR

May 27, 2020

John Kennelly
Chief, Planning Division
U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, Massachusetts 01742-2751

RE: Section 107 Navigation Improvement Project Environmental Assessment, Finding of No Significant Impact and Clean Water Act Section 404(b)(1) Evaluation for Improvement Dredging in Blue Hill Harbor in Blue Hill, Maine

Dear Mr. Kennelly:

We are writing in response to your request for comments on the U.S. Army Corps of Engineers (USACE) Draft Environmental Assessment (DEA) for proposed improvement dredging of Blue Hill Harbor in Blue Hill, Maine. We submit the following response on the DEA in accordance with our responsibilities under the National Environmental Policy Act (NEPA), Section 309 of the Clean Air Act. This comment letter also provides our comments on the 404(b)(1) Evaluation for the project under Section 404 of the Clean Water Act.[1]

EPA reviewed the DEA and it is our understanding that the USACE proposes to dredge a 6-foot deep, 80 foot-wide channel extending from the outer harbor 2,500 feet to the Blue Hill town wharf. The proposed project also includes a turning basin measuring 160 feet by 80 feet adjacent to the town wharf. The dredging is expected to generate 62,500 cubic yards of sand, gravel and silt that will be disposed at the Eastern Passage Disposal Site (52,000 cubic yards) off Mount Desert Island and at a proposed Confined Aquatic Disposal (CAD) site (10,500 cubic yards) within Blue Hill Harbor. All the material will be dredged by mechanical means.

The improvement dredging proposed for Blue Hill Harbor "would provide all tide access to the Blue Hill town landing." This increased access would raise the efficiency of fishing operations while also reducing vessel groundings and accidents, increasing emergency access to the water and improving access to shore-based pump out facilities. We do not question the need for the navigation improvements the proposed project would provide.

Based on our review we have several comments and concerns that we recommend be addressed before the NEPA process concludes. Our attached comments are related to project design,

[1] This comment letter also responds to the USACE March 23, 2020 Public Notice for Navigation Improvement of Blue Hill Harbor, Main.

impact avoidance, minimization, mitigation and consistency of the project with the Clean Water Act Section 404 (b)(1) Guidelines. The attached comments identify additional information necessary to demonstrate compliance with the 404(b)(1) Guidelines related to the design of the project, consideration of disposal alternatives and the minimization of impacts of the proposed discharge on the aquatic ecosystem. The attachment also provides our comments and recommendations with respect to compensatory mitigation the USACE could undertake to offset unavoidable adverse impacts from the project. We discussed several of these issues with your staff during an interagency coordination call last week.

EPA appreciates the opportunity to comment on this DEA and looks forward to continued coordination with the USACE on the issues raised in this comment letter as this project moves forward.

Please contact me at (617) 918-1025 to set up a time for a follow-up conversation regarding our comments on the project.

Sincerely,

Timothy L. Timmermann, Director
Office of Environmental Review

Blue Hill Harbor Detailed Comments

<u>404 (b)(1) Guidelines</u>

EPA's Section 404(b)(1) Guidelines (40 CFR Section 230) ("Guidelines") set forth the environmental standards which must be satisfied for the project to proceed in compliance with Corps regulations at 33 CFR Section 336.1. The attachment highlights three key provisions of the Guidelines where additional information is necessary to demonstrate compliance.

Alternatives Analysis

The Guidelines at 40 CFR Section 230.10(a) prohibit the discharge of dredged or fill material if there exists a practicable alternative which causes less harm to the aquatic ecosystem. A discharge of dredged or fill material is prohibited if there "is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem so long as the alternative does not have other significant adverse environmental consequences."

Alternative disposal sites are discussed in Section 5.4 of the DEA (page EA-9), which states that "disposal site alternatives for dredging projects include open water disposal, upland disposal, intertidal or shallow water disposal with possible habitat development, and beach disposal." The DEA then addresses all the listed alternatives, except for intertidal or shallow water disposal with possible habitat development.

Recommendation:

We recommend that intertidal or shallow water disposal be more fully considered in the final EA. For example, properly designed disposal of clean dredged material at impaired intertidal or shallow subtidal sites (following removal of existing contaminated sediments as warranted), either in the vicinity of the Blue Hill Harbor project or at appropriate offsite locations, could serve to restore or enhance these degraded areas and provide habitat development. We recommend that the final EA analyze the availability and practicability of this disposal alternative, which could also serve to minimize impacts and provide compensatory mitigation for the permanent loss of 3.7 acres of intertidal mudflat habitat resulting from the proposed project.

Minimization of Impacts

The Guidelines at 40 CFR Section 230.10(d) prohibit discharges unless all appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem. Compensatory mitigation may be required to offset unavoidable, minimized impacts to the aquatic ecosystem, and must satisfy the requirements of Subpart J of the Guidelines, 40 CFR Sections 230.91-230.98. Based on our review we believe additional information is necessary to document that impacts have been minimized through project design.

Channel Turn Configuration Design

Section 3.0 of Appendix C (pages E-8 and E-9) generally describes the methodology for channel turn design in accordance with the Hydraulic Design of Deep-Draft Navigation Projects Engineer Manual, EM 1110-2-1613, and references Table 8-4. However, it is not clear from the information presented exactly how the turn width increase (ΔW) was determined to be 70 feet. More detailed information is needed to better explain the methodology used to calculate the channel width increase, and to show that the turning area width has been minimized to reduce impacts.

Recommendation:

We recommend that the final EA provide more detailed information on the design methodology for the channel turn configuration.

Turning Basin Design

Section 3.0 of Appendix C (page E-9) notes that EM 1110-2-1613 recommends providing a turning basin 1.2-1.5 larger than the channel width. However, the DEA states that "because this is not a deep draft project and taking into consideration the needs of the town, the proposed turning basin is 160' long and 80' wide…." The EM recommendations would result in a turning basin width in the range of 96 feet to 120 feet. More information is needed to demonstrate that that the turning basin dimensions and configuration have been designed to minimize impacts.

Recommendation:

We recommend that the final EA provide more detailed information to better explain the rationale for the turning basin design, to show that reduced dimensions or alternate configurations of the turning basin to lessen aquatic impacts are not practicable, and to demonstrate that the impacts of the selected design have been minimized. As part of this discussion we recommend that the analysis explain why a non-deep draft project would require a greater turning basin width than the width recommended for deep draft projects. Specific town needs that influenced the turning basin design (as referenced in the DEA) should also be clarified.

Compensatory Mitigation

The objective of compensatory mitigation is to offset unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved. Compensatory mitigation is typically accomplished through the restoration (re-establishment or rehabilitation), establishment, enhancement, and in certain circumstances preservation of aquatic resources (see compensatory mitigation requirements at Subpart J of the Guidelines, 40 CFR Sections 230.91-230.98).

The DEA at Section 7.4.1 states that "(m)itigation is not being proposed for the loss of intertidal habitat as the area is currently impaired and will be replaced with a habitat that will provide higher quality ecological value to the Blue Hill Harbor system." While it is true that PAH and metals contamination present in the dredged intertidal sediments would be sequestered and the remaining subtidal sediments would presumably be uncontaminated, the project will still result in the permanent loss of 3.7 acres of intertidal habitat. The impacted intertidal resource is to be removed and replaced with the subtidal habitat associated with the proposed navigation channel and turning basin. In addition to the permanent loss of intertidal habitat and conversion to subtidal habitat, the remaining subtidal habitat will be subject to regular maintenance dredging, which will adversely impact the remaining resource.

Recommendation:

We recommend that the final EA provide a description of compensatory mitigation for the project to address unavoidable, minimized impacts. In this case, the goal of compensatory mitigation is to restore or enhance intertidal habitat, either in the vicinity of the Blue Hill Harbor project, or at offsite locations. In the absence of adequate available intertidal mitigation sites, restoration of shallow subtidal habitat should be considered. As noted above, properly designed disposal of clean dredged material at impaired intertidal or shallow subtidal sites (following removal of contaminated sediments as warranted) could serve to restore or enhance these degraded areas and provide habitat development.

Other compensatory mitigation options that could be considered include but are not limited to restoration of former borrow sites to appropriate intertidal or shallow subtidal elevations; removal of derelict coastal infrastructure and restoration of habitat at those sites; and installation of conservation moorings at appropriate locations to restore or enhance impaired aquatic resources. EPA is willing to work with the USACE to help develop a compensatory mitigation plan for the project.

Miscellaneous

We recommend that the following minor errors in the DEA be corrected:

- On several figures, including Figures 2, 4, 5, 6 and 8 of the DEA; Figures 2 and 3 in Appendix C; and Figures 1, 3 and 5 in Appendix F, the proposed turning basin is misidentified as a "6 FT Anchorage."

- On page EA-13 of the DEA and on page 5 of 15 of the Suitability Determination documentation presented in Appendix F, Table 2 depicting sediment testing results contains a duplicate reference to HMW PAH. The second entry should instead reference LMW PAH (Low Molecular Weight PAH).

- On page E-10 of Appendix C, there is a reference to "Appendix X," which does not appear in the documentation. This is likely a typographical error, where perhaps Appendix F was the intended reference.

- The Economics Appendix should be specifically identified as "Appendix B."

United States Department of the Interior

U.S. FISH AND WILDLIFE SERVICE
Maine-New Hampshire Fish and Wildlife Service Complex
Ecological Services
Maine Field Office
306 Hatchery Road
East Orland, Maine 04431
Telephone: 207/469-7300 Fax: 207/902-1588

May 08, 2020

John R. Kennelly, Chief
U.S. Army Corps of Engineers
New England District
Planning Division
696 Virginia Road
Concord, Massachusetts 01742-2751

Dear Mr. Kennelly:

This letter responds to the Corps of Engineers' (Corps) April 24, 2020 request for our review of the February 2020 draft Environmental Assessment (EA) for the proposed navigation improvement project at the *Blue Hill Harbor Federal Navigation Project* located at Blue Hill, Maine. The following comments are provided pursuant to section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.) and the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.).

Project Name/Location: **Blue Hill Harbor Federal Navigation Improvement Project, Blue Hill, Maine**

Log Numbers: **05E1ME00-2020-TA-1062 and 05E1ME00-2020-CPA-0094**

The draft EA for the Blue Hill Harbor project acknowledges two federally listed species under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that could occur in the project area, the threatened northern long-eared bat (*Myotis septentrionalis*) and the endangered Atlantic salmon (*Salmo salar*). The effects of the project to northern long-eared bat were addressed via the Corps' May 04, 2020 submittal of the northern long-eared bat 4(d) rule streamlined consultation form stating that this project may affect the northern long-eared bat, but that any resulting incidental take is not prohibited by the final 4(d) rule. The Service considers consultation for the northern long-eared bat concluded. If this project is not completed within one year of this letter, the Corps must update their determination and resubmit the required information.

The Corps has determined that the proposed project is not likely to adversely affect the endangered Atlantic salmon, a species under the joint ESA jurisdiction of the Service and the National Marine Fisheries Service (NMFS). Given that the proposed Blue Hill Harbor dredging project is located entirely in tidal waters, the Corps will be completing ESA section 7 consultation for the Atlantic salmon with the NMFS.

Therefore no further consultation with the Service pursuant to section 7 of the ESA is required. Should project plans change, or if additional information on the distribution of listed or proposed species becomes available, this determination may need to be reconsidered and reinitiation may be necessary.

Given current staffing limitations and workload priorities in our office, we are not able to provide any comments on this project pursuant to the Fish and Wildlife Coordination Act. However, we appreciate your coordination with us on this draft EA. If you have any questions, please contact Wende Mahaney by telephone at 207/902-1569 or by email at *wende_mahaney@fws.gov*.

Sincerely,

Digitally signed by ANNA HARRIS
Date: 2020.05.08 15:14:47 -04'00'

Anna Harris,
Project Leader
Maine Field Office
Maine-New Hampshire
Fish and Wildlife Service Complex

cc: Todd Randall, Corps – Concord, MA
Zach Jylkka, NMFS – Gloucester, MA
Mike Johnson, NMFS – Gloucester, MA

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD MA 01742-2751

April 24, 2020

Planning Division
Environmental Branch

Mr. Timothy Timmermann
Office of Environmental Review
EPA New England-Region 1
5 Post Office Square, Suite 100
Mail Code OEP 06-3
Boston, MA 02109-3912

Dear Mr. Timmerman:

I am writing to request EPA's comments on our proposal to perform improvement dredging in Blue Hill Harbor in Blue Hill, Maine. We will provide a copy of the draft Environmental Assessment by electronic file transfer. The draft EA and its appendices include maps of the proposed project area, a project description, resource characterizations of the project area, and an air quality conformity determination.

The proposed project includes dredging a 6-foot deep mean lower low water (MLLW), 80-foot wide channel from the outer harbor, extending 2,500 ft. northwest to the town wharf. This channel would be widened at its upper end to form a turning basin, 160 feet by 80 feet, adjacent to the town wharf. Approximately 62,500 cubic yards (CY) of mixed gravel, sand, and silt would be removed from the proposed project area using a mechanical dredge. The estimated 52,000 CY of dredged material deemed suitable for open water disposal would be loaded onto scows and towed to the Eastern Passage Disposal Site (EPDS), a previously used disposal site near Dodge Island, for placement. The EPDS is located approximately 11 miles southeast from Blue Hill Harbor. Approximately 10,500 CY of material from the upper two feet of the inner harbor, which was deemed unsuitable for open water placement due to the presence of polycyclic aromatic hydrocarbons (PAHs) and metals, will be placed in a proposed confined aquatic disposal cell within Blue Hill Harbor. Construction will occur between October 1 and April 1 and is expected to take three to four months to complete.

We are requesting that you review this project information relative to all applicable EPA authorities including but not limited to Section 176c and 309 of the Clean Air Act. We would appreciate your comments within 30 days of the date of this letter.

If you or your staff have any questions or require additional information, please feel free to contact Mr. Todd Randall, the Environmental Resources Team Member at (978) 318-8518 or Dr. Dot Lundberg, the Project Manager, at (978) 318-8155.

Sincerely,

KENNELLY.JOHN.R.1228532939 Digitally signed by KENNELLY.JOHN.R.1228532939 Date: 2020.04.24 12:50:09 -04'00'

John Kennelly
Chief, Planning Division

Enclosures

Copies furnished (via email):

Ms. Regina Lyons: lyons.regina@epa.gov

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD MA 01742-2751

April 24, 2020

Planning Division
Environmental Branch

Mr. Louis A. Chiarella
Assistant Regional Administrator for Habitat Conservation
NOAA Fisheries Service
Northeast Regional Office
Habitat Conservation Division
55 Great Republic Drive
Gloucester, MA 01930

Dear Mr. Chiarella:

I am writing to request your Essential Fish Habitat (EFH) conservation recommendations, if any, under the Magnuson-Stevens Fishery Conservation and Management Act and comments in accordance with the Fish and Wildlife Coordination Act (FWCA) on our proposal to perform improvement dredging in Blue Hill Harbor in Blue Hill, Maine. We will provide a copy of the Feasibility Report and the draft Environmental Assessment by electronic file transfer. The Feasibility Report contains an alternatives analysis for the need of the project. The draft EA and its appendices include maps of the proposed project area, a project description, resource characterizations of the project area, and an essential fish habitat assessment. Also attached is the NMFS EFH consultation worksheet.

The proposed project includes dredging a 6-foot deep mean lower low water (MLLW), 80-foot wide channel from the outer harbor, extending 2,500 ft. northwest to the town wharf. This channel would be widened at its upper end to form a turning basin, 160 feet by 80 feet, adjacent to the town wharf. Approximately 62,500 cubic yards (CY) of mixed gravel, sand, and silt would be removed from the proposed project area using a mechanical dredge. An estimated 52,000 CY of dredged material deemed suitable for open water disposal would be loaded onto scows and towed to the Eastern Passage Disposal Site (EPDS), a previously used disposal site near Dodge Island, for placement. The EPDS is located approximately 11 miles southeast from Blue Hill Harbor. Approximately 10,500 CY of material from the upper two feet of the inner harbor, which was deemed unsuitable for open water placement due to the presence of polycyclic aromatic hydrocarbons and metals, will be placed in a proposed confined aquatic disposal cell within Blue Hill Harbor. Construction will occur between October 1 and April 1 and is expected to take three to four months to complete.

Please provide any EFH conservation recommendations and comments under the FWCA within 30 days of the date this letter.

If you or your staff have any questions or require additional information, please feel free to contact Mr. Todd Randall, the Environmental Resources Team Member at (978) 318-8518 or Dr. Dot Lundberg, the Project Manager, at (978) 318-8155.

Sincerely,

KENNELLY.JOHN.R.1228532939 Digitally signed by KENNELLY.JOHN.R.1228532939 Date: 2020.04.24 12:47:47 -04'00'

John Kennelly
Chief, Planning Division

Enclosures

Copies Furnished (via email):

Mr. Mike Johnson: mike.johnson@noaa.gov
Mr. Zachary Jylkka: zachary.jylkka@noaa.gov

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD MA 01742-2751

April 24, 2020

Planning Division
Environmental Branch

Ms. Anna Harris
Maine Field Office Project Leader
Maine-New Hampshire Fish and Wildlife Complex
U.S. Fish and Wildlife Service
306 Hatchery Way
East Orland, ME 04431

Dear Ms. Harris:

I am writing to request a Final Coordination Act Report (FCAR) pursuant to the Fish and Wildlife Coordination Act and any final comments with respect to the Endangered Species Act for our proposal to perform improvement dredging in Blue Hill Harbor in Blue Hill, Maine. We will provide a copy of the draft Environmental Assessment by electronic file transfer. The draft EA and its appendices include maps of the proposed project area, a project description, resource characterizations of the project area, and the Corps preliminary determination of effects the proposed project may have on threatened and endangered species.

The proposed project includes dredging a 6-foot deep mean lower low water (MLLW), 80-foot wide channel from the outer harbor, extending 2,500 ft. northwest to the town wharf. This channel would be widened at its upper end to form a turning basin, 160 feet by 80 feet, adjacent to the town wharf. Approximately 62,500 cubic yards (CY) of mixed gravel, sand, and silt would be removed from the proposed project area using a mechanical dredge. The estimated 52,000 CY of dredged material deemed suitable for open water disposal would be loaded onto scows and towed to the Eastern Passage Disposal Site (EPDS), a previously used disposal site near Dodge Island, for placement. The EPDS is located approximately 11 miles southeast from Blue Hill Harbor. Approximately 10,500 CY of material from the upper two feet of the inner harbor, which was deemed unsuitable for open water placement due to the presence of polycyclic aromatic hydrocarbons and metals, will be placed in a proposed confined aquatic disposal cell within Blue Hill Harbor. Construction will occur between October 1 and April 1 and is expected to take three to four months to complete.

It is the Corps' determination that the proposed work is not likely to adversely affect any Federally-listed threatened or endangered species under the jurisdiction of the USFWS. Please review the enclosed information and provide your comments in accordance with the Fish and Wildlife Coordination Act and the Endangered Species Act concerning the proposed project. I would appreciate your comments within 30 days of the date of this letter.

If you or your staff have any questions or require additional information, please feel free to contact Mr. Todd Randall, the Environmental Resources Team Member at (978) 318-8518 or Dr. Dot Lundberg, the Project Manager, at (978) 318-8155.

Sincerely,

KENNELLY.JOHN.R.1228532939 Digitally signed by KENNELLY.JOHN.R.1228532939 Date: 2020.04.24 12:55:10 -04'00'

John Kennelly
Chief, Planning Division

Enclosures

US Army Corps of Engineers ®
New England District

Public Notice

In Reply Refer to: Dr. Dot Lundberg
Dot.J.Lundberg@usace.army.mil
Planning Division

696 Virginia Road
Concord, MA 01742-2751

Date: March 23, 2020
Comment Period Closes: April 23, 2020

30 DAY PUBLIC NOTICE

NAVIGATION IMPROVEMENT OF BLUE HILL HARBOR, MAINE

Interested parties are hereby notified that the U.S. Army Corps of Engineers (Corps), New England District, is proposing channel improvements to increase the Blue Hill Harbor's ability to accommodate safe and efficient commercial fishing vessel operations from the Town Landing. The proposed project involves work in the navigable waters of this District, under the provisions of Section 404 of the Clean Water Act of 1977 (P.L. 95-217) and is being authorized in accordance with Title 33, Parts 335-338 of the Code of Federal Regulations. Attachment No. 1 lists pertinent laws, regulations, and directives.

Project Description: The proposed project will make improvements to the Blue Hill Harbor in Blue Hill Maine. A feasibility study developed and analyzed several alternatives for navigation channel improvements and the benefits that each alternative provides. The Recommended Plan, as shown in Figure 1, would establish a 6-foot mean lower low water (MLLW) by 80-foot wide Federal channel extending about 5,400 feet from deep water off Parker Point up-harbor to the Blue Hill town landing with a one-half acre turning basin at its head. Only the upper 2,600 feet of the channel would require dredging. Approximately 62,500 cubic yards (CY) of mixed gravel, sand, and silt will be removed from the proposed project area using a mechanical dredge. The 52,000 CY of dredged material deemed suitable for open water disposal will be loaded onto scows and towed about 11 miles to the Eastern Passage Disposal Site (EPDS), a previously used disposal site near Dodge Island, for placement. Approximately 10,500 CY of material from the upper two feet of the inner harbor, which was deemed unsuitable for open water placement due to the presence of polycyclic aromatic hydrocarbons (PAHs) and metals, will be placed in a confined aquatic disposal (CAD) cell within Blue Hill Harbor. The CAD cell will be constructed by removing approximately 19,500 CY of suitable of mixed gravel, sand,

and silt material from an area adjacent to the designated channel. Material generated from the CAD cell creation will be placed at the EPDS. Construction will occur between October 1 and April 1and is expected to take three to four months to complete. Construction will occur in any given year in which funding becomes available. This improvement project is authorized under the continuing authority of Section 107 of the River and Harbor Act of 1960, as amended.

Purpose of Work: The principal navigation issue at Blue Hill Harbor is that the existing conditions do not accommodate safe and efficient operations of commercial fishermen and other vessel operators in the Blue Hill area. Regional demands on the commercial fishing fleet, navigation delays, and inefficiencies have become problematic for the fleet. Under present conditions, navigation is limited to the period of three hours before and three hours after high tide. At low tide, a boat drawing two feet or more cannot approach closer than 2,000 feet seaward of the wharf. The only other landings in Blue Hill Harbor that have adequate water access are the Kollegewidgwok Yacht Club and the privately owned old Steamboat Wharf on Peter's Point. The Blue Hill commercial fishing fleet has already maximized the available berthing and offloading space, so providing a new channel will alleviate the commercial fleet's navigation problems. The vessels utilizing Blue Hill as a base of operations must be better accommodated if the commercial operators at Blue Hill are to continue to be competitive in the New England region fish industry. The Corps has tentatively selected a plan that recommends dredging a new channel to enhance the navigation routes and allow vessels to safely reach berthing and offloading areas.

Alternatives Considered: Alternatives were developed based on project depth optimization and disposal options for unsuitable dredged material. Project depths of 5, 6, and 7 feet below mean lower low water (MLLW) were evaluated to aid in optimization of the Corps tentatively selected plan. Alternatives for disposal of unsuitable dredged material include placement in an in-harbor Confined Aquatic Disposal (CAD) Cell, or rehandling material ashore for dewatering and transport to an upland disposal facility. Two alternatives were evaluated for the proposed project: establish a channel with use of a CAD cell and establish a channel with upland disposal. The selected plan is based on consideration of economic efficiency, minimization of environmental impacts, navigational safety, and the needs of state government and local stakeholders. Establishing a channel with CAD disposal results in the greatest net benefits, and is the preferred National Economic Development (NED) plan.

Placement Area: Disposal of the unsuitable portion of the dredged material will be taken to a CAD cell constructed north of the channel. All suitable material, including material dredged to create the CAD cell (Figure 1), would be placed at the previously used Eastern Passage Disposal Site. The haul route is found in Figure 2.

Additional Information: Additional information may be obtained from Dr. Dot Lundberg Planning Division, at the address shown above, telephone number (978) 318-8155 or email at Dot.J.Lundberg@usace.army.mil.

Coordination: The proposed work is being coordinated with the following federal, state, and local agencies and federally recognized tribal nations:

Federal
U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service
National Marine Fisheries Service

State
Maine Department of Environmental Protection
Maine Department of Marine Resources
Maine Coastal Program
State Historic Preservation Office

Federally Recognized Tribes
Passamaquoddy Tribe
Penobscot Indian Nation

Local
Town of Blue Hill

Environmental Impacts: A draft Environmental Assessment for this work has been prepared and is available for review upon request. The Corps has made a preliminary determination that an Environmental Impact Statement is not required under the provisions of the National Environmental Policy Act of 1969. This determination will be reviewed in light of facts submitted in response to this notice.

Federal Consistency with Maine's Coastal Zone Management Program: The Corps finds that the improvement dredging of the Blue Hill Harbor navigation project is consistent to the maximum extent practicable with Maine's approved coastal zone management plan established as a result of the Coastal Zone Management Act of 1972.

Other Information:

a. Local Sponsor: The Town of Blue Hill, Maine, is the local sponsor for the proposed work.

b. Previous Dredging: The areas proposed to be dredged for navigation improvement have never been dredged before.

c. Alternate Placement Methods: Alternate placement options that have been considered were: open water placement, upland disposal, a confined disposal facility, and beneficial use. The preferred alternative for the placement of dredged material from the proposed project is open water placement for suitable dredged material and the use of a confined aquatic disposal (CAD) cell for unsuitable dredged material.

d. Non-Federal Dredging: To date there are no non-Federal dredging projects proposed in connection with the proposed Federal improvement dredging. Facility owners within the harbor who may be interested in performing non-Federal dredging concurrently with this project should be aware that work will require a permit from the U.S. Army Corps of Engineers under Section 10 of the River and Harbor Act and, depending on the location of the non-Federal dredged material disposal, may also require a Corps permit under Section 404 of the Clean Water Act. In order to be disposed of in ocean waters, private dredged material must be determined to be suitable for such disposal.

e. Endangered Species: The Corps made the preliminary determination that the proposed project is not likely to adversely impact any state or Federally-listed threatened or endangered species.

f. Floodplain Management: The proposed project is not located within the floodplain, so it will not result in further development of the floodplain and will not result in any long or short-term adverse impacts associated with the occupancy and modification of the floodplains.

g. Cultural Resources: The proposed work will not affect any cultural or archaeological features or resources in the area of dredging or disposal, and coordination was complete in accordance with Section 106 of the National Historic Preservation Act and implementing regulations (36 CFR 800).

h. Essential Fish Habitat Assessment: The Corps has determined that dredging and placement activities may have a temporary adverse effect on Essential Fish

Habitat (EFH). The Corps has assessed the effects that the project is likely to have on EFH and has determined that they will be short-term and limited and that there will be no significant impacts on the designated fisheries resources.

i. Additional Requirements: A 401 Water Quality Certificate will be requested from the State of Maine. The Clean Water Act of 1977 requires that the work comply with state or interstate requirements to control the discharge of dredged or fill material.

The decision whether to perform the proposed work will be based on an evaluation of the probable impact of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefits that reasonably may be expected to accrue from the proposal will be balanced against its reasonably foreseeable detriments. All factors that may be relevant to the proposal will be considered; among these are conservation, economics, aesthetics, general environmental concerns, historic values, fish and wildlife values, flood damage prevention, land use classification, and the welfare of the people.

Any person who has an interest that may be affected by the dredging and disposal of this dredged material may request a public hearing. The request must be submitted in writing to the District Engineer within the comment period of this notice and must clearly set forth the interest that may be affected and the manner in which the interest may be affected by this activity.

Please bring this notice to the attention of anyone you know to be interested in this project. Comments are invited from all interested parties and should be directed to the U.S. Army Corps of Engineers, New England District, 696 Virginia Road, Concord, MA 01742-2751, ATTN: Dr. Dot Lundberg, or to email address Dot.J.Lundberg@usace.army.mil within 30 days of this notice.

William M Conde

William M. Conde
Colonel, Corps of Engineers
District Engineer

Attachments

Attachment 1:

PERTINENT LAWS, REGULATIONS, AND DIRECTIVES

Clean Air Act, as amended (42 U.S.C. 1221 et. seq.)

Clean Water Act, of 1977 as amended (33 U.S.C. 1251 et. seq.)

Coastal Zone Management Act of 1972 (16 U.S.C. 1456)

Code of Federal Regulation, Title 33, Parts 335 through 338

Endangered Species Act of 1973 as amended (16 U.S.C. 1531 et seq.)

Estuary Protection Act (16 U.S.C. 1221 et. seq.)

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

Fish and Wildlife Act of 1956 (16 U.S.C. 472a, et. seq.)

Fish and Wildlife Coordination Act (16 U.S.C. 661-666c)

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

Magnuson-Stevens Fishery Conservation and Management Act and amended by the Sustainable Fisheries Act of 1996

Migratory Marine Game-Fish Act (16 U.S.C. 760c-760g)

National Environmental Policy Act of 1969 (42 U.S.C. 4321-4347)

National Historic Preservation Act of 1966 (16 U.S.C. 470)

Executive Order 11988, Floodplain Management, 24 May 1977

Executive Order 11990, Protection of Wetlands, 24 May 1977

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations, 11 February 1994

Executive Order 13045, Protection of Children from Health Risks and Safety Risks, 21 April 1997

River and Harbor Act of 1960

Figure 1: Channel and CAD Cell Placement Locations

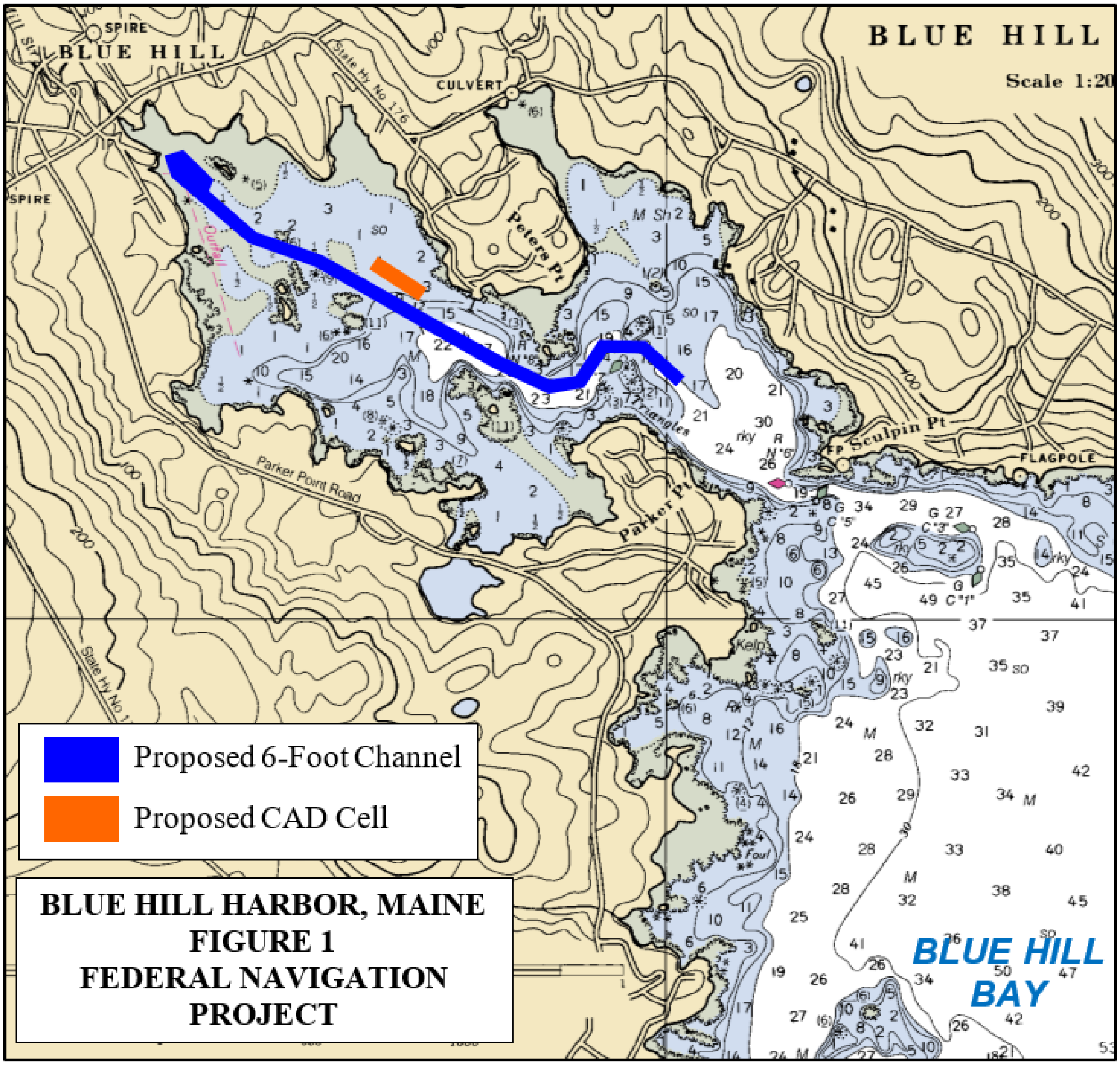
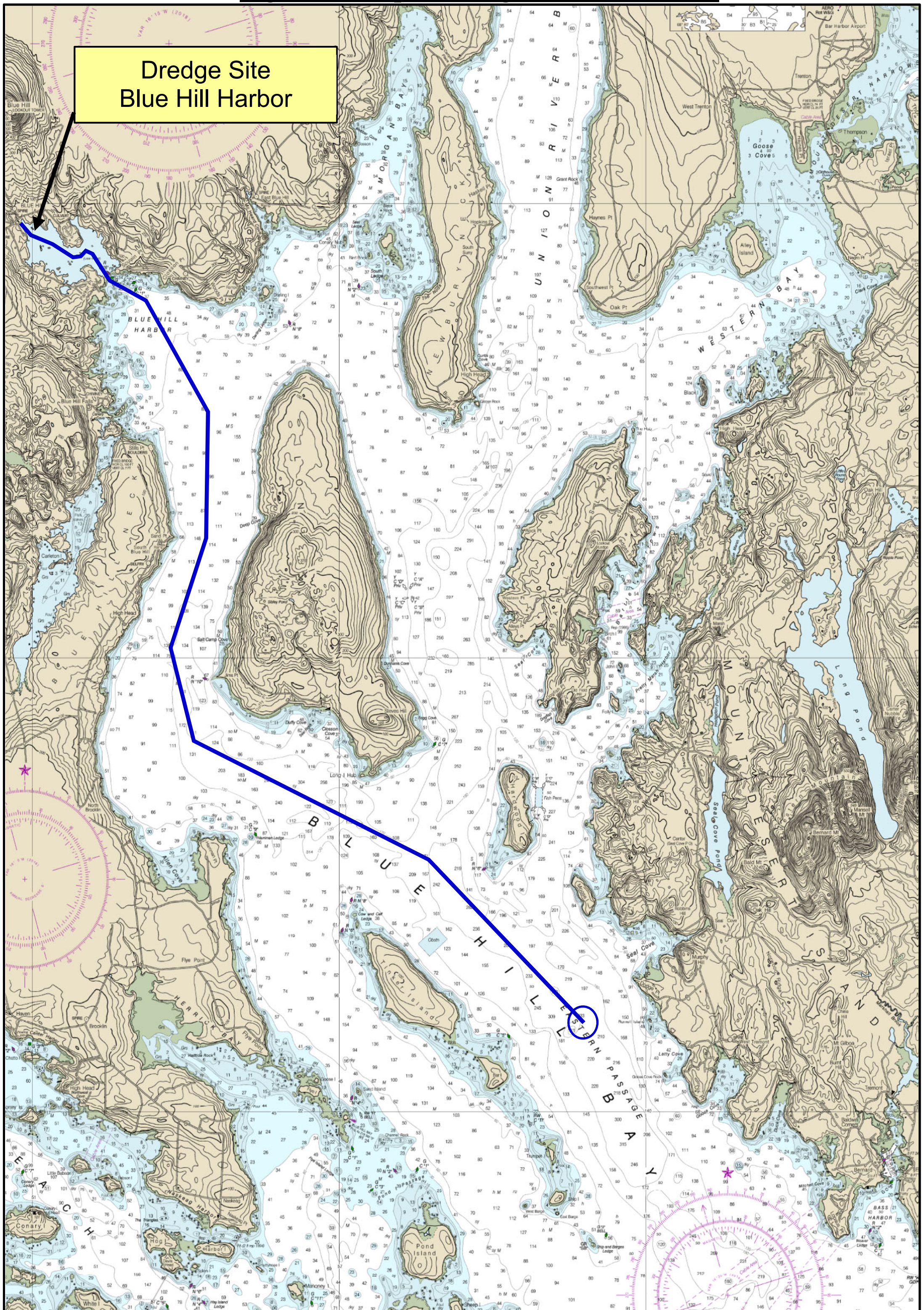


Figure 2: Proposed Tug/Scow Haul Route



Blue Hill Harbor, Maine Navigation Improvement Project	Proposed Tug/Scow Haul Route For Eastern Passage Placement Site

THE WEEKLY PACKET

TOURNEY TIME: Eagles advance, and all the playoff news PAGES 7-10

FEBRUARY 20, 2020 BLUE HILL, BROOKLIN, BROOKSVILLE, SEDGWICK AND SURRY weeklypacket.com | $1.40

JOBS AVAILABLE

EVENT COORDINATOR: The Town of Castine is seeking an event coordinator for the town's Maine 200 celebration. Applications are due no later than February 21, 2020. Details can be found on the Castine town website (castine.me.us) or obtained at the Town Office.

EXPERIENCED ADMINISTRATIVE ASSISTANT. Alternative health care practice in Ellsworth seeks organized, self motivated, personable individual with excellent communication skills. P/T, flexible hrs., year-round position. Starting at $12-15/hr., EOE. Email resume to: office@acadianaturopathic.com.

STEPHEN MACARTHUR & CO. Hiring one more skilled carpenter for year-round work with small, friendly, professional outfit. Must have good character. Call 326-9612. Leave clear message.

TOWN OF DEER ISLE seeks to fill the position of Road and Public Works Foreman. Competitive salary and benefits. Details available townofdeerisle.org and at the Deer Isle Town Office. FMI, email deerislemanager@gmail.com or call 348-2324.

MISCELLANEOUS

THE ISLAND PANTRY is open from 5:30-7 p.m. on Thursdays, located at the Island Community Center in Stonington and is handicapped accessible. Neighbors from Sedgwick, Brooksville and Brooklin are welcome. More info: 367-2918.

PERSONALS

To the person that passed a vehicle on Snows Cove Road at about 5:40 the night of Wednesday, February 12th and almost ran head on into my car, you are an idiot. Why, why, why would you pass in that spot without being sure nobody was coming the other way? I had my 11 year old daughter with me and were on our way to watch the GSA boys varsity basketball team. Slow down and stay on your side of the road!

NOTICES

NOTICE OF INTENT TO FILE

Please take notice that the Town of Blue Hill, 18 Union Street, Blue Hill, Maine 04614 (Phone: 207-374-2281) is intending to file a Natural Resources Protection Act permit application with the Maine Department of Environmental Protection pursuant to the provisions of 38 M.R.S. §§ 480-A thru 480-BB on or about February 20, 2020.

The application is for constructing a new Federal Navigation Project (FNP) in Blue Hill Harbor. The proposed project would establish a -6-foot mean lower low water by 80-foot wide Federal channel extending about 5,400 feet from deep water off Parker Point up-harbor to the Blue Hill town landing with a one-half acre turning basin at its head. The project would involve the dredging of about 92,500 cubic yards of material. Approximately 73,000 cubic yards would be dredged from the FNP and an estimated 19,500 cubic yards would be dredged from the construction of a Confined Aquatic Disposal (CAD) cell in Blue Hill Harbor needed to contain unsuitable dredged material from inner harbor areas. Suitable material from the outer harbor and CAD cell construction would be placed at the previously used Eastern Passage Disposal Site. The dredging would be by mechanical dredge and scow that will be able to operate in shallow draft areas in the channel. Dredging and disposal activities would be limited to the period of October 1 through March 31. The work would be performed in the year(s) in which Federal and local cost-sharing funds become available.

A public information meeting to discuss the proposed project will be held at the Blue Hill Town Hall (18 Union Street, Blue Hill, Maine 04614) at 5:30 p.m. on March 4, 2020.

A request for a public hearing or a request that the Board of Environmental Protection assume jurisdiction over this application must be received by the Department in writing, no later than 20 days after the application is found by the Department to be complete and is accepted for processing. A public hearing may or may not be held at the discretion of the Commissioner or Board of Environmental Protection. Public comment on the application will be accepted throughout the processing of the application. For Federally licensed, permitted, or funded activities in the State's Coastal Zone, review of this application shall also constitute the State's consistency review in accordance with the Maine Coastal Program pursuant to Section 307 of the Federal Coastal Zone Management Act, 16 U.S.C. § 1456.

The application will be filed for public inspection at the Department of Environmental Protection's office in Bangor, Maine during normal working hours. A copy of the application may also be seen at the municipal offices in Blue Hill, Maine. Written public comments may be sent to the regional office in Bangor where the application is filed for public inspection: MDEP, Eastern Maine Regional Office, 106 Hogan Road, Bangor, Maine 04401.

TOWN OF BROOKSVILLE
Residents

Notice is hereby given that the Selectmen of the Town of Brooksville will hold a Public Hearing

NOTICE OF INTENT TO FILE

Please take notice that Fifield Lobster Co., 4 Willie's Way, Stonington, ME 04681, 207-367-2313, is intending to file a Maine Natural Resources Protection Act permit application with the Maine Department of Environmental Protection pursuant to the provisions of 38 M.R.S. §§ 480-A thru 480-BB on or about March 1, 2020.

The application is for reconstruction and expansion of commercial lobster wharf and bait shed at the following location: Willie's Way, south side of Burnt Cove, Stonington.

A request for a public hearing or a request that the Board of Environmental Protection assume jurisdiction over this application must be received by the Department in writing, no later than 20 days after the application is found by the Department to be complete and is accepted for processing. A public hearing may or may not be held at the discretion of the Commissioner or Board of Environmental Protection. Public comment on the application will be accepted throughout the processing of the application.

For Federally licensed, permitted, or funded activities in the State's Coastal Zone, review of this application shall also constitute the State's consistency review in accordance with the Maine Coastal Program pursuant to Section 307 of the Federal Coastal Zone Management Act, 16 U.S.C. § 1456.

The application will be filed for public inspection at the Department of Environmental Protection's office in Bangor, Maine during normal working hours. A copy of the application may also be seen at the municipal offices in Stonington, Maine.

Written public comments may be sent to the regional office in Bangor where the application is filed for public inspection: MDEP, Eastern Maine Regional Office, 106 Hogan Road, Bangor, Maine 04401.

HERE & ABOUT

Chorus forming for 'the fun of singing'

Registration is open for SCHERZO\skerts\—an adult chorus organized by Ellsworth Community Music Institute in collaboration with Friends in Action in Ellsworth. The primary focus of this chorus is to have fun singing. No auditions are required, and all voices are welcome. Sessions for adults ages 50+ will begin February 25 and run for 10 weeks on

program. Mixed genres will be presented, including show tunes, oldies, Americana, etc. Rehearsals will include a one-time visit and sing-along class with Grammy award winner Paul Sullivan.

Full details and registration form may be found at ellsworth-communitymusic.org/classes/. Interested singers may direct questions to Ellsworth Community Music Institute at 664-9258 or info@ellsworthcommunitymusic.org. Also, students may

Appendix A

Part 2

Correspondence during Preparation of the Draft Detailed Project Report and Draft Environmental Assessment

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DEPARTMENTOFTHEARMY
US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD MA 01742-2751

July 11, 2019

Planning Division

Select Board
Town of Blue Hill
P.O. Box 412
Blue Hill, ME 04614

Dear Board Members:

I am writing in reference to the Blue Hill Harbor Navigation Improvement project and the Feasibility Cost Sharing Agreement (FCSA) signed on June 29, 2015 between the Town of Blue Hill and the U.S. Army Corps of Engineers.

In accordance with discussions held between USACE and the Blue Hill Select Board, we request that you provide an additional $20,000 towards your share of total project costs. The additional Town funds together with additional Federal funds, will be used to complete required public and agency technical reviews of the detailed project report for the study of Blue Hill Harbor. This additional payment will increase your total cash contribution for the project to $124,000.

Transmit a check to cover this amount, payable to "FAO, USAED, NEW ENGLAND DISTRICT (E6)", to the attention of the Project Manager, Mr. William Bartlett.

If you have any questions or require any additional information, please contact the project manager, Mr. Bartlett at (978) 318-8004 or at william.c.bartlett@usace.army.mil.

Sincerely,

John R. Kennelly
Chief, Planning Division

PENOBSCOT NATION
CULTURAL & HISTORIC PRESERVATION
12 WABANAKI WAY, INDIAN ISLAND, ME 04468

CHRIS SOCKALEXIS – TRIBAL HISTORIC PRESERVATION OFFICER
E-MAIL: chris.sockalexis@penobscotnation.org

NAME	Marc Paiva
ADDRESS	US Army Corps of Engineers New England District 696 Virginia Road Concord, MA 01742-2751
OWNER'S NAME	Town of Blue Hill
TELEPHONE	(978) 318-8796
EMAIL	Marcos.A.Paiva@usace.army.mil
PROJECT NAME	Navigation Improvement Project located at Blue Hill Harbor
PROJECT SITE	Blue Hill, ME
DATE OF REQUEST	December 4, 2018
DATE REVIEWED	January 15, 2019

Thank you for the opportunity to comment on the above referenced project. This project appears to have no impact on a structure or site of historic, architectural or archaeological significance to the Penobscot Nation as defined by the National Historic Preservation Act of 1966, as amended.

If Native American cultural materials are encountered during the course of the project, please contact my office at (207) 817-7471. Thank you for consulting with the Penobscot Nation Tribal Historic Preservation Office with this project.

Chris Sockalexis, THPO
Penobscot Nation

MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

PAUL R. LEPAGE
GOVERNOR

KIRK F. MOHNEY
DIRECTOR

December 11, 2018

Mr. John R. Kennelly
Department of the Army
US Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742-2751

Project: MHPC# 1664-18 Town of Blue Hill; Blue Hill Harbor
Proposed Navigation Improvement Project

Town: Blue Hill, ME

Dear Mr. Kennelly:

In response to your recent request, I have reviewed the information received December 6, 2018 to initiate consultation on the above referenced project in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA).

Based on the information submitted, I have concluded that there will be no historic properties affected by this proposed undertaking, as defined by Section 106.

Please contact Megan Rideout at (207) 287-2992 or megan.m.rideout@maine.gov if we can be of further assistance in this matter.

Sincerely,

Kirk F. Mohney

Kirk F. Mohney
State Historic Preservation Officer

PHONE: (207) 287-2132 FAX: (207) 287-2335

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD MA 01742-2751

December 4, 2018

Planning Division
Evaluation Branch

Mr. Kirk F. Mohney, State Historic Preservation Officer
Maine Historic Preservation Commission
55 Capitol Street, 65 State House Station
Augusta, ME 04333

Dear Mr. Mohney:

The U.S. Army Corps of Engineers (USACE), New England District is preparing an Environmental Assessment for a proposed Navigation Improvement Project at Blue Hill Harbor in Blue Hill, Maine (see enclosed figures). We would like your comments on the following undertaking in accordance with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended.

Blue Hill Harbor is the principal commercial fishing harbor of the Town of Blue Hill, located on the western shore of Blue Hill Bay in Hancock County, Maine. The harbor is located about 30 miles south-southeast of Bangor and 103 miles east of Portland, Maine. Blue Hill Harbor is located on the northwest side of Blue Hill Bay, northwest of Long and Mount Desert Islands.

The principal navigation issue at Blue Hill Harbor is that existing conditions do not accommodate safe and efficient operations for commercial fishermen and other vessel operators in the Blue Hill area. Given the regional demands from the commercial fishing fleet, navigation delays and inefficiencies have become problematic for the facilities. There is a lack of sufficient water depth in the western portion of the inner harbor to the publicly-owned shorefront facilities in Blue Hill Harbor. Under present conditions, navigation is limited to the period of three hours before and three hours after high tide. At low tide a boat drawing two feet or more cannot approach closer than 2,000 feet seaward of the wharf.

Currently, a majority of commercial vessels load and offload at town facilities at South Blue Hill Wharf, located outside the protected inner harbor and five miles by road from the town center. South Blue Hill Wharf contains a municipal ramp, docks and floats, as well as 23 moorings for commercial fishermen. South Blue Hill is at maximum capacity with no room for expansion. Other fishermen are based in East Blue Hill Harbor, located outside the protected inner harbor to the northeast, and at Steamboat Wharf, located inside the protected inner harbor on the eastern shore.

USACE is proposing the following alternatives to improve existing navigation conditions in Blue Hill Harbor:

Alternative A:

- ❑ A 6-foot deep channel (MLLW), 80-feet wide from the outer harbor to the town wharf, widened at its upper end to form a turning basin 160 feet by 80 feet adjacent to the Town Wharf.
- ❑ A Confined Aquatic Disposal (CAD) cell adjacent to the channel to dispose of the 10,000 cubic yards (CY) of unsuitable material.
- ❑ Suitable material (63,000 CY) will be hauled by scow to Eastern Passage Disposal Site for open water placement (14 miles one-way travel).

Alternative B:

- ❑ A 6-foot deep channel (MLLW), 80-feet wide from the outer harbor to the town wharf, widened at its upper end to form a turning basin 160 feet by 80 feet adjacent to the Town Wharf.
- ❑ Dewatering and treatment of unsuitable material (10,000 CY) onshore at the Town Wharf, then transport to Juniper Ridge landfill in Alton, ME by truck (56 miles one-way travel).
- ❑ Suitable material (63,000 CY) will be hauled by scow to Eastern Passage Disposal Site for open water placement (14 miles one-way travel).

A review of the National Oceanic and Atmospheric Administration (NOAA) Coast Survey's Automated Wreck and Obstruction Information System (AWOIS) and Electronic Navigation Charts (ENC) identified no potential submerged archaeological sites or shipwrecks within the project area and proposed disposal locations. Sediment cores were collected to project depth throughout the channel from seven sample stations (see sample locations figure). Sediments in the outer portion of the channel were predominantly gray, poorly graded medium to coarse sands overlying marine clay deposits with mixtures of fine, woody organic debris. Sediments within the inner harbor were composed of medium to coarse sands overlain by a thin layer of loose fine sand and silt with shell and wood fragments. The area surrounding the town dock was composed of mixed sand, gravel, and silt over a cobble and gravel substrate.

Sanborn Fire Insurance maps of Blue Hill (1925) depict the G.M. Allen and Son sawmill adjacent to the dam in the inner harbor area (Main Street). Earlier historic maps (Walling 1860 and Map of Blue Hill Village 1881) indicate a dense concentration of commercial and industrial development in the inner harbor area. The Blue Hill Historic District is centered on and around Main Street. However, dredging of the harbor will commence from the Town Wharf south, well outside of the inner harbor area. Historic and archaeological properties are not expected within this area.

Therefore, dredging of Blue Hill Harbor with disposal within a CAD cell adjacent to the channel, at the Eastern Passage Disposal Site, or via transport to the Juniper Ridge landfill will have no effect upon any site or structure of historic, architectural or archaeological significance as defined by Section 106 of the NHPA and implementing regulations 36 CFR 800. We would appreciate your concurrence with this determination. If unanticipated historic properties are identified during project construction, we will follow the procedures for post-review discoveries at 36 CFR 800.13.

If you have any questions, please feel free to contact Mr. William Bartlett, Study Manager at (978) 318-8004 or Mr. Marc Paiva, Project Archaeologist at (978) 318-8796.

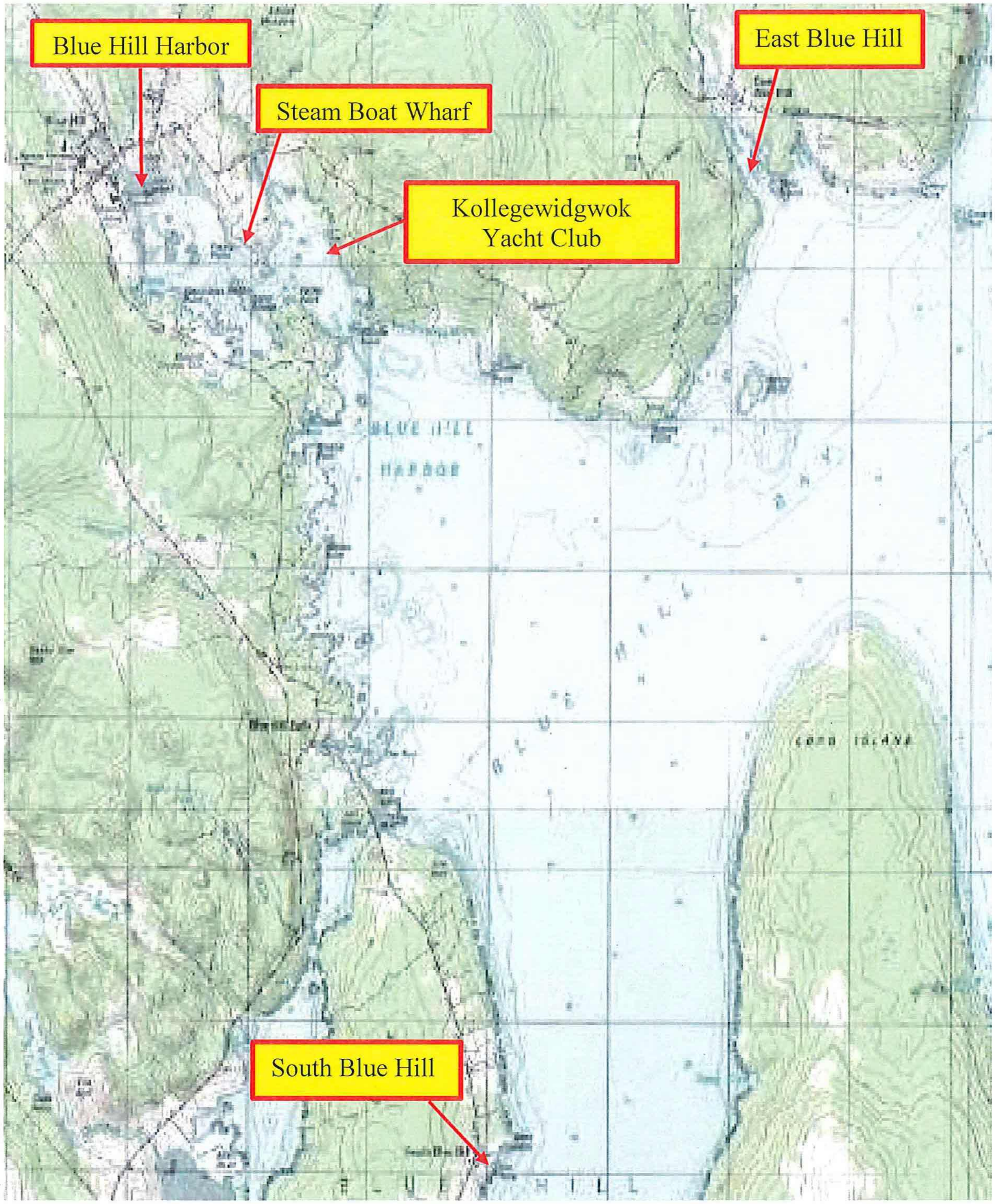
Sincerely,

John R. Kennelly
Chief, Planning Division

Enclosures

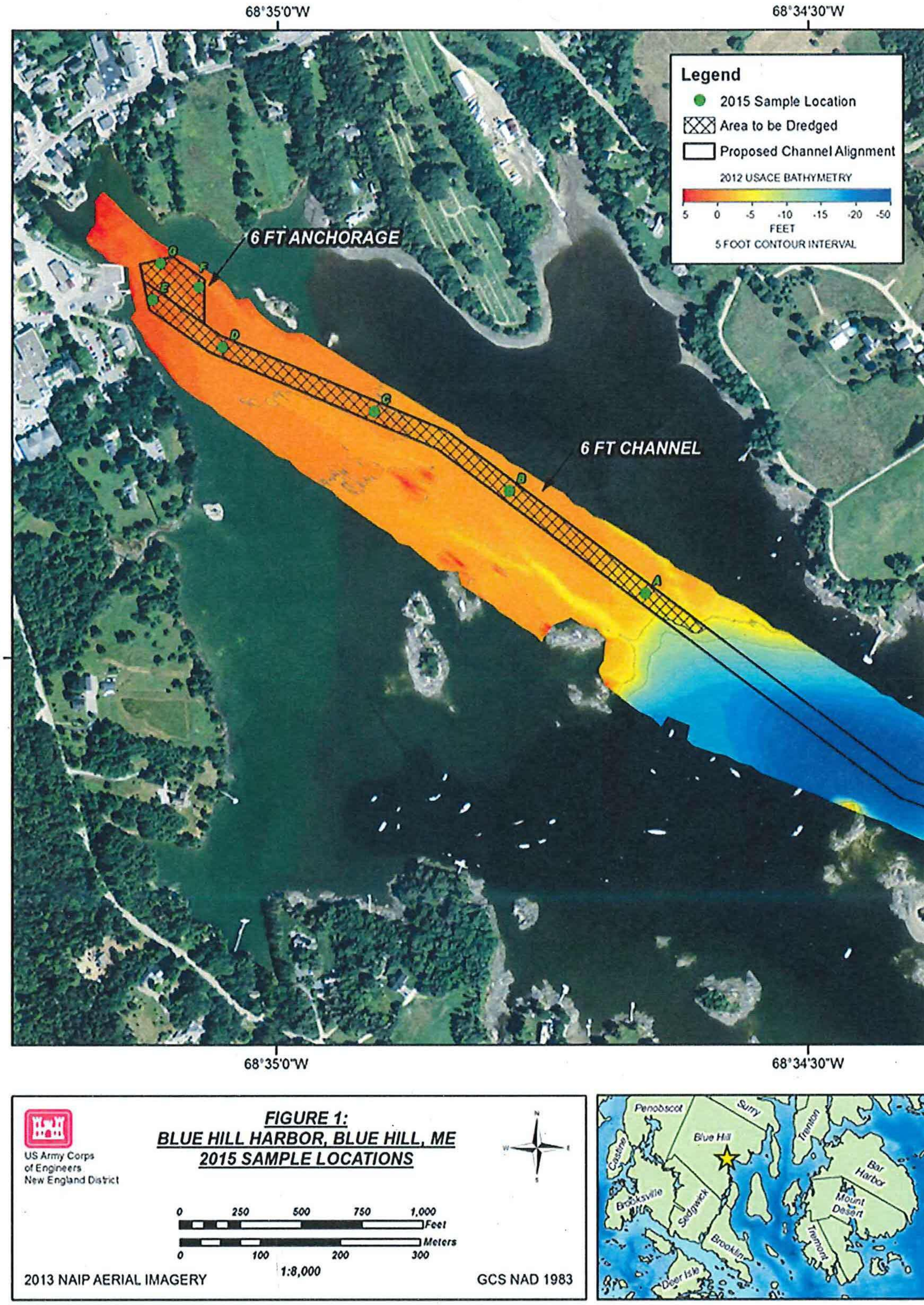
Same Letter Sent (with enclosures):
Mr. Donald Soctomah, Tribal Historic Preservation Officer
Passamaquoddy Tribe
P.O. Box 159
Princeton, ME 04668

Mr. Chris Sockalexis, Tribal Historic Preservation Officer
Penobscot Indian Nation
Cultural and Historic Preservation Department
12 Wabanaki Way
Indian Island, ME 04468



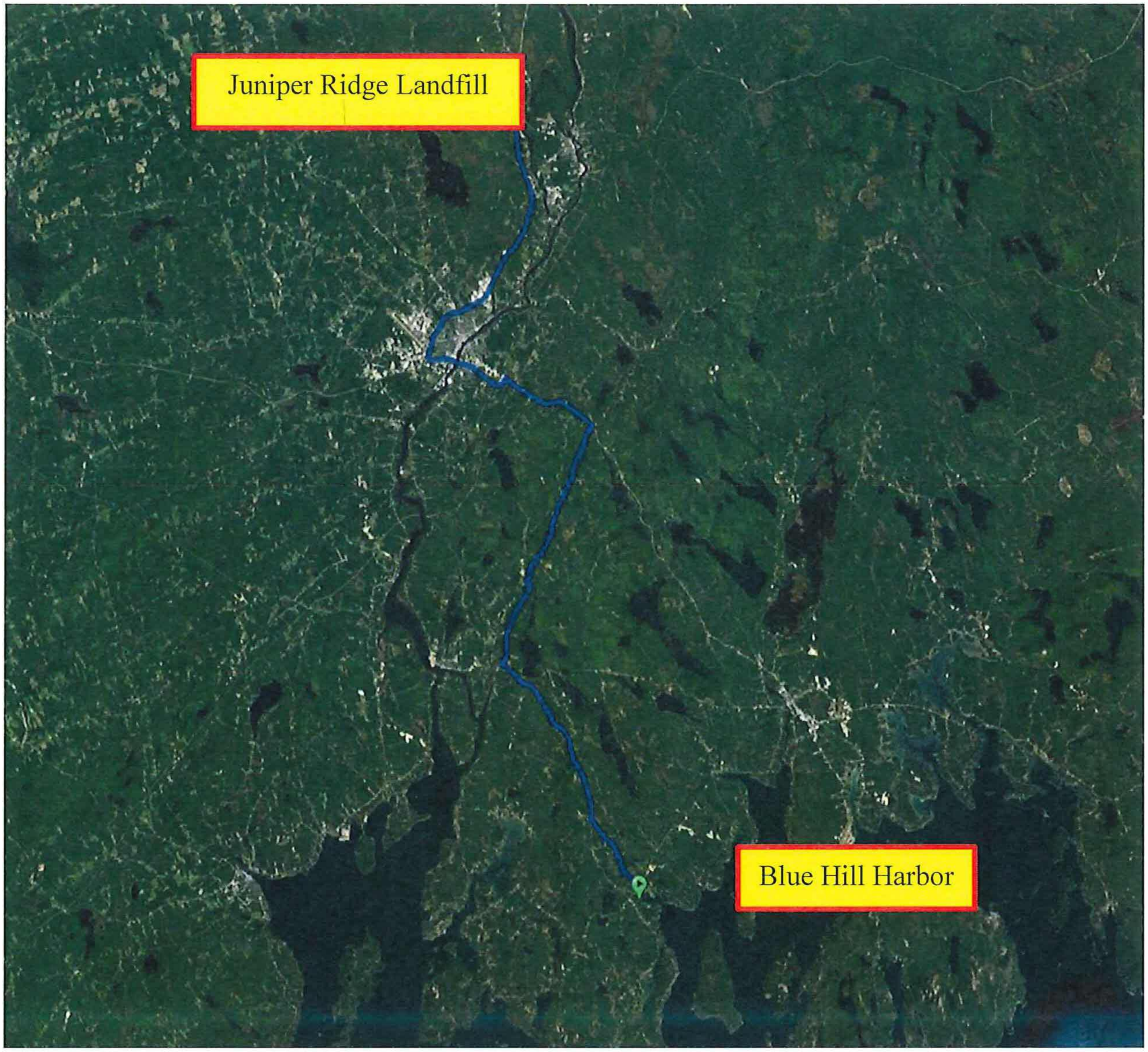
Project Location - Blue Hill Harbor
Blue Hill, Maine

Blue Hill Town Wharf
Looking West at the Town owned landing in Inner Blue Hill Harbor

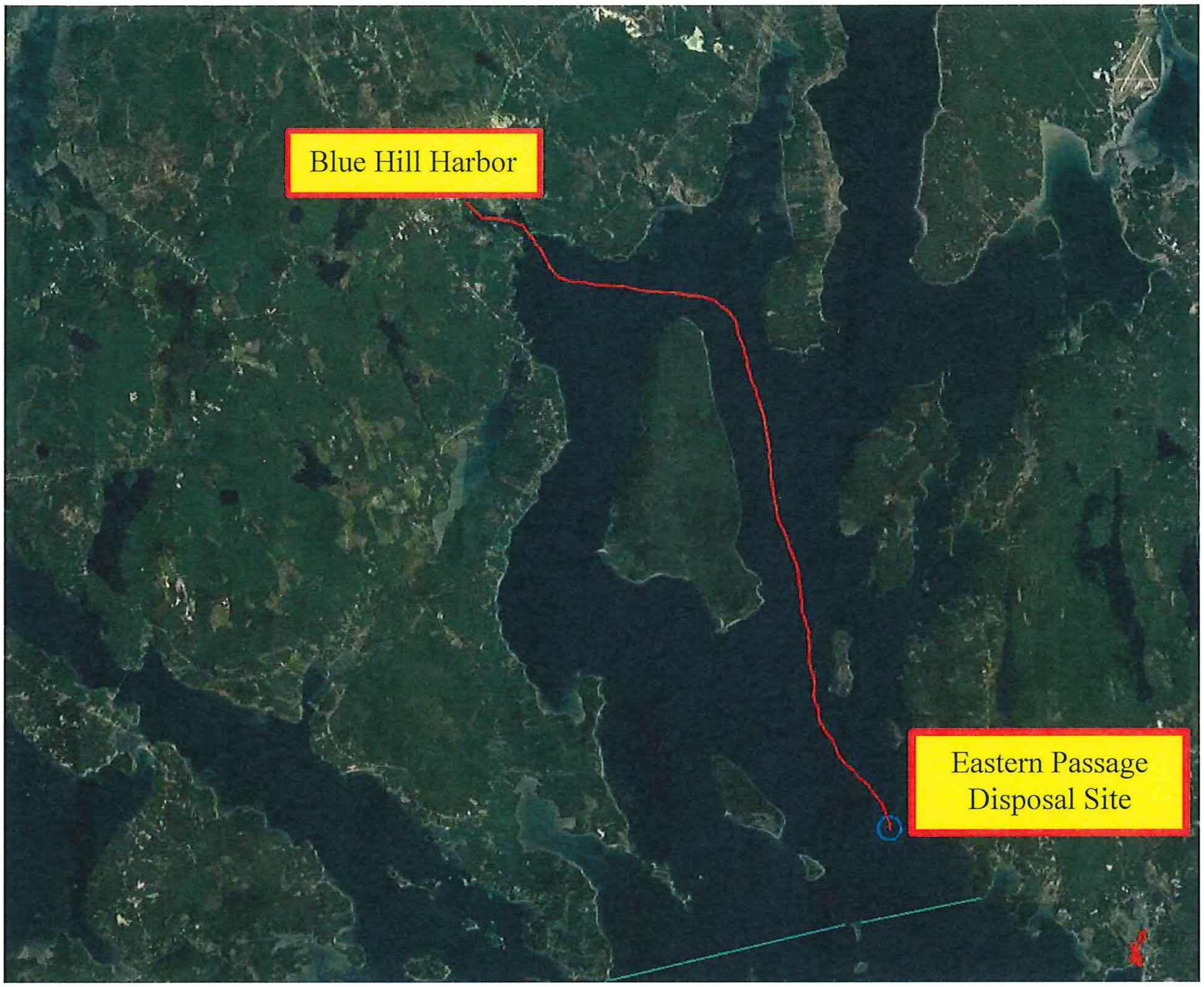


Channel Alignment, Dredging Limits and Sample Locations

Proposed CAD Cell Location Adjacent to Channel



Upland Disposal Location – Juniper Ridge Landfill



Open Water Disposal Location – Eastern Passage Disposal Site

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD MA 01742-2751

December 4, 2018

Planning Division
Evaluation Branch

Mr. Donald Soctomah, Tribal Historic Preservation Officer
Passamaquoddy Tribe
P.O. Box 159
Princeton, ME 04668

Dear Mr. Soctomah:

The U.S. Army Corps of Engineers (USACE), New England District is preparing an Environmental Assessment for a proposed Navigation Improvement Project at Blue Hill Harbor in Blue Hill, Maine (see enclosed figures). We would like your comments on the following undertaking in accordance with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended.

Blue Hill Harbor is the principal commercial fishing harbor of the Town of Blue Hill, located on the western shore of Blue Hill Bay in Hancock County, Maine. The harbor is located about 30 miles south-southeast of Bangor and 103 miles east of Portland, Maine. Blue Hill Harbor is located on the northwest side of Blue Hill Bay, northwest of Long and Mount Desert Islands.

The principal navigation issue at Blue Hill Harbor is that existing conditions do not accommodate safe and efficient operations for commercial fishermen and other vessel operators in the Blue Hill area. Given the regional demands from the commercial fishing fleet, navigation delays and inefficiencies have become problematic for the facilities. There is a lack of sufficient water depth in the western portion of the inner harbor to the publicly-owned shorefront facilities in Blue Hill Harbor. Under present conditions, navigation is limited to the period of three hours before and three hours after high tide. At low tide a boat drawing two feet or more cannot approach closer than 2,000 feet seaward of the wharf.

Currently, a majority of commercial vessels load and offload at town facilities at South Blue Hill Wharf, located outside the protected inner harbor and five miles by road from the town center. South Blue Hill Wharf contains a municipal ramp, docks and floats, as well as 23 moorings for commercial fishermen. South Blue Hill is at maximum capacity with no room for expansion. Other fishermen are based in East Blue Hill Harbor, located outside the protected inner harbor to the northeast, and at Steamboat Wharf, located inside the protected inner harbor on the eastern shore.

USACE is proposing the following alternatives to improve existing navigation conditions in Blue Hill Harbor:

Alternative A:

- A 6-foot deep channel (MLLW), 80-feet wide from the outer harbor to the town wharf, widened at its upper end to form a turning basin 160 feet by 80 feet adjacent to the Town Wharf.
- A Confined Aquatic Disposal (CAD) cell adjacent to the channel to dispose of the 10,000 cubic yards (CY) of unsuitable material.
- Suitable material (63,000 CY) will be hauled by scow to Eastern Passage Disposal Site for open water placement (14 miles one-way travel).

Alternative B:

- A 6-foot deep channel (MLLW), 80-feet wide from the outer harbor to the town wharf, widened at its upper end to form a turning basin 160 feet by 80 feet adjacent to the Town Wharf.
- Dewatering and treatment of unsuitable material (10,000 CY) onshore at the Town Wharf, then transport to Juniper Ridge landfill in Alton, ME by truck (56 miles one-way travel).
- Suitable material (63,000 CY) will be hauled by scow to Eastern Passage Disposal Site for open water placement (14 miles one-way travel).

A review of the National Oceanic and Atmospheric Administration (NOAA) Coast Survey's Automated Wreck and Obstruction Information System (AWOIS) and Electronic Navigation Charts (ENC) identified no potential submerged archaeological sites or shipwrecks within the project area and proposed disposal locations. Sediment cores were collected to project depth throughout the channel from seven sample stations (see sample locations figure). Sediments in the outer portion of the channel were predominantly gray, poorly graded medium to coarse sands overlying marine clay deposits with mixtures of fine, woody organic debris. Sediments within the inner harbor were composed of medium to coarse sands overlain by a thin layer of loose fine sand and silt with shell and wood fragments. The area surrounding the town dock was composed of mixed sand, gravel, and silt over a cobble and gravel substrate.

Sanborn Fire Insurance maps of Blue Hill (1925) depict the G.M. Allen and Son sawmill adjacent to the dam in the inner harbor area (Main Street). Earlier historic maps (Walling 1860 and Map of Blue Hill Village 1881) indicate a dense concentration of commercial and industrial development in the inner harbor area. The Blue Hill Historic District is centered on and around Main Street. However, dredging of the harbor will commence from the Town Wharf south, well outside of the inner harbor area. Historic and archaeological properties are not expected within this area.

Therefore, dredging of Blue Hill Harbor with disposal within a CAD cell adjacent to the channel, at the Eastern Passage Disposal Site, or via transport to the Juniper Ridge landfill will have no effect upon any site or structure of historic, architectural or archaeological significance as defined by Section 106 of the NHPA and implementing regulations 36 CFR 800. We would appreciate your concurrence with this determination. If unanticipated historic properties are identified during project construction, we will follow the procedures for post-review discoveries at 36 CFR 800.13.

If you have any questions, please feel free to contact Mr. William Bartlett, Study Manager at (978) 318-8004 or Mr. Marc Paiva, Project Archaeologist at (978) 318-8796.

Sincerely,

John R. Kennelly
Chief, Planning Division

Enclosures

Same Letter Sent (with enclosures):
Mr. Kirk F. Mohney, State Historic Preservation Officer
Maine Historic Preservation Commission
55 Capitol Street, 65 State House Station
Augusta, ME 04333

Mr. Chris Sockalexis, Tribal Historic Preservation Officer
Penobscot Indian Nation
Cultural and Historic Preservation Department
12 Wabanaki Way
Indian Island, ME 04468

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD MA 01742-2751

December 4, 2018

Planning Division
Evaluation Branch

Mr. Chris Sockalexis, Tribal Historic Preservation Officer
Penobscot Indian Nation
Cultural and Historic Preservation Department
12 Wabanaki Way
Indian Island, ME 04468

Dear Mr. Sockalexis:

The U.S. Army Corps of Engineers (USACE), New England District is preparing an Environmental Assessment for a proposed Navigation Improvement Project at Blue Hill Harbor in Blue Hill, Maine (see enclosed figures). We would like your comments on the following undertaking in accordance with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended.

Blue Hill Harbor is the principal commercial fishing harbor of the Town of Blue Hill, located on the western shore of Blue Hill Bay in Hancock County, Maine. The harbor is located about 30 miles south-southeast of Bangor and 103 miles east of Portland, Maine. Blue Hill Harbor is located on the northwest side of Blue Hill Bay, northwest of Long and Mount Desert Islands.

The principal navigation issue at Blue Hill Harbor is that existing conditions do not accommodate safe and efficient operations for commercial fishermen and other vessel operators in the Blue Hill area. Given the regional demands from the commercial fishing fleet, navigation delays and inefficiencies have become problematic for the facilities. There is a lack of sufficient water depth in the western portion of the inner harbor to the publicly-owned shorefront facilities in Blue Hill Harbor. Under present conditions, navigation is limited to the period of three hours before and three hours after high tide. At low tide a boat drawing two feet or more cannot approach closer than 2,000 feet seaward of the wharf.

Currently, a majority of commercial vessels load and offload at town facilities at South Blue Hill Wharf, located outside the protected inner harbor and five miles by road from the town center. South Blue Hill Wharf contains a municipal ramp, docks and floats, as well as 23 moorings for commercial fishermen. South Blue Hill is at maximum capacity with no room for expansion. Other fishermen are based in East Blue Hill

Harbor, located outside the protected inner harbor to the northeast, and at Steamboat Wharf, located inside the protected inner harbor on the eastern shore.

USACE is proposing the following alternatives to improve existing navigation conditions in Blue Hill Harbor:

<u>Alternative A</u>:

- ❑ A 6-foot deep channel (MLLW), 80-feet wide from the outer harbor to the town wharf, widened at its upper end to form a turning basin 160 feet by 80 feet adjacent to the Town Wharf.
- ❑ A Confined Aquatic Disposal (CAD) cell adjacent to the channel to dispose of the 10,000 cubic yards (CY) of unsuitable material.
- ❑ Suitable material (63,000 CY) will be hauled by scow to Eastern Passage Disposal Site for open water placement (14 miles one-way travel).

<u>Alternative B</u>:

- ❑ A 6-foot deep channel (MLLW), 80-feet wide from the outer harbor to the town wharf, widened at its upper end to form a turning basin 160 feet by 80 feet adjacent to the Town Wharf.
- ❑ Dewatering and treatment of unsuitable material (10,000 CY) onshore at the Town Wharf, then transport to Juniper Ridge landfill in Alton, ME by truck (56 miles one-way travel).
- ❑ Suitable material (63,000 CY) will be hauled by scow to Eastern Passage Disposal Site for open water placement (14 miles one-way travel).

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Sanborn Fire Insurance maps of Blue Hill (1925) depict the G.M. Allen and Son sawmill adjacent to the dam in the inner harbor area (Main Street). Earlier historic maps (Walling 1860 and Map of Blue Hill Village 1881) indicate a dense concentration of commercial and industrial development in the inner harbor area. The Blue Hill Historic District is centered on and around Main Street. However, dredging of the harbor will commence from the Town Wharf south, well outside of the inner harbor area. Historic and archaeological properties are not expected within this area.

Therefore, dredging of Blue Hill Harbor with disposal within a CAD cell adjacent to the channel, at the Eastern Passage Disposal Site, or via transport to the Juniper Ridge landfill will have no effect upon any site or structure of historic, architectural or archaeological significance as defined by Section 106 of the NHPA and implementing regulations 36 CFR 800. We would appreciate your concurrence with this determination. If unanticipated historic properties are identified during project construction, we will follow the procedures for post-review discoveries at 36 CFR 800.13.

If you have any questions, please feel free to contact Mr. William Bartlett, Study Manager at (978) 318-8004 or Mr. Marc Paiva, Project Archaeologist at (978) 318-8796.

Sincerely,

John R. Kennelly
Chief, Planning Division

Enclosures

Same Letter Sent (with enclosures):
Mr. Kirk F. Mohney, State Historic Preservation Officer
Maine Historic Preservation Commission
55 Capitol Street, 65 State House Station
Augusta, ME 04333

Mr. Donald Soctomah, Tribal Historic Preservation Officer
Passamaquoddy Tribe
P.O. Box 159
Princeton, ME 04668

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD MA 01742-2751

September 25, 2018

Planning Division

Attn: Jim Schatz
Board of Selectmen
Town of Blue Hill
P.O. Box 412
Blue Hill, ME 04614

Dear Mr. Schatz:

I am writing in reference to the Blue Hill Harbor Navigation Improvement project and the Feasibility Cost Sharing Agreement (FCSA) signed on June 29, 2015 between the Town of Blue Hill and the U.S. Army Corps of Engineers.

In accordance with discussions held between the USACE and the Blue Hill Board of Selectmen, we request that you provide an additional $15,000 towards your share of total project costs. The additional Town funds together with additional Federal funds, will be used to complete sampling and testing of sediment and the design of a confined aquatic disposal cell in Blue Hill Harbor. The purpose of this additional work is to allow for disposal of dredge spoils deemed unsuitable for open water disposal. This additional payment will increase your total cash contribution for the project to $104,000.

Please provide a check in the amount of $15,000 payable to "FAO, U.S. Army Corps of Engineers, New England District." The mailing address is New England District, U.S. Army Corps of Engineers, 696 Virginia Road, Concord, MA 01742, Attn: Mr. John Kennelly.

If you have any questions or require any additional information, please contact the project manager, Mr. William Bartlett at (978) 318-8004 or at William.C.Bartlett@usace.army.mil

Sincerely,

John R. Kennelly
Chief, Planning Division

Town of Blue Hill

SELECTMEN
ASSESSORS
OVERSEERS of the POOR
John R Bannister
James M Schatz
Vaughn W Leach

ASSESSORS' AGENTS
R. J. D. Appraisals

CODE ENFORCEMENT OFFICER
Judith Jenkins

First Settled in 1762
Incorporated Jan. 30, 1789

18 Union Street
PO Box 412
Blue Hill, ME 04614

207-374-2281
Fax 207-374-9935

TREASURER
Jody Murphy

TAX COLLECTOR
TOWN CLERK
Etta Perkins

ROAD COMMISSIONER
William Cousins

FIRE CHIEF
Matthew Dennison

March 16, 2017

William Bartlett, Project Manager
US Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742-2751

Dear Mr. Bartlett:

The Town of Blue Hill has explored the availability of an "upland" site within our jurisdiction to deposit up to 10,000 cubic yards of the dredgings you estimate in need of relocation. Hopefully, you can identify another cost-effective location to store that material.

Sincerely,

James M. Schatz
For the Selectmen of Blue Hill

JMS:djb

Town of Blue Hill, Maine

SELECTMEN/ASSESSORS
JOHN R. BANNISTER
JAMES M. SCHATZ
VAUGHN LEACH

OVERSEERS OF POOR
JOHN R. BANNISTER
JAMES M. SCHATZ
VAUGHN LEACH

ASSESSORS' AGENTS
R. J. D. APPRAISALS

FIRST SETTLED 1762

INCORPORATED JAN. 30, 1789

SELECTMEN IN OFFICE
FRIDAY AFTERNOONS
P.O. Box 412
Blue Hill, Maine 04614

TREASURER/ADMI ASST.
ANN STADDEN
TAX COLLECTOR
ETTA PERKINS
TOWN CLERK
ETTA PERKINS
ROAD COMMISSIONER
WILLIAM H. COUSINS
FIRE CHIEF
DENNIS ROBERTSON

BLUE HILL, MAINE
TELEPHONE 207-374-2281 FAX 207-374-9935

June 17, 2015

Mr. William Bartlett
Study Manager
Army Corps of Engineers / New England District
Engineering/Planning Division
696 Virginia Road
Concord, MA 01742-2751

RE: Certificate of Authority (Unclassified)

Dear Mr. Bartlett:

The Town understands that the $80,000 non-Federal cost share is based on the feasibility cost estimate of $160,000 as stated in the FCSA. Town Meeting's authorization to the Selectmen is presently limited to that $80,000 cash contribution. Any increase in the study scope and estimate requiring an increase in the Town's study cost-share will require additional authority from the Town Meeting before the Selectmen can make any commitment to providing additional funds.

Please note that the signature of our Town attorney on the "Certificate of Authority" was provided with the full expectation that the Town must comply with the conditions cited in the above statement.

Sincerely,

James M. Schatz
For the Selectmen of Blue Hill

JMS:djb

NON-FEDERAL SPONSOR'S
SELF-CERTIFICATION OF FINANCIAL CAPABILITY
FOR AGREEMENTS

I, Jody A. Murphy, do hereby certify that I am the Treasurer for the Town of Blue Hill, Maine (the "Non-Federal Sponsor"); that I am aware of the financial obligations of the Non-Federal Sponsor for the Blue Hill Harbor Maine Federal Navigation Improvement Feasibility Study; and that the Non-Federal Sponsor has the financial capability to satisfy the Non-Federal Sponsor's obligations under the Blue Hill Harbor, Navigation Improvement Feasibility Study.

IN WITNESS WHEREOF,

I have made and executed this certification this 17th day of March, 2015.

BY: ______________________

TITLE: treasurer

DATE: 3/17/15

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD MA 01742-2751

June 30, 2015

Engineering/Planning Division
Planning Branch

Town of Blue Hill
Board of Selectmen
P.O. Box 412
Blue Hill, Maine 04614

Dear Board of Selectmen:

Enclosed for your use are two fully executed copies of the Feasibility Cost Sharing Agreement (FCSA) for the Navigation Improvement Feasibility Study in Blue Hill, Maine.

As stipulated in Article IV – Method of Payment of the FCSA, your estimated cash contribution toward study costs is $80,000. We request that you transmit a check to cover this amount payable to "FAO, USAED, NEW ENGLAND" to the attention of the Project Manager, Mr. William Bartlett. This office must receive the check by July 30, 2015.

If you have any questions or require any additional information, please contact me at (978) 318-8505 or Mr. Bartlett, at (978) 318-8004.

Sincerely,

John R. Kennelly
Chief, Planning Branch

Enclosure

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD MA 01742-2751

May 13, 2015

Engineering/Planning Division
Planning Branch

Town of Blue Hill
c/o Board of Selectmen
P.O. Box 412
Blue Hill, Maine 04614

Dear Board of Selectmen:

On May 5, 2015 the New England District received approval from our North Atlantic Division to execute the Feasibility Cost Sharing Agreement between the Town of Blue Hill and the Department of the Army Corps of Engineers for the Feasibility Study of navigation improvements at Blue Hill Harbor, Maine. Enclosed are four (4) copies of the Feasibility Cost Sharing Agreement. Please sign and date the three signature pages at the end of each copy of the agreement and return all four (4) to this office for the Corps New England District Engineer's signature. Once signed by the District Engineer, we will date the first page and send you two (2) copies of the fully executed agreement for your records, along with our request for sponsor cost-share funds.

If you have any questions or require any additional information, please contact me or Mr. William Bartlett, at (978) 318-8162 or (978) 318-8004 respectively.

Sincerely,

Scott E. Acone, P.E.
Chief, Engineering/Planning Division

Enclosures

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS, NORTH ATLANTIC DIVISION
FORT HAMILTON MILITARY COMMUNITY
302 GENERAL LEE AVENUE
BROOKLYN NY 11252-6700

CENAD-PD-C 5 May 2015

MEMORANDUM FOR Commander, US Army Corps of Engineers, New England District (CENAE-PP-C), 696 Virginia Road, Concord, MA 01742-2752

SUBJECT: Blue Hill Harbor, Maine, Continuing Authorities Program Section 107 Feasibility Cost Sharing Agreement (FCSA) (CWIS/P2: 328230)

1. References:

a. Memorandum, CENAE-EP-PN, 20 March 2015, Subject: Approval to Execute the FCSA for the Blue Hill Harbor, Blue Hill, Maine Navigation Improvement Study, Blue Hill, Maine, PWI 328230, Section 107.

b. E-mail, CENAE-EP-P, 29 April 2015, Subject: Blue Hill Harbor.

2. The enclosed subject Feasibility Cost Sharing Agreement package (FCSA) is approved for execution by the District Commander. The Division has reviewed the package (References 1a and 1b) and determined it is policy compliant. The FCSA reflects a total study cost of $160,000, which will be cost shared on a 50% Federal and 50% non-Federal basis.

3. The District is required to enter a feasibility phase project network schedule in P2, which includes the milestone (CW 130) for FCSA execution through (CW 170) Final Report Approval. Please provide this office with a signed, digital copy, of the agreement upon execution. You may not deviate from this approved FCSA without prior authorization from the North Atlantic Division.

4. The point of contact is Mr. Paul A. Sabalis, P.E., PMP. Mr. Sabalis may be reached at 347-370-4589.

John O'Connor

JOHN O'CONNOR, P.E.
Continuing Authorities Program Manager

DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MASSACHUSETIS 01742-2751

REPLY TO
ATTENTION OF

CENAE-EP-PN

18 March 2015

MEMORANDUM FOR Commander, North Atlantic Division, U.S. Army Corps of Engineers CENAD-PD-CID-P (Attn: Mr. Forcina), Ft. Hamilton Military Community, 302 General Lee Avenue, Brooklyn, New York 11252-5700

SUBJECT: Approval to Execute the Feasibility Cooperation Study Agreement (FCSA) for the Blue Hill Harbor, Blue Hill, Maine Navigation Improvement Study, Blue Hill, Maine, PWI 328230, Section 107

1. NAE requests that NAD approve for execution the enclosed FCSA for the Blue Hill Harbor, Navigation Improvement Study, Blue Hill, Maine. HQUSACE review and coordination of the CAP Fact Sheet with the OASA (CW) has been completed.

2. The town of Blue Hill, Maine, the non-Federal sponsor, supports this study and will provide the non-Federal share when requested. There are no deviations to the revised model Feasibility Cost Sharing Agreement, dated October 15, 2014. As directed by the OASA (CW) the non-Federal sponsor was advised that the Army does not budget for the Section 107 program.

3. Enclosed for your information are the non-Federal sponsor's Support Letter, Self Certification of Financial capability, Review Plan, negotiated FCSA, FCSA Legal certification, funds allocation table, and the OASA (CW) Fact Sheet approval memo.

FOR THE COMMANDER:

Ends

Scott E. Acone, P. E.
Chief Engineering/Planning Division

CF (w/encls):
Paul Sabalis, NAD
Peter Blum, NAD

DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
CIVIL WORKS
108 ARMY PENTAGON
WASHINGTON DC 20310-0108

NOV 2 1 2014

MEMORANDUM FOR THE DEPUTY COMMANDING GENERAL FOR CIVIL AND EMERGENCY OPERATIONS

SUBJECT: Blue Hill Harbor, Maine Navigation Improvement Project Section 107 Fact Sheet

This responds to an email submission from the North Atlantic Regional Integration Team, dated December 12, 2013, requesting concurrence with the subject fact sheet to allow the New England District to proceed with negotiating and executing a Feasibility Cost Sharing Agreement with the Office of the Selectmen, the Town of Blue Hill, the non-Federal sponsor of the project.

I concur with the fact sheet. However, the non-Federal sponsor is to be advised that, even if the Corps finds the project to be feasible, in the Federal interest, and funds project construction, future budgets for the Civil Works program might not include funding to maintain the project. Future funding for maintenance of navigation projects with low commercial tonnage is likely to be highly constrained.

Jo-Ellen Darcy
Assistant Secretary of the Army
(Civil Works)

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD MA 01742-2751

CENAE-EP 11 June 2014

MEMORANDUM FOR RECORD

SUBJECT: Blue Hill Harbor, Blue Hill, Maine, Section 107 Navigation Improvement Study, Initial Appraisal Report (Federal Interest Determination), District Quality Control Certification

1. Reference:

   a. EC 1165-2-214, 15 December 2012, subject: Civil Works Review Policy.

2. EC 1165-2-214, Paragraph 5(d) requires that all civil works planning, engineering, and O&M products must undergo District Quality Control (DQC).

3. CENAE has conducted a DQC review of the Initial Appraisal Report (IAR) in accordance with EC 1165-2-214. The Project Delivery Team and District technical supervisors responsible for report products have reviewed the IAR documents for technical accuracy. The District Quality Control review was completed on 30 July 2013. No significant issues were indentified and minor editorial comments were incorporated into the IAR. Records of all edits and changes resulting from DQC have been retained at the New England District.

4. The District certifies that the report as reviewed meets the requirements for an Initial Appraisal/ Federal Interest Determination as a basis for proceeding to a cost-shared feasibility study.

Robert S Russo

ROBERT S. RUSSO
Study Manager
Planning Branch

Mark L Habel

MARK L. HABEL
Chief
Navigation Section (CENAE-EP-PN)

JOHN R. KENNELLY
Chief
Planning Branch (CENAE-EP)

Town of Blue Hill, Maine

SELECTMEN/ASSESSORS
JOHN R. BANNISTER
JAMES M. SCHATZ
VAUGHN W. LEACH

OVERSEERS OF POOR
JOHN R. BANNISTER
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FIRST SETTLED 1762

INCORPORATED JAN. 30, 1789

SELECTMEN IN OFFICE
FRIDAY AFTERNOONS
P.O. Box 412
Blue Hill, Maine 04614

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ROAD COMMISSIONER
WILLIAM H. COUSINS
FIRE CHIEF
DENNIS ROBERTSON

BLUE HILL, MAINE
TELEPHONE 207-374-2281 FAX 207-374-9935

November 18, 2013

John Kennelly, Chief of Planning Branch
Engineering/Planning Division
US Army Corps of Engineers
696 Virginia Road
Concord, MA 01742

Dear Mr. Kennelly,

The purpose of this letter is to reiterate the Town of Blue Hill's support of further feasibility study of navigation improvements in Blue Hill Harbor. We understand that we have the responsibility to provide 50 percent of the $160,000 study cost. The Town voted to support that portion of the study at our last Town Meeting (04/06/13).

We look forward to our partnership with the US Army Corps of Engineers. Jointly, we will improve the economic viability of those who use our harbor facilities.

Sincerely,

James M. Schatz
For the Blue Hill Board of Selectmen

Cc: Rob Russo
Study Manager
Engineering/Planning Division
US Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742/2751

DEPARTMENT OF THE ARMY
NORTH ATLANTIC DIVISION, CORPS OF ENGINEERS
FORT HAMILTON MILITARY COMMUNITY
GENERAL LEE AVENUE, BLDG 301
BROOKLYN, NY 11252

REPLY TO

CENAD-PD-CS 29 October 2013

MEMORANDUM FOR Commander, New England District, US Army Corps of Engineers, ATTN: CENAE-EP-PN

SUBJECT: Blue Hill Harbor, Maine, Continuing Authorities Program, Section 107, CWIS/P2#: 328230

1. Reference is made to the following:

   a. CENAE-EP-PN e-mail, dated 17 October 2013.

   b. CENAD-PSD-P memorandum, dated 24 October 2013.

2. The North Atlantic Division (Division) has reviewed the District's resubmission (Reference 1a) and has approved the initial appraisal (Reference 1b).

3. The District should mark the completion of this milestone in P2 and the CAP database of OFA. The Division will advise your staff once we receive a response from OASA (CW) concerning the policy fact sheet.

4. The point of contact for this action is Mr. Paul A. Sabalis, P.E., PMP. (NAD DST Manager). Mr. Sabalis may be reached at 347-370-4589.

Encl

PAUL A. SABALIS, P.E., PMP
District Support Team
Civil Works Integration Division

DEPARTMENT OF THE ARMY
NORTH ATLANTIC DIVISION, CORPS OF ENGINEERS
FORT HAMILTON MILITARY COMMUNITY
GENERAL LEE AVENUE, BLDG 301
BROOKLYN, NY 11252

REPLY TO

CENAD-PSD-P 24 October 2013

MEMORANDUM FOR Civil Works District Support Team (Sabalis)

SUBJECT: Blue Hill Harbor, ME – Initial Appraisal Report
Continuing Authorities Program, Section 107

1. Reference is made to the following:

a. CENAD-PD-CS memorandum, dated 17 October 2013, requesting review of NAE's revised Initial Appraisal Report, SAB.

b. CENAE-EP-PS e-mail, dated 17 October 2013, SAB.

c. CENAD-PSD-P memorandum, dated 23 September 2013, SAB.

2. CENAD-PD-CS has requested review (Reference 1a) of NAE's resubmission of the initial appraisal report and extent of compliance, SAB, for Division back-check review and approval (Reference 1b). Prior Division policy review comments are enclosed (Reference 1c).

3. At your request (Reference 1a), Planning staff has reviewed the NAE's revisions to their Initial Appraisal Report (Reference 1b) and has no remaining comments. The IAR is hereby approved.

4. The point of contact for this action is Ms. Naomi Fraenkel, AICP (NAE Planning Program Manager). Ms. Fraenkel may be reached at (917) 790-8615.

PST PM
RECEIVED
10-28-13

JOSEPH R. VIETRI
Chief, Planning and Project Formulation
Programs Directorate

DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

REPLY TO
ATTENTION OF

CENAE-EP-PN

13 August 2013

MEMORANDUM FOR Commander, U.S. Army Corps of Engineers, North Atlantic Division, ATTN: CENAD-PD-CID-P (Mr. Joseph Forcina), Fort Hamilton Military Community, 302 General Lee Avenue, Brooklyn, NY 11252-6700

SUBJECT: Continuing Authorities Initial Appraisal Report, Section 107, Blue Hill Harbor, Blue Hill, Maine (PWI # 328230)

1. Enclosed are four copies of the Initial Appraisal Report and Fact Sheet for the Blue Hill Harbor Navigation Improvement Project, Blue Hill, Maine, for your review and approval to proceed to the Feasibility Phase. The initial appraisal indicates that navigation improvements consisting of developing a Federal channel connecting the central Blue Harbor wharf with deep water are in the Federal interest, and provide the basis to prepare and negotiate a Feasibility Cost Sharing Agreement (FCSA). Execution of a FCSA with the Sponsor, the town of Blue Hill, Maine, is required to share the costs of the feasibility phase.

2. If you have any questions or require additional information, please contact me at (978) 318-8162, or Mr. Robert Russo, the Project Manager, at (978) 318- 8553.

FOR THE COMMANDER:

Scott E. Acone, P.E.
Chief, Engineering/Planning Division

Encls

Copy Furnished (w/o Encl):
Paul Sabalis, DST, NAD

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
16 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0016

Paul R. LePage
GOVERNOR

David Bernhardt
COMMISSIONER

March 20, 2013

The Honorable Susan M. Collins
United States Senate
188 Russell Senate Office Building
Washington, DC 20510

The Honorable Angus S. King, Jr
United States Senate
413 Dirksen Senate Office Building
Washington, DC 20510

The Honorable Michael H. Michaud
United State House of Representatives
1318 Longworth HOB
Washington, DC 20515

The Honorable Chellie M. Pingree
United State House of Representatives
1724 Longworth HOB
Washington, DC 20515

Dear Senator Collins, Senator King, Congressman Michaud and Congresswoman Pingree:

In response to previous requests from our Congressional Delegation staff, this letter is to provide information for your consideration in addressing the State's interests and concerns regarding federal funding for maintenance and improving dredging and related matters.

The Army Corps of Engineers' ("ACOE") policy for prioritizing among projects that qualify for and need federal funds for maintenance dredging is based primarily on the tonnage of commercial freight that passes through a port. With few exceptions, the federal navigation projects which the ACOE maintains along Maine's coast serve primarily commercial fishing and recreational boating-related small businesses as well as many water-dependent public uses. Most of Maine's ports have little or no commercial shipping traffic yet provides critical infrastructure and supports small businesses vital to the economy of our coastal communities and in turn our state economy as a whole. As a consequence, many Maine projects do not rank highly among the ACOE's funding priorities. For example the Kennebec River project, which provides access for Navy vessels built and repaired at Bath Iron Works, one of the few naval shipyards of its kind in the country, does not rank highly in the ACOE's maintenance dredging ranking scheme, illustrates the narrowness of the ACOE's focus, even in addressing strategic national interests.

In recent years, Congress has considered legislation, such as the Renew America's Maritime Promise ("RAMP") bill, which would provide additional funding to the ACOE from the Harbor Maintenance Trust Fund, to meet the maintenance dredging-related needs of the nation's ports and harbors. We urge that you give thoughtful consideration to any such legislation that may facilitate maintenance and improvement of Maine's ports and harbors.

PHONE: (207) 624-3000 TTY: 888-516-9364 FAX: (207) 624-3001

The federal navigation projects in Maine require maintenance at varying intervals and in varying degrees over time, depending on shoaling rates, weather, and other natural factors. Likewise, the local, state, federal processes to determine dredging needs and ensure the necessary environmental review and approval of dredging activities may vary. As a result, the State's priorities regarding federal funding for dredging in a given year focuses on projects that are ready, are anticipated to be ready, or are in a position to move forward in the project planning and assessment process if federal funds were available.

The State has identified the following as current needs for federal funding for maintenance dredging, navigation improvement, and navigation project planning: [1]

Maintenance dredging

- Portland Harbor project - $13 million
- Wells Harbor project - $3.5 million
- Beals Island/Pig Island Gut project - $4 million (The ACOE has advised that, for efficiency's sake, it would undertake these two projects together when funded.)
- Royal River project - $3 million

We note that funding for the Portland Harbor project is in the President's budget for this year and that funding for the Wells Harbor project is provided by legislation to address the effects of Hurricane Sandy. We appreciate and encourage your continuing support for the anticipated federal appropriations needed to complete these projects.

Please be advised that the ACOE has also identified the Scarborough River, Biddeford Pool, Saco River, Kennebunk River, and York Harbor projects as other federal navigation projects which the ACOE is evaluating and which may be ready for maintenance dredging funding in a subsequent, near-term fiscal year.

Navigation improvement

It is our understanding that there is potential that Congress may consider and enact a Water Resources Development Act ("WRDA") bill this year. The ACOE has advised that it needs authorization in WRDA as well as an appropriation in the amount indicated to complete the following navigation improvement-related projects:

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[1] The approximate project cost estimates indicated are based on information provided by the ACOE at its annual meeting with Maine congressional delegation staff, state and federal agencies, local officials, and other stakeholders to discuss the status, funding needs, and related issues regarding ACOE navigation projects in Maine.

- Searsport Project - $8.6 million (design & construction)

- Piscataqua River/turning Basin Project - $5.3 million (Dredging for this New Hampshire-sponsored project would occur in Maine. The Towns of Wells and Kittery are among those which have expressed interest in using the dredged materials, sand and blasted ledge, for beach nourishment or other beneficial uses.)

- Saco/Camp Ellis Project

Disposal of dredged materials

In 2010, due to a deadline under the federal process for formally designating it as a disposal site, the Cape Arundel Disposal Site ("CADS") ceased to be open for disposal of dredged materials. For decades, CADS was used as a site for deposition of dredged materials suitable for ocean disposal and has the capacity for such use in the future. The York Harbor project, for example, would be about $1.2 million less if CADS were available for disposal of dredged materials according to the ACOE.

Project planning and development

The ACOE works with communities to help plan and design navigation improvement projects. The State has identified the following current funding needs to continue to advance these efforts in the following Maine coastal communities:

- Blue Hill - $200,000

- Chebeague Island - $216,000

Thank you for your consideration and work on behalf of our State.

Sincerely,

David Bernhardt
Commissioner

Town of Blue Hill, Maine

BLUE HILL, MAINE

August 30, 2012

To: Karen Umbrell

From: Selectmen-Town of Blue hill

Re: Additional Info/Benefits of Dredging in Blue Hill Harbor

- Dredging would tend to lengthen the period boats can be in the water. It extends the commercial fishing season and allows for additional income.
- The size of the (fishing) fleet should increase since all-tides burden will now be spread between two wharves.
- We estimate that the savings to the Town by being able to remove the South Blue Hill floats before rough weather will be up to $20,000 per year in float and infra-structure repairs.
- We estimate that the fishing fleet will experience a savings of up to $100,000 per year in repair costs that will be avoided by having the all-tides option at the Town wharf.
- There will probably be purchases of larger craft once there is an all-tides facility in the village.
- "Catch" figures will increase because of easier and quicker access to bait and seafood dealers.
- Boat building and repair businesses will experience an increase in activity-more jobs/more income. It is hard to put a number on this.
- Bottom lines for individuals depending on products, services, and revenues from commercial fishing will experience an increase in their gains and a decrease in costs. Some estimate the increases at 10% and reduced costs at 10%. This may be too optimistic but some see it as realistic.

US ARMY CORPS
OF ENGINEERS
New England District

Blue Hill Harbor
Blue Hill, Maine

Section 107 Investigation

Trip Report

Location: Blue Hill Harbor
Blue Hill, Maine

Date: August 4, 2012

PARTICIPANTS

Todd Randall USACE

BACKGROUND

Blue Hill Harbor is the principal commercial fishing harbor of the Town of Blue Hill, located on the western shore of Blue Hill Bay in Hancock County, Maine. The harbor is located about 30 miles south-southeast of Bangor and 103 miles east of Portland, Maine (Figure 1). Blue Hill Harbor is comprised of several small coves hosting a mix of inshore commercial fishing and lobstering boats and seasonal recreational craft. Much of the commercial fleet works year-round and shifts operations with the seasons due to available mooring space, active offloading and servicing facilities, and icing of portions of the harbor. A 1972 Survey Report recommended adopting a Federal project for Blue Hill Harbor consisting of a 6-foot channel and turning basin accessing the Town Landing in the western basin of the harbor (Figure 1). However the Town declined to provide the cost-sharing needed to construct that project. The Town now wishes to re-visit that proposed improvement as well as examine improving access to other areas of the harbor.

SITE VISIT

A site visit to Blue Hill Harbor was conducted on August 4, 2012 by the undersigned to assess the need for physical, chemical, and ecological sampling in the proposed project area as well as provide a description of observable ecological resources in the harbor. The site visit was conducted via land-side observation at low tide on the afternoon of August 4, 2012 between 1700-1900 hrs. The predicted low tide in Blue Hill Harbor on August 4, 2012 was at 1928 hrs with sunset at 1955 hrs.

OBSERVATIONS

General

The majority of the inner harbor area of Blue Hill Bay was entirely intertidal flat. The channel leading from the middle harbor to the inner harbor was observed as having water at low tide (Figure 8) and a small rivulet channel was observed in the inner harbor during low tide (Figures 3-5). The town wharf was functional with electrical service, running water, and a power winch & davit. The concrete boat ramp adjacent to the wharf was a well maintained and functional. One discharge pipe located to the north of the town wharf (Figure 4) was noted.

Sediments

The sediments in the inner harbor were predominately silt with many areas of silt/sand/gravel/cobble.

The areas from the town wharf north to the dam near Main Street (Figures 3-5) were a heterogeneous mix of silty patches and patches of silt/sand/gravel/cobble. The banks of the embayment were generally exposed silty-sandy areas. However, some rip-rap was present adjacent to the town wharf and along the embayment banks near houses abutting the water.

The sediments in the areas to the southeast of the town wharf appeared to be mainly silt (Figures 6-8). Some gravel/cobble patches were observed, however they were not as prevalent as in the northern portion of the inner harbor. Two rock outcrops were also noted to the southeast of the town wharf (Figure 8).

Ecological Resources

The habitats in the inner harbor of Blue Hill Harbor are representative of typical New England intertidal mudflats as described by Whitlatch (1982). Intertidal mudflats are biologically productive environments that support important recreational and commercial fisheries for softshell clams, jackknife clams, quahogs, bloodworms, and sandworms. Muddy habitats play a role in sustaining the valuable fishery for winter flounder (Whitlatch 1982), as they are prime feeding grounds for these fish as well as seasonal aggregations of migrating birds.

Species noted on/in the mudflat during the site visit include the gastropods *Nassarius* and *Littorina*, soft-shell clams (*Mya arenaria*), and sandworms (*Neanthes*). Laughing gulls, herring gulls, mallard ducks, mergansers, cormorants, and several unidentified shorebird species were also identified in the area during the site visit.

The embayment banks contained little to no *Spartina* salt marsh. The majority of the banks transitioned from the intertidal flat to upland vegetation, rocky outcroppings, or rip-rap.

No observable eelgrass beds were noted in the intertidal areas or in the shallow subtidal areas that were accessible. No eelgrass wrack was observed in the high tide wrack line.

________________________________	27 August 2012
TODD RANDALL	DATE
MARINE ECOLOGIST	

References

Whitlatch, R.B. 1982. The Ecology of New England Tidal Flats: A Community Profile. US Fish and Wildlife Service, Biological Services Program, Washington.

Figure 1. Location of Blue Hill Harbor and potential project area.

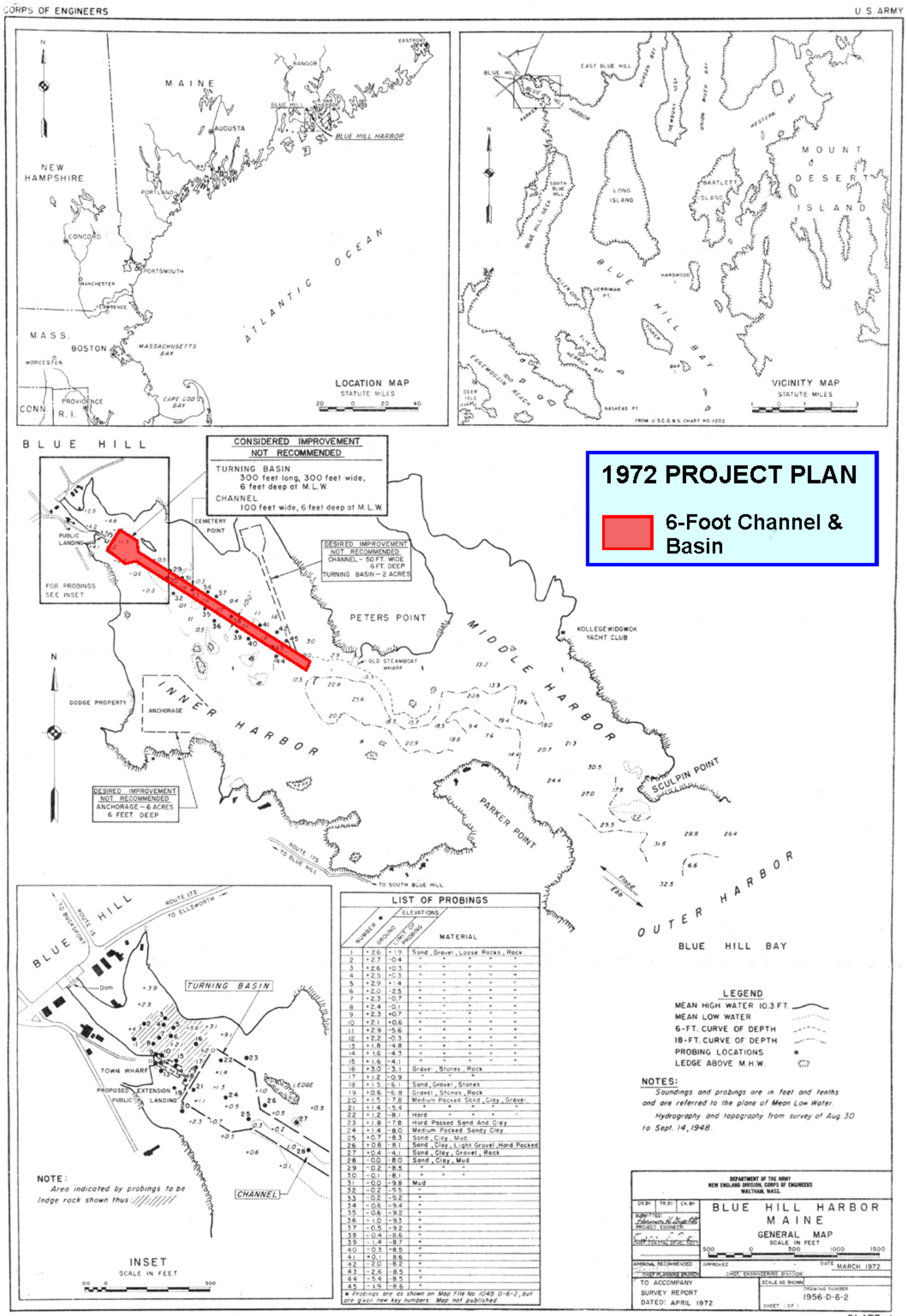

Figure 2. Bulkhead and boat ramp of the Blue Hill Harbor town wharf.

Figure 3. View to the north-northwest of the Blue Hill Harbor town wharf.

Figure 4. View to the north of the Blue Hill Harbor town wharf.

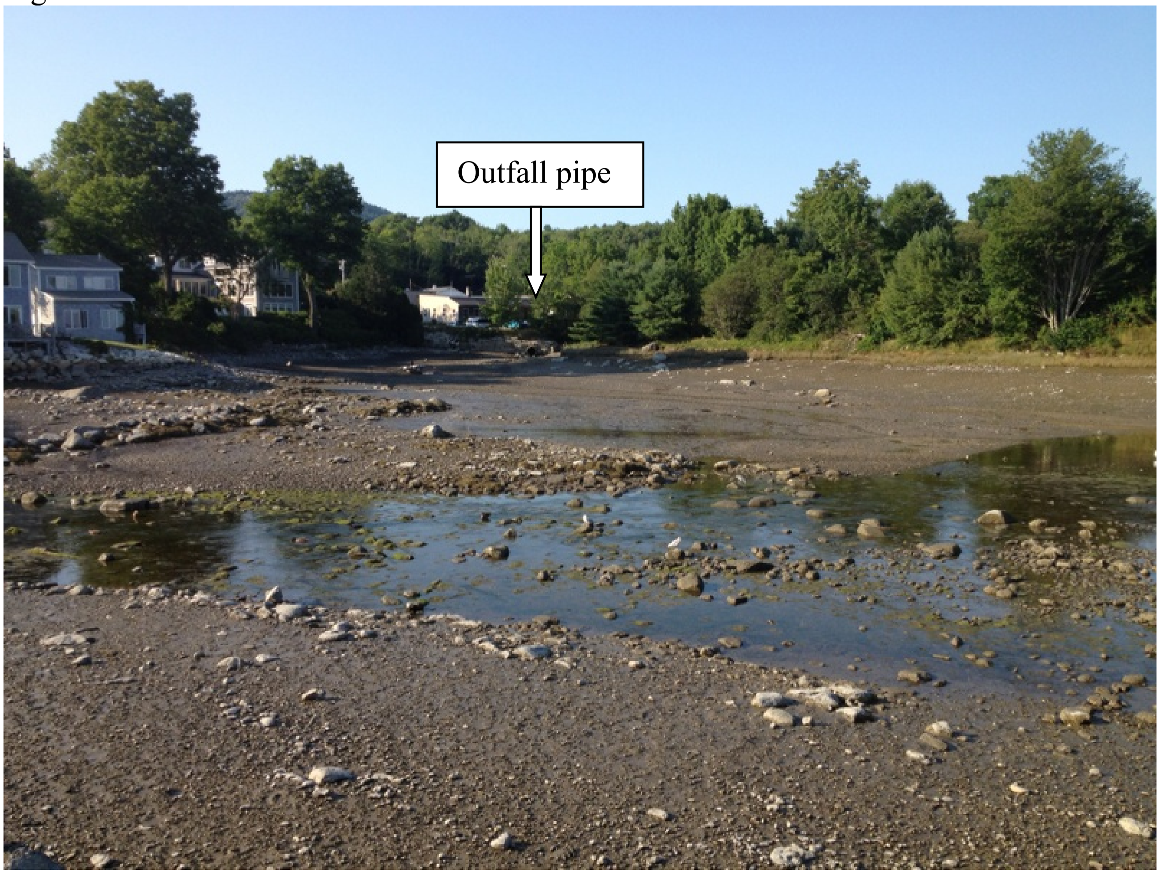

Figure 5. View to the east of the Blue Hill Harbor town wharf.

Figure 6. View to the east-southeast of the Blue Hill Harbor town wharf with view of the town boat ramp and floating dock.

Figure 7. View of intertidal flat and foraging megafauna at the end of the Blue Hill Harbor town boat ramp.

Figure 8. View to the east-southeast of the Blue Hill Harbor town wharf.

Town of Blue Hill, Maine

SELECTMEN/ASSESSORS
JOHN R. BANNISTER
JAMES M. SCHATZ
DUANE B. GRAY

OVERSEERS OF POOR
JOHN R. BANNISTER
JAMES M. SCHATZ
DUANE B. GRAY

ASSESSORS' AGENTS
R. J. D. APPRAISALS

FIRST SETTLED 1762

INCORPORATED JAN. 30, 1789

SELECTMEN IN OFFICE
FRIDAY AFTERNOONS
P.O. Box 412
Blue Hill, Maine 04614

TREASURER/ADMI ASST.
ANN STADDEN
TAX COLLECTOR
ETTA PERKINS
TOWN CLERK
ETTA PERKINS
ROAD COMMISSIONER
DAVID M. COUSINS
FIRE CHIEF
DENNIS ROBERTSON
SUPT. OF SCHOOLS
ARTHUR WITTINE

BLUE HILL, MAINE

September 4, 2009

John Kennelly
Chief, Planning Branch
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

Dear Mr. Kennelly:

The Town of Blue Hill, Maine requests that the Corps of Engineers initiate the necessary steps for the dredging of channels and associated navigation features in Blue Hill Harbor under the continuing authority of Section 107 of the River and Harbor Act of 1960. The channels would include all-tide access to the Blue Hill Municipal Wharf and Cemetery Cove areas. The Town of Blue Hill is currently facing the possible loss of a right of way to Steamboat Wharf which would eliminate public all-tide access to the inner harbor.

Regarding the location at the Blue Hill Municipal Wharf, there are several reasons for our request:

- Currently the Blue Hill Municipal Wharf is accessible only at high tide, a great inconvenience to our growing fishing community and a deterrent to marine research and the development of marine-related industry in the area.
- Dredging a channel to this location would provide access to emergency services including a helipad and Blue Hill Memorial Hospital. It would also provide a launching point for the Harbormaster's rescue boat which is currently moored approximately five miles away from his office and emergency services.
- The shorefront location of the town's waste treatment facility offers the opportunity of a pump-out station for commercial and other vessels.
- Blue Hill Harbor is an ideal location for a number of storm moorings which are sorely needed in the area.

Nearby Cemetery Cove provides many opportunities for mariners as well:

- Facilities and equipment necessary for maintenance and repair of vessels exists on site.
- Access to haul-out trailers and storage for large vessels is available. Commercial fishermen greatly benefit from these amenities but can currently use them only at high tide.
- With the expected donation to the town of private land at this location, should the dredging project proceed, public in-town water access could be maximized.

The Town of Blue Hill looks forward to working with the Army Corps of Engineers to improve Blue Hill Harbor for the benefit of our commercial fishing fleet and all navigation interests. Please contact me should you have any questions about this request.

Sincerely,

John R Bannister Duane B. Gray

The Blue Hill Board of Selectmen

BLUE HILL HARBOR
MAINE
NAVIGATION IMPROVEMENT PROJECT

APPENDIX B

ECONOMIC ASSESSMENT

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APPENDIX B
ECONOMIC ASSESSMENT

Table of Contents

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Blue Hill Harbor, Maine
Economic Assessment

1.0 Introduction

This Economics Appendix evaluates the economic benefits of providing a Federal channel into the inner harbor in Blue Hill, Maine. The proposed channel would provide all-tides access to the town wharf located in the inner harbor in the town center. A turning basin would also be required. This analysis was conducted based on data provided by the Blue Hill Harbormaster and Selectmen, and based on information provided by fishermen at a workshop held in Blue Hill on 4 October 2016. All information was confirmed in October 2019. The analysis follows Corps guidance for estimating National Economic Development (NED) benefits as contained in ER 1105-2-100, April 2000, Appendix E, Section II - Navigation.

Costs and benefits are initially presented in annual terms using the FY19 Federal interest rate of 2.875 % that was used to determine the NED plan. The cost and benefits for the NED plan have been updated to the FY21 price level and annualized using the FY21 Federal discount rate of 2.5%. The updated analysis is presented at the end of the document to show the current Benefit to Cost analysis using FY21 price levels and discount rate of 2.5%.

2.0 Economic Setting

The town of Blue Hill is located in northeastern Maine in Hancock County. In 2010, Blue Hill had a population of 2,686 and contained 1,936 housing units (2010 US Census). The town is located 28 miles southeast of Bangor, Maine and 98 miles northeast of Portland, Maine. In the summer months the population of Blue Hill swells to over 6,000 with the addition of tourists and seasonal residents attracted to the many recreation and tourism opportunities of the area, cultural amenities such as art galleries and a chamber music center, and nearby Acadia National Park. Summary socioeconomic statistics for the town, county and state are shown in the tables below.

Table B-1 – Population

	2000	2010	% change 2000-2010
Blue Hill	2,390	2,686	12.4%
Hancock County	51,791	54,418	5.1%
State of Maine	1,274,923	1,328,361	4.2%

Source: US Census Bureau

Table B-2 – Housing Units

	2000	2010	% change 2000-2010
Blue Hill	1,486	1,936	30.3%
Hancock County	33,945	40,184	18.4%
State of Maine	651,901	721,830	10.7%

Source: US Census Bureau

Table B-3 – Median Household Income

	2000	2010	% change 2000-2010
Blue Hill	31,484	44,158	40.3%
Hancock County	35,811	47,533	32.7%
State of Maine	37,240	46,933	26.0%

Source: US Census Bureau

Table B-4 – Employment – Blue Hill, Maine

	count	% total
Unemployment rate (Apr 2016)		**3.1%**
Labor force (Q4 2015)	**1,240**	
Employment by Sector		
Construction	91	7.3%
Manufacturing	53	4.3%
Retail trade	233	18.8%
Information	27	2.2%
Finance and insurance	46	3.7%
Real estate and rental and leasing	13	1.0%
Professional, scientific, and management	43	3.5%
Administrative and waste management services	74	6.0%
Educational services	111	9.0%
Health care and social assistance	341	27.5%
Accommodation and Fodd Services	113	9.1%
Other services, except public administration	66	5.3%

Source: Maine Department of Labor, Center for Workforce Research and Information

3.0 Description of Study Area and Harbor Usage

Blue Hill Harbor contains 428 vessels, of which 50 are commercial fishing vessels and 378 are recreational vessels. Commercial vessels moor at several areas around the harbor, including South Blue Hill, Steamboat Wharf, and East Blue Hill. Facilities to support the commercial fishing fleet are located at South Blue Hill and in the inner harbor. As shown in Figure B-1 the inner harbor is located in the center of town within the main downtown retail district, in upper Blue Hill Bay. In 2012, the town completely rebuilt the inner harbor wharf, a $300,000 to $400,000 investment, with the long-term goal of relocating commercial fishing loading and offloading operations to a protected location in the center of town. The new wharf has a crane as well as water service and electricity. Currently, the wharf in the inner harbor is used only minimally since it is accessible at only the highest tides, generally 3 hours per day. The natural channel accessing the inner wharf currently has depths of less than -4 feet mean lower low water (MLLW), with some areas exposed at low tide. The harbor has a mean tidal range of 10 feet.

Figure B-1 – Blue Hill Harbor Aerial View

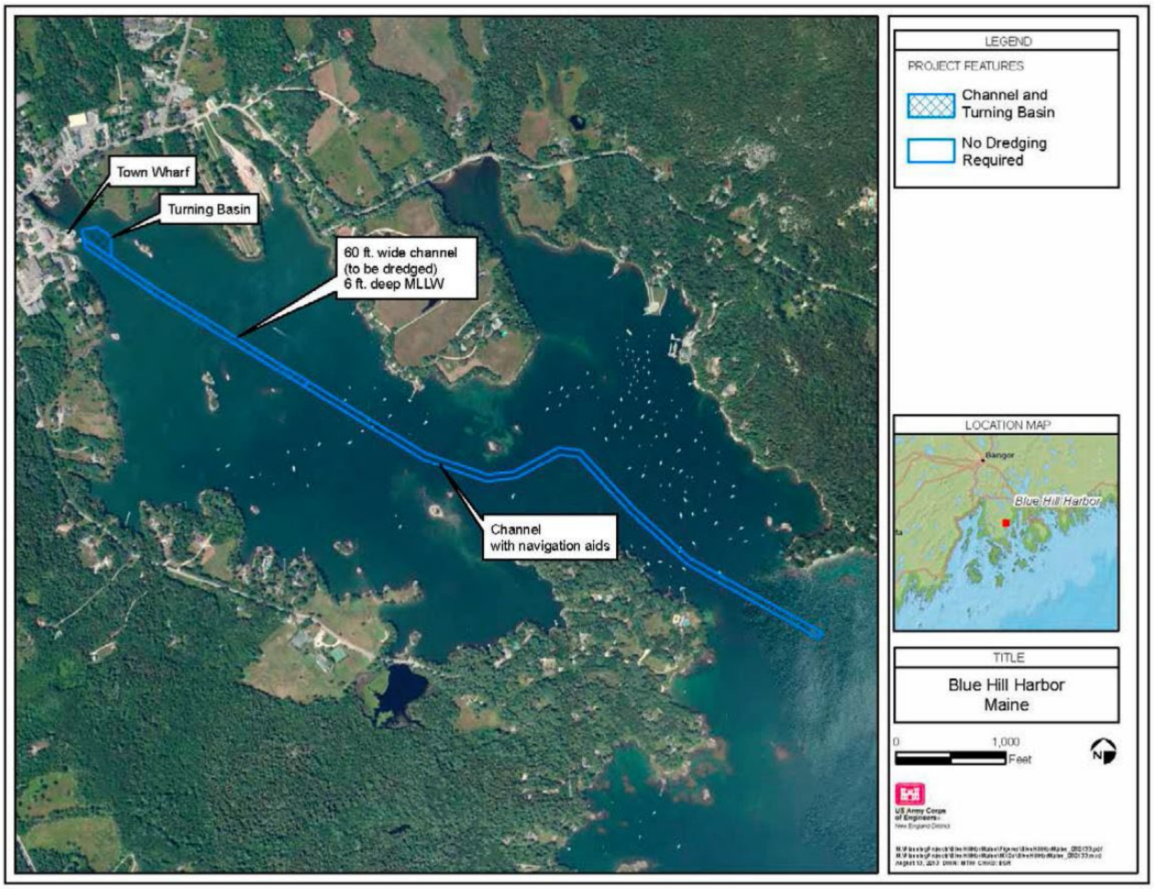

Figure B-2 shows the coastal areas of the town of Blue Hill. Currently, commercial vessels load and offload primarily at town facilities at South Blue Hill Harbor, located outside the protected inner harbor to the south. South Blue Hill Harbor contains a municipal wharf, docks and floats, as well as 23 moorings for commercial fishermen. Bait suppliers, fuel suppliers, and fish buyers operate out of trucks at South Blue Hill. Other fishermen are based in East Blue Hill Harbor, located outside the protected inner harbor to the northeast, and at Steamboat Wharf, located inside the protected inner harbor on the eastern shore. In addition to the 23 fishing vessels which moor at South Blue Hill, 8 commercial vessels moor at East Blue Hill, 12 moor at the Steamboat Wharf area in the inner harbor, and 7 moor elsewhere around the harbor. Currently, there is some use of the wharf in the inner harbor, but its use is limited due to the shallow access. There are no slips or moorings in the wharf area of inner Blue Hill Harbor. The draft distribution of the commercial fleet is shown in Table B-5 below.

Figure B-2 – Blue Hill Coastal Areas

Table B-5 – Blue Hill Commercial Fishing Fleet

Blue Hill Commercial Fishing Vessels by Draft - Total Count	
Loaded Draft	**Number of Boats**
10.0'	1
5.6'	1
4.5'	2
4.0'	30
3.6'	1
3.5'	2
3.0'	5
2.0'	1
2.5'	1
n/a	6
Total	50

In 2014, Blue Hill fishermen landed nearly 1.8 million pounds of catch, including 1,547,549 pounds of live lobster valued at nearly $5,600,000 (Blue Hill Harbormaster, December 2015). Other major species landed include eel and scallops. In 2014, total landings were valued at $6,113,000 (Blue Hill Harbormaster, December 2015). Blue Hill fishermen generally fish seven to eight months a year, six days a week, and typically fish full-time. Lobster boats predominate, with generally one or two crew per boat plus captain.

4.0 Benefit Methodology

National Economic Development (NED) benefits to dredging a channel into Blue Hill Harbor are calculated based on damages prevented to fishing vessels and town infrastructure, and efficiencies gained by fishermen. NED Benefits are defined as changes in the value of the national output of goods and services. As described in Corps regulation ER-1105-2-100, Appendix E, page E-54, "When no change in aggregate fish catch is expected as a result of a plan…, NED benefits may be measured as cost savings to existing fish harvests." For Blue Hill Harbor, costs savings are derived from reduced damages and reduced delays. The same regulation, page E-61, states that, "changes in net income to fish harvesters or boat operators is the appropriate measure of NED benefits…Reduction of damage to boats and facilities is frequently a component of commercial fishing benefits. Reduced damages may be a part of the net income analysis or it may proceed as a separate analysis (e.g. damage reduced to public facilities not included in fish harvester's net income)."

Damages and delays in the without-project condition are compared to those expected in the with-project condition to determine project benefits. Three categories of benefits are calculated: damages prevented to commercial fishing vessels; reduced loading and off-loading delays; reduced tidal delays to the inner harbor wharf, and reduced damages to town infrastructure.

Other benefits which may occur with channel dredging and increased use of the inner harbor wharf include increased business to the suppliers and shops in the Blue Hill area, as well as the potential for new business activity in the area. However, these benefits are typically considered a shift of business activity from one region of the country to another, not increases in national output, and so are considered Regional Economic Development (RED) benefits, not NED benefits. RED benefits are addressed in this analysis but not included in the benefit-cost calculations, since current Corps guidance allows only NED benefits to be counted against project costs.

5.0 Existing Conditions

Under existing conditions, fishing vessels based in the various parts of Blue Hill Harbor load and offload their vessels primarily at South Blue Hill Harbor, where suppliers and fish buyers are located. Some also use the inner harbor wharf when it is accessible, at high tide. While South Blue Hill Harbor is the primary commercial fishing area, the South Blue Hill wharf has no power, water, or other services. Fuel trucks deliver fuel directly to vessels pulled up at the dock. Supplies and catch are loaded and off-loaded while vessels are pulled up at either the dock or at barges moored nearby. The wharf at South Blue Hill

Harbor is very exposed to winds and waves, particularly from the south and southwest. Loading and offloading delays occur frequently due to both congestion and the exposed conditions. As the only loading and offloading facility in the harbor, South Blue Hill facilities can be congested, requiring vessels to wait for a space to load or offload. Offloading delays of one to two hours are common, particularly in the summer months, with fishing vessels often lined up to offload. Offloading delays also occur during bad weather, when high winds or waves make tying up to the exposed wharf too hazardous. Vessels which do tie up in bad weather are sometimes damaged from banging against the dock. The municipal wharf and floats at South Blue Hill Harbor are also regularly damaged, requiring repairs, as vessels knock against the wharf and floats during rough weather.

East Blue Hill suffers from similar disadvantages to South Blue Hill; access is limited, particularly in the summer months, with a small boat ramp, limited parking, and no other public facilities. A large private marina occupies much of the harbor area at East Blue Hill. Fishermen and their floats are moored in the harbor's outer reaches. The harbor would have difficulty accommodating more than the 8 fishing boats that already work out of that location.

Some vessels use the inner harbor wharf periodically, depending on conditions and tides. When using the inner harbor wharf, tidal delays can be significant, with vessels lining up to wait for the tide. Another concern in the inner harbor is that vessels moored in the Steamboat Wharf area use private land to access their vessels and park vehicles. If this access is no longer allowed, an alternative location for access and parking will be required. Access and parking at South Blue Hill Harbor is already at capacity, particularly in the busy summer months.

6.0 Without Project Condition

In the without project condition, South Blue Hill will continue to be the only loading and offloading area with all-tides access for Blue Hill fishermen from South Blue Hill, East Blue Hill, the inner harbor, and elsewhere around the harbor. The exposure of the South Blue Hill wharf to storms and bad weather conditions will continue to result in damages to vessels, damages to town infrastructure, and delays. The lack of a second wharf with all-tides access will result in continued congestion delays at South Blue Hill facilities. For those vessels which use the inner harbor wharf, extensive tidal delays will continue.

7.0 With Project Condition

In the with-project condition, a Federal channel would be dredged from deep water to the town wharf in inner Blue Hill Harbor. Channel depths of five, six, and seven feet are evaluated. With channel dredging, all-tides access would be provided to the inner harbor town wharf, and more commercial fishing loading and offloading could occur in the protected inner harbor. Since suppliers and buyers are truck-based, they could also relocate to the inner harbor area. For commercial fishing vessels which relocate their loading and offloading operations, damages and delays currently experienced at South Blue Hill would be prevented. The significant congestion delays currently experienced at South Blue Hill would be greatly reduced. Damages to town infrastructure and congestion delays at South Blue Hill would also be reduced. Tidal delays for vessels which currently use the inner harbor wharf would be reduced. Mooring locations would not be changed since no new mooring area would be provided.

In the with-project condition, fishermen would continue to moor at their current mooring location, since no new mooring space would be created with the project. Only the location of loading and offloading operations would be changed. With channel dredging, a second loading and parking area for fishermen would be available in Blue Hill, which will ensure continued access for vessels currently moored at Steamboat Wharf. With channel dredging, the town may place new moorings in naturally deep water in the inner protected area to provide protected mooring space for commercial fishermen. However, the town could do this now, without the channel dredging. There would be no change in fish landings or fish catch with the project, nor would the fishing season be extended, since the fishing season is based on when the lobsters are located in the areas fished and areas close to shore.

Sea Level Change is not expected to impact the FWOP condition in the low and intermediate SLC scenarios for the 50-year period of analysis ending in 2072. The high SLC scenario is projected to exceed wharf elevation only at the tail-end of the period of analysis in 2068. This level or risk is assumed to not impact project feasibility.

8.0 Benefit Calculations

Annual benefits to channel dredging are calculated based on information provided by Blue Hill fishermen and town officials. With dredging of a channel to the wharf at inner Blue Hill Harbor, all-water access to the protected town wharf would be provided. Fishing vessels could load supplies and offload catch well-protected from the weather. Weather-related damages to the town wharf and floats at South Blue Hill would be prevented. Based on information provided by town officials, weather-related damages to the wharf and floats at South Blue Hill that would be prevented with all-tides access to the inner harbor equal $30,400 per year.

Based on information provided by the town, it is estimated that 17 of the 50 commercial vessels would shift all their loading and offloading operations to the inner harbor with the dredging of a Federal channel, and 15 would shift some of their loading and offloading operations, depending on situational circumstances such as the weather, congestion, or convenience. The remaining 18 vessels would not shift their operations with the project. For the purpose of these benefit calculations, it is assumed that 17 vessels shift to using the inner harbor wharf for all of their loading and offloading, and that of the 15 that would shift partially, they would shift 50% of the time, for the equivalent of 8 additional vessels. This yields an equivalent estimate of 25 vessels shifting their loading and offloading operations in the with-project condition, or half of the 50-vessel fleet.

With all-tides access to the inner harbor wharf in the center of Blue Hill, damages to vessels from loading or offloading at South Blue Hill in poor weather conditions would be prevented, since vessels could choose to load and offload at the more protected inner harbor. Annual damages experienced by the town were provided through surveys by the Harbormaster and Selectmen, based on their town historical records of damages and losses.

Based on information collected by town officials, damages to vessels from banging against the wharf or colliding with other vessels while loading or offloading during adverse weather conditions equal $133,200 per year, or an average of $2,664 per vessel. With an equivalent of half the fleet shifting the location of their loading and operations with the project, it is projected that half of the $133,200 in annual damages to fishing vessels related to loading or offloading in bad weather at South Blue Hill would be prevented with the project, or $66,600.

The efficiency of fishing operations would also be improved with channel dredging, since having all-tides access to the wharf at the inner Blue Hill Harbor would alleviate the significant congestion delays currently experienced at South Blue Hill and would give fishermen an alternative location to load and off-load during bad weather, thereby reducing weather-related loading and offloading delays. Delays would be prevented for the 25 vessels projected to relocate their loading and offloading operations to the inner harbor wharf. Delays would also be reduced by 75% for the remaining 25 vessels projected to continue operations at South Blue Hill, due to the reduction in number of vessels using the wharf in the with-project condition. Blue Hill fishermen make an average of 180 fishing trips per year, and typically have two men per boat, although larger boats may have 3 onboard in the summer. Based on information obtained in discussions with fishermen, delays at South Blue Hill are estimated to occur on roughly one-third of fishing trips and often last at least an hour. These delays would be prevented with the dredging project. The value of time saved for fishermen is estimated using one-third of the average wage of a production worker in manufacturing, to represent the opportunity cost of time, as required for Corps of Engineers small boat harbor analyses. In May 2018, the average hourly wage of a production worker in manufacturing the state of Maine was $19.43 (US Bureau of Labor Statistics, State Occupational Employment and Wage Estimates), one-third of which is $6.48.

Fuel costs during offloading and congestion delays at the South Blue Hill wharf are calculated based on four gallons burned per hour for the typical Blue Hill lobster boat and a cost of $3.36 per gallon of diesel fuel in the New England area (Gasoline and Diesel Fuel Update - Energy Information Administration). Annual benefits from the prevention of offloading delays in terms of both time and fuel cost savings are calculated as shown below.

Table B-6 – Calculation of Offloading Delay Costs - South Blue Hill Harbor

FY 2019 Prices - Offloading Delay Costs Prevented - South Blue Hill Harbor Federal Discount Rate = 2.875%							
Time Costs	# of Vessels	Crew/ Boat	Average Delay Time (Hours)	Trips/ Year	Probability of Delay	Hourly Wage	Annual Value
	25	2	1	180	33%	$6.48	$19,200
Fuel Costs	# of Vessels	Fuel Use (Gallons/Hr)	Average Delay Time (Hours)	Trips/ Year	Probability of Delay	Fuel Cost/ Gallon	Annual Value
	25	4	1	180	33%	$3.36	$20,000

Table B-7 – Calculation of Offloading Delay Costs for Remaining Vessels - South Blue Hill Harbor

FY 2019 Prices - Offloading Delay Costs Prevented for Ships Remaining - South Blue Hill Harbor Federal Discount Rate = 2.875%								
Time Costs	# of vessels	Crew/ Boat	Average Delay Time (hours)	% of delay time reduced	Trips/ Year	Probability of Delay	Hourly Wage	Annual Value
	25	2	1	0.75	180	33%	$6.48	$14,400
Fuel Costs	# of vessels	Fuel Use (Gallon s/Hr)	Average Delay Time (hours)	% of delay time reduced	Trips/ Year	Probability of Delay	Fuel Cost/ Gallon	Annual Value
	25	4	1	0.75	180	33%	$3.36	$15,000

Ten fishing vessels use the inner harbor wharf under current conditions and experience significant tidal delays. The vessels based at Steamboat Wharf are most likely to use the inner harbor wharf. Average tidal delays for these vessels were calculated using a mean tide chart based on a 10-foot tidal range, assuming an average 1-foot existing channel depth, and using the drafts of vessels based at Steamboat Wharf. Tidal delay costs were calculated assuming these vessels use the inner harbor wharf 25 percent of the time, or 45 out of 180 trips per year. Tidal delay costs prevented in terms of time and fuel are shown in the tables below. These costs would be prevented with the channel dredging project.

Table B-8 – Calculation of Tidal Delay Time Costs – Inner Harbor

FY 2019 - Tidal Delay Time Costs Prevented - Federal Discount Rate 2.875%						
Draft (Feet)	# of Vessels	Average Delay (Hours)	Trips/ Year	Crew/Boat	$/Hour	Tidal Delay Time Cost
4	8	1.5	45	2	$6.48	$7,000
3	2	1.1	45	2	$6.48	$1,300
Total						$8,300

Table B-9 – Calculation of Tidal Delay Fuel Costs – Inner Harbor

FY 2019 - Tidal Delay Fuel Costs Prevented - Federal Discount Rate 2.875%						
Draf t	# of vessels	Average delay (hours)	trips/ year	gallons/ hour	fuel price/ gallon	Tidal delay fuel cost
4	8	1.5	60	6	$3.36	$14,500
3	2	1.1	60	6	$3.36	$2,700
Total						$17,200

Dredging of the inner harbor would also increase recreational opportunities in Blue Hill Harbor. Currently there are 378 recreational vessels using the harbor. This number would be expected to increase under with-projection conditions (see Section 9 for more discussion on new recreational opportunities). The number of vessels is assumed to remain constant between the without-project and the with-project conditions to provide a conservative estimate of recreational benefits, as the increased quantity in recreation vessels in the Federal with-project condition is uncertain.

Recreational activities are evaluated based on five criteria that characterize the quality of the recreational experience. Point values for the existing without-project conditions are compared to the with-project condition. Total point values are converted to dollar values based on current Corps guidance as contained in EGM 16-03 Fiscal Year 2017. Additional recreational benefits of approximately $145,300 would be realized if the project is constructed. The Unit Day Value analysis for Blue Hill Harbor is shown in the table below.

Carrying capacity increases from the Federal without-project condition to the Federal with-project condition, because in the current condition, the channel depth allows for the current recreational vessels to use the area, thus providing a basic facility to conduct activities. The with-project condition will increase channel depth and allow larger recreational, charter, and tour vessels to use the location, and so provide more optimized facilities to conduct activities at site potential. Recreation Experience increases slightly, as there are several general activities in the area such as recreational boating that would expand in the with-project condition to allow educational tours and charter ships to make use of the area. Accessibility increases from the without-project to the with-project conditions, because in the current condition, access to the site remains high both by roads and by ocean access, but the accessibility within the site increases in the with-project condition due to the increased channel depth, thus increasing overall accessibility in the site to a small degree in the with-project condition. Availability of opportunity increases only slightly due to the harbor's proximity to Bass Harbor and South Blue Hill Harbor. Environmental Aesthetic is not changed after the project is constructed.

Table B-10 – Recreational Benefits - Federal Discount Rate 2.875%

UDV CRITERIA	POINT RANGE	POINTS WITHOUT PROJECT	POINTS WITH PROJECT	JUSTIFICATION
Recreation Experience	0 - 30	5	7	There are several general activities that increase in number with project.
Availability of Opportunity	0 - 18	4	6	There are other harbors in the area but none that offer the same protection or atmosphere.
Carrying Capacity	0 - 14	5	11	With the project, the adequate facilities would become optimum.
Accessibility	0 - 18	15	16	There is good road access to the harbor and access will not change with the project.
Environmental Aesthetic	0 - 20	20	20	The harbor has outstanding aesthetic qualities which will not change after the project is constructed.
TOTAL POINTS		49	60	
UNIT DAY VALUE		$7.59	$9.37	
NUMBER OF DAYS		72	72	
USERS PER BOAT		3	3	
NUMBER OF BOATS		378	378	
DOLLAR VALUE		$619,708	$765,042	
RECREATION BENEFIT (Rounded)			**$145,300**	

Total annual benefits to dredging a Federal channel into Blue Hill Harbor, providing all-tides access to the town wharf in the inner harbor, are summarized below.

Table B-11 – Benefit Summary

FY2019 - Benefit Summary - Federal Discount Rate 2.875%	
Benefit Category	**Annual Benefits**
1. Damages prevented to South Blue Hill wharf and floats	$30,400
2. Damages Prevented to Commercial Fishing vessels	$66,600
3. Offloading Delays Prevented - Time Savings	$33,600
4. Offloading Delays Prevented - Fuel Cost Savings	$35,000
5. Tidal Delays Prevented - Time Savings	$8,300
6. Tidal Delays Prevented - Fuel Cost Savings	$17,200
Total Annual Commercial Benefits	$191,100
7. Recreation Benefits	$145,300
Total Annual Benefits	$336,400

In order to determine the optimal channel depth, three channel depths are examined in this analysis, 5-feet, 6-feet, and 7-feet. Benefits are allocated based on the distribution of vessel drafts of the Blue Hill commercial fishing fleet. With sufficient channel depth, vessels which have indicated they would shift their loading and offloading operations to the inner harbor would shift, but with inadequate channel depth, their access would be undependable and they would be less likely to shift. Based on the vessel draft distribution, 96 percent of vessels have drafts of 4.5 feet or below, and 32 percent have drafts of 3.6 feet or below. It is assumed that the vessels which would shift their loading and offloading operations to the inner harbor have a similar draft distribution as the overall fleet. It is also assumed that a 7-foot channel would provide access and therefore full benefits to all vessels, a 6-foot channel would provide full access to the 96 percent of vessels with drafts of 4.5 feet and below, and a 5-foot channel would provide full access to the 32 percent of vessels with drafts of 3.6 feet and below. For the purpose of this analysis, annual benefits are allocated based on these same percentages for all benefits categories to determine project optimization, with the exception of all Tidal Delays Prevented. Because the 6-foot channel sees full benefits for vessels with a 4.5-foot draft or less, and all 10 vessels that see Tidal Delay benefits derived from time and fuel cost savings have 3 or 4-foot drafts, weighing of benefits does not apply to Tidal Delay benefits for the 6-foot channel. Benefit weights for these are 100% in both the 6-foot and 7-foot dredging depth categories. This is reflected in the table below.

Table B-12 – Benefit Allocation

FY 2019 – Federal Discount Rate 2.875%

Channel Depth	Benefit Allocation	Annual Benefits
7-foot Channel	100%	\$336,400
6-foot Channel	96%	\$324,000
5-foot Channel	32%	\$107,700

9.0 Regional Economic Development Benefits

With channel dredging to the inner harbor wharf, there would likely be an increase in business revenues for suppliers, shops, and restaurants located in downtown Blue Hill as more commercial fishing activity would occur in the downtown area. Channel dredging would also allow the wharf to be used by other vessels including recreational, charter and tour vessels. With new uses, downtown businesses would likely experience additional increases in traffic and revenues. The town has been contacted by several vessel operators and marine-related businesses which have expressed interest in using the wharf, including a small cruise line and a marine research vessel providing educational tours. Based on information provided by town officials, use of the wharf for educational tours of the marine research vessel would create new business revenues of \$75,000 per summer season. Increased use of the inner harbor wharf by kayakers, recreational fishermen, and sailors would generate additional traffic in downtown businesses estimated by the town at $500 per day, or at least $45,000 per summer season. The town also received a letter of interest from a small cruise ship line indicating that they would make Blue Hill a regular port of call if the inner harbor wharf were accessible with channel dredging. There has also been interest expressed regarding operating day sail crewed charter trips, which would generate income estimated at $22,000 per vessel per summer season. This would bring significant additional foot traffic and business revenues to the downtown shops and restaurants. Total increased business revenues with the channel dredging would therefore likely exceed $142,000. This increase in business revenues would also likely generate indirect and induced multiplier effects, further increasing area business revenues. However, these increases in local economic activity are considered Regional Economic Development (RED) benefits, not National Economic Development (NED) benefits, because they represent economic activity that would likely occur in another area or region if not at Blue Hill. Based on Corps of Engineers regulations, only NED benefits can be counted against project costs for economic justification of improvement projects.

10.0 Other Social Effects

Other social effects of the proposed channel dredging include a significant increase in safety for commercial fishermen and other boaters who will be able to use the protected inner harbor wharf with the proposed dredging project. The risk of personal injury and loss of life will be greatly reduced for Blue Hill fishermen with the channel dredging, since they would have all-tides access to a fully protected wharf for loading and offloading. While these safety benefits are not quantified in monetary terms, they are significant benefits to the project.

11.0 Project Costs

Contaminated materials are known to exist within the harbor and have been identified within the upper 2 feet of harbor material. The contaminant of concern in this case is PAHs, which are petroleum-based products. Environmental testing has revealed that this material is unsuitable for disposal of in open water, so two main alternatives are considered: dispose this material in a CAD cell or dispose of it at an upland site. Each alternative was estimated at 3 different dredged channel depths (5-feet, 6-feet, and 7-feet) and each includes 1-foot of allowable overdepth. Interest During Construction (IDC) was calculated using the end-period monthly basis and assumed a two-month construction period in the with-project condition.

Assumptions for O&M were made by examining nearby harbors such as Bass Harbor and determining that no sediment sources existed and that both connected to small streams. An annual O&M dredging cost of 0.5% was assumed for the with-project condition based on the findings at Bass harbor and other local facilities.

Table B-13 – Project Costs – Federal Discount Rate 2.875%

FY 2019	Alternative A: CAD Cell Disposal			Alternative B: Upland Disposal		
Channel Depth	5 Feet	6 Feet	7 Feet	5 Feet	6 Feet	7 Feet
Project Cost	$ 4,196,713	$ 4,545,442	$ 4,911,001	$ 9,657,231	$10,003,196	$10,364,183
IDC	$ 5,027	$ 5,445	$ 5,883	$ 11,569	$ 11,983	$ 12,415
Total Cost	$ 4,201,740	$ 4,550,887	$ 4,916,884	$ 9,668,800	$10,015,179	$10,376,598
Annual Cost						
I & A	$159,448	$172,697	$186,586	$366,912	$380,057	$393,772
O & M	$20,984	$22,727	$24,555	$48,286	$50,016	$51,821
Total	$180,432	$195,425	$211,141	$415,199	$430,073	$445,593

12.0 Conclusion

This analysis shows that Alternative A at the 6-foot channel depth is the National Economic Development plan as it maximizes net NED benefits at $128,575 and provides the highest benefit-to-cost ratio of 1.66. The 7-foot channel depth is the second favorable alternative with net benefits of $125,259 and a BCR of 1.59, while Alternative B at all depths produces no net benefits.

Table B-14 – Benefit-to-Cost Ratios - Federal Discount Rate 2.875%

FY 2019	Alternative A: CAD Cell Disposal			Alternative B: Upland Disposal		
Channel Depth	5 Feet	6 Feet	7 Feet	5 Feet	6 Feet	7 Feet
Annual Benefit	$107,700	$324,000	$336,400	$107,700	$324,000	$336,400
Annual Cost	$180,432	$195,425	$211,141	$415,199	$430,073	$445,593
Net Annual Benefits	($72,732)	$128,575	$125,259	($307,499)	($106,073)	($109,193)
BCR	0.60	**1.66**	**1.59**	0.26	0.75	0.75

13.0 Uncertainty Analysis

Economic results are impacted significantly by offloading delay fuel and time costs, as well as by the damages prevented to the South Blue Hill wharf, floats, and commercial fishing vessels. In order to determine economic viability under a range of conditions, the number of commercial fishing vessels shifting their operations to Blue Hill central harbor were altered and evaluated, as well as the damages prevented to the South Blue Hill wharf, floats, and commercial fishing vessels. When the number of commercial fishing vessels shifting their operations to the Blue Hill central harbor in the with-project condition was reduced by 33% from 25 to 17, time savings benefits for offloading delays decreased from $32,300 to $30,900 and fuel savings benefits for offloading delays decreased from $33,600 to $32,100. This decreased total benefits from $324,000 to $321,100. When the number of commercial fishing vessels shifting their operations to the Blue Hill central harbor was increased by 33% from 25 to 33, time savings benefits for offloading delays increased from $32,300 to $33,800 and fuel savings benefits for offloading delays increased from $33,600 to $35,000. This increased total benefits from $324,000 to $326,900. When the damages prevented to the South Blue Hill wharf and floats were decreased by 33% in the with-project condition, benefits decreased from $29,200 to $19,500. When damages prevented to South Blue Hill Commercial Fishing Vessels were decreased by 33%, benefits decreased from $63,900 to $42,600. These decreased total benefits from $324,000 to $293,000. When the damages prevented to the South Blue Hill wharf and floats were increased by 33% in the with-project condition, benefits increased from $29,200 to $38,900. When damages prevented to South Blue Hill Commercial Fishing Vessels were increased by 33%, benefits increased from $63,900 to $85,200. These increased total benefits from $324,000 to $355,000.

Recreational benefits also have a significant impact on economic viability, and in order to determine benefits in a similar range of conditions, the number of recreational vessels in the with-project condition was altered and evaluated. When the number of recreational vessels was decreased by 33% to 250, recreational benefits decreased from $139,500 to $93,000. This decreased total benefits from $324,000 to $277,500. When the number of recreational vessels was increased by 33% to 503, recreational benefits increased from $139,500 to $186,000. This increased total benefits from $324,000 to $370,500.

Regardless of these uncertainties, the project would still result in a BCR above 1.0 given annual costs of $195,425.

14.0 Economic Update for 2021

Benefits were updated to FY2021 using the most current data available. Recreation benefits were based on EGM #21-02 Unit Day Value for Recreation for Fiscal Year 2021 (Latest available on 14 Jun 2021).

To calculate the opportunity cost of time for boat operators and crew on commercial vessels during tidal delays, the value of time is estimated using one-third of the average wage for production workers in manufacturing in Maine, as required for Corps small boat harbor analyses. The average production wage in 2020 (latest available) for Maine was $21.08 (US Bureau of Labor Statistics: Maine Occupational Employment and Wage Estimates, accessed 11 May 2021), one-third of which is $7.03.

Fuel costs during delays are calculated using the average cost of diesel fuel between the beginning of the boating season in March ($3.18) and the end of the season in September ($2.61) for a price of $2.90 per gallon.

Table B-14 below also presents the minor overall change in annual benefits of $4,900, or ($2,500) with only commercial navigation benefits. The 6-foot channel is allocated 96% of these total benefits or $328,600, or $182,000 when only commercial navigation benefits are counted.

Table B-15 – Benefit Price Level Comparison

FY 2021 - Benefit Summary - Federal Discount Rate 2.5%				
Benefit Category	**Annual Benefits 7-Foot Depth - 100%**		**Annual Benefits 6-Foot Depth - 96%**	
	FY2019	**FY2021**	**FY2019**	**FY2021**
1. Damages prevented to South Blue Hill Wharf and Floats	$30,400	$30,700	$29,200	$29,500
2. Damages Prevented to Commercial Fishing Vessels	$66,600	$67,400	$63,900	$64,700
3. Offloading Delays Prevented - Time Savings	$33,600	$36,600	$32,300	$35,100
4. Offloading Delays Prevented - Fuel Cost Savings	$35,000	$30,100	$33,600	$28,900
5. Tidal Delays Prevented - Time Savings	$8,300	$9,000	$8,300	$9,000
6. Tidal Delays Prevented - Fuel Cost Savings	$17,200	$14,800	$17,200	$14,800
Total Commercial Benefits	$191,100	$188,600	$184,500	$182,000
7. Recreation Benefits	$145,300	$152,700	$139,500	$146,600
Total Annual Benefits	$336,400	$341,300	$324,000	$328,600

The cost for the preferred alternative for dredging Blue Hill Harbor down to -6 feet MLLW was also updated to FY21 price level and is supported by the Total Project Cost Summary presented in Cost Engineering Appendix (Appendix D). The significant decrease in cost estimates between the FY19 and FY21 update is due to the higher level of uncertainties that led to high preliminary FY19 estimates regarding mobilization and demobilization costs as well as dredging costs and construction duration. The current FY21 costs are more in line with the current project's scope. Table B-15 below presents the net annual benefits for commercial navigation and the BCR calculated at the FY21 Federal Discount Rate (2.5%). Annual costs include interest and amortization of the investment cost plus annualized project maintenance. Interest During Construction is altered to reflect the increase of estimated construction time from two months to four months.

Table B-16 – Benefit Cost Analysis Update
(FY 2021 Price Levels - Federal Discount Rate 2.5%)

Project Cost	$2,960,000
IDC	$ 9,263
Total Cost	$2,969,263
CRF at 2.5%	0.03526
Annual Cost	$104,700
O & M	$14,800
Total Annual Cost	$119,500
Annual Benefit	$328,600
Net Benefit	$209,100
BCR	2.75

The updated annual cost of the NED plan amounts to $119,500 with annual navigation benefits of $328,600. The net annual benefits of dredging Blue Hill Harbor amount to $209,100 yielding a benefit-to-cost ratio of 2.75.

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BLUE HILL HARBOR
MAINE
NAVIGATION IMPROVEMENT PROJECT

APPENDIX C
ENGINEERING DESIGN

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APPENDIX C
ENGINEERING DESIGN

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APPENDIX C
ENGINEERING DESIGN

1.0 Existing Conditions

The Town of Blue Hill, Maine is located on the western shore of Blue Hill Bay in Hancock County, Maine. The harbor is located about 30 miles south-southeast of Bangor and 13 miles southwest of Ellsworth. Blue Hill Harbor is located off the northwest end of Blue Hill bay just west-northeast of Long Island and due west of Union River Bay. The harbor is divided into three parts known locally as the outer, middle, and inner harbors. The outer harbor, situated southeast of Parker and Sculpin Points, has depths ranging from 24 to 48 feet and is exposed to easterly and southerly winds. The middle harbor has depths ranging from 6 to 30 feet and is well protected. The outer and middle harbors are connected by a deep natural channel between Parker and Sculpin Points. This channel has a width of about 150 feet and a controlling depth of 20 feet. The middle harbor connects to the inner harbor through a natural channel passing between Parker and Peters Points. This channel has a minimum width of 150 feet and controlling depth of 19 feet. The western half of the inner harbor shallow depths prevail, ranging from 6 feet to +3.5 feet at the Town Wharf. The mean range of the tide is 10.59 feet. At low tide the Town Wharf and docks are dry.

Blue Hill Harbor is home to a sizeable lobster fleet as well as numerous recreational craft and charter fishing boats, and other inshore and offshore commercial fishing craft. All of Blue Hill is served by two public landings, a fish pier, a marina, a boat club, and rental boat facilities. Much of the commercial fleet works year-round and shifts operations with the seasons due to available mooring space, active offloading and servicing facilities, and icing of portions of the harbor. In 2012, the Town of Blue Hill rehabilitated the central harbor wharf, which included a new crane as well as water and electricity service. The wharf improvements provide the facility with year-round support to the town’s commercial fishing industry.

2.0 Field Explorations

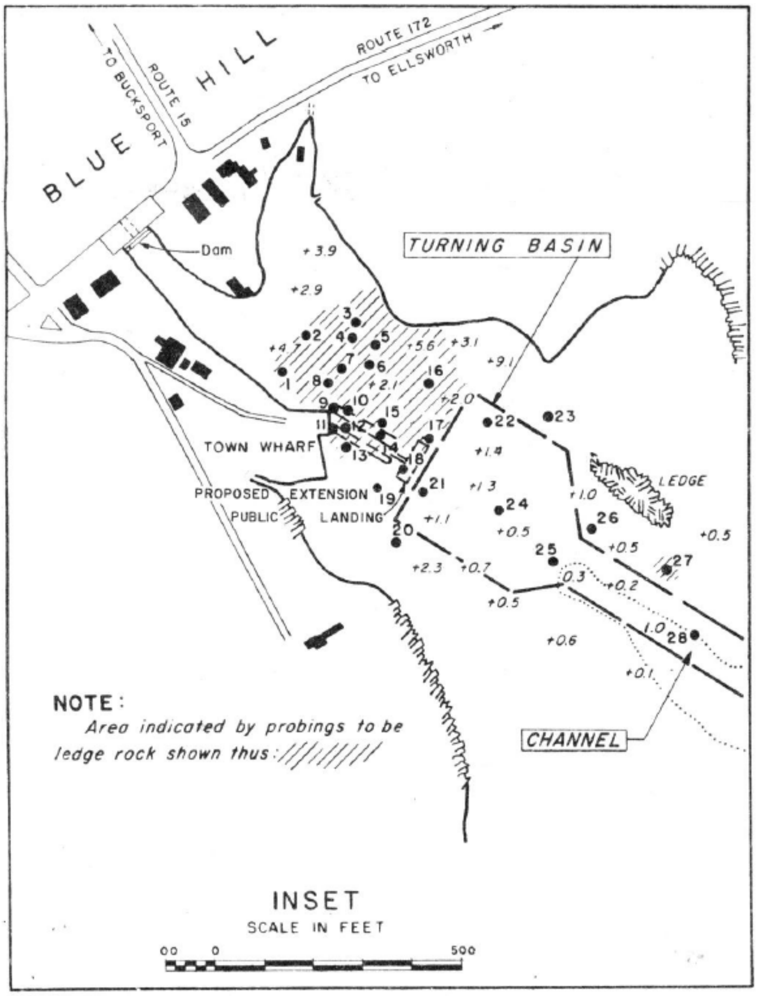
Field explorations included hydrographic surveys of the proposed dredge areas, subsurface explorations to delineate the area of ledge in the harbor and define the nature of the substrate at depth, and sediment sampling to determine the nature of the dredge material to evaluate potential disposal options. The information obtained from these field investigations was used to develop and evaluate alternative plans of improvement.

Hydrographic Surveys

A hydrographic survey of the project area conducted in 1951 was supplemented by a May 1970 hydrographic and topographic survey to lay-out and evaluate the proposed project and alternatives included in the 1972 detailed project report. A bathymetric survey of the proposed improvement area was conducted in 2012 and used to re-evaluate the project for this study. The results of the 2012 survey are shown on Attachment A.

Subsurface Explorations

In 1948 the U.S. Army Corps of Engineers conducted a hydrograph and topography survey of Central Blue Hill Harbor. Figure C-1 lists the probings with their results and locations. The probings were conducted with a 1-inch diameter pipe drive and an 8-pound hammer. The probings indicate that the inner harbor material was made up mostly of sand, gravel, looser rock and rock. The outer harbor material was made up of mostly sand and mud.



← TO SOUTH BLUE HILL

LIST OF PROBINGS

NUMBER *	ELEVATIONS GROUND	ELEVATIONS LIMIT OF PROBING	MATERIAL
1	+2.6	+1.9	Sand, Gravel, Loose Rocks, Rock
2	+2.7	-0.4	" " " " "
3	+2.6	+0.3	" " " " "
4	+2.5	+0.3	" " " " "
5	+2.9	+1.4	" " " " "
6	+2.0	-2.5	" " " " "
7	+2.3	-0.7	" " " " "
8	+2.4	-0.1	" " " " "
9	+2.3	+0.7	" " " " "
10	+2.1	+0.6	" " " " "
11	+2.9	-5.6	" " " " "
12	+2.2	-0.3	" " " " "
13	+1.8	-4.8	" " " " "
14	+1.6	-4.3	" " " " "
15	+1.6	-4.1	" " " " "
16	+3.0	-3.1	Gravel, Stones, Rock
17	+1.2	-0.9	" " "
18	+1.5	-6.1	Sand, Gravel, Stones
19	+0.6	-6.8	Gravel, Stones, Rock
20	+1.5	-7.8	Medium Packed Sand, Clay, Gravel
21	+1.4	-5.4	" " " " "
22	+1.2	-8.1	Hard " " " "
23	+1.8	-7.8	Hard Packed Sand And Clay
24	+1.4	-8.0	Medium Packed Sandy Clay
25	+0.7	-8.3	Sand, Clay, Mud
26	+0.8	-8.1	Sand, Clay, Light Gravel, Hard Packed
27	+0.4	-4.1	Sand, Clay, Gravel, Rock
28	-0.0	-8.0	Sand, Clay, Mud
29	-0.2	-8.5	" " "
30	-0.1	-8.1	" " "
31	-0.0	-9.8	Mud
32	-0.2	-9.5	"
33	-0.2	-9.2	"
34	-0.6	-9.4	"
35	-0.6	-9.2	"
36	-1.0	-9.3	"
37	-0.5	-9.2	"
38	-0.4	-8.6	"
39	-1.4	-8.7	"
40	-0.3	-8.5	"
41	+0.1	8.6	"
42	-2.0	-8.2	"
43	-2.6	-8.5	"
44	-5.4	-8.5	"
45	-1.9	-8.6	"

** Probings are as shown on Map File No 1045 D-6-2, but are given new key numbers. Map not published.*

Figure C-1 - 1948 Probes

The U.S. Army Corps of Engineers (USACE) went out October 23, 2015 to collect sediment vibracores from seven locations throughout the proposed dredging area identified as Stations A through G on Figure C-2.

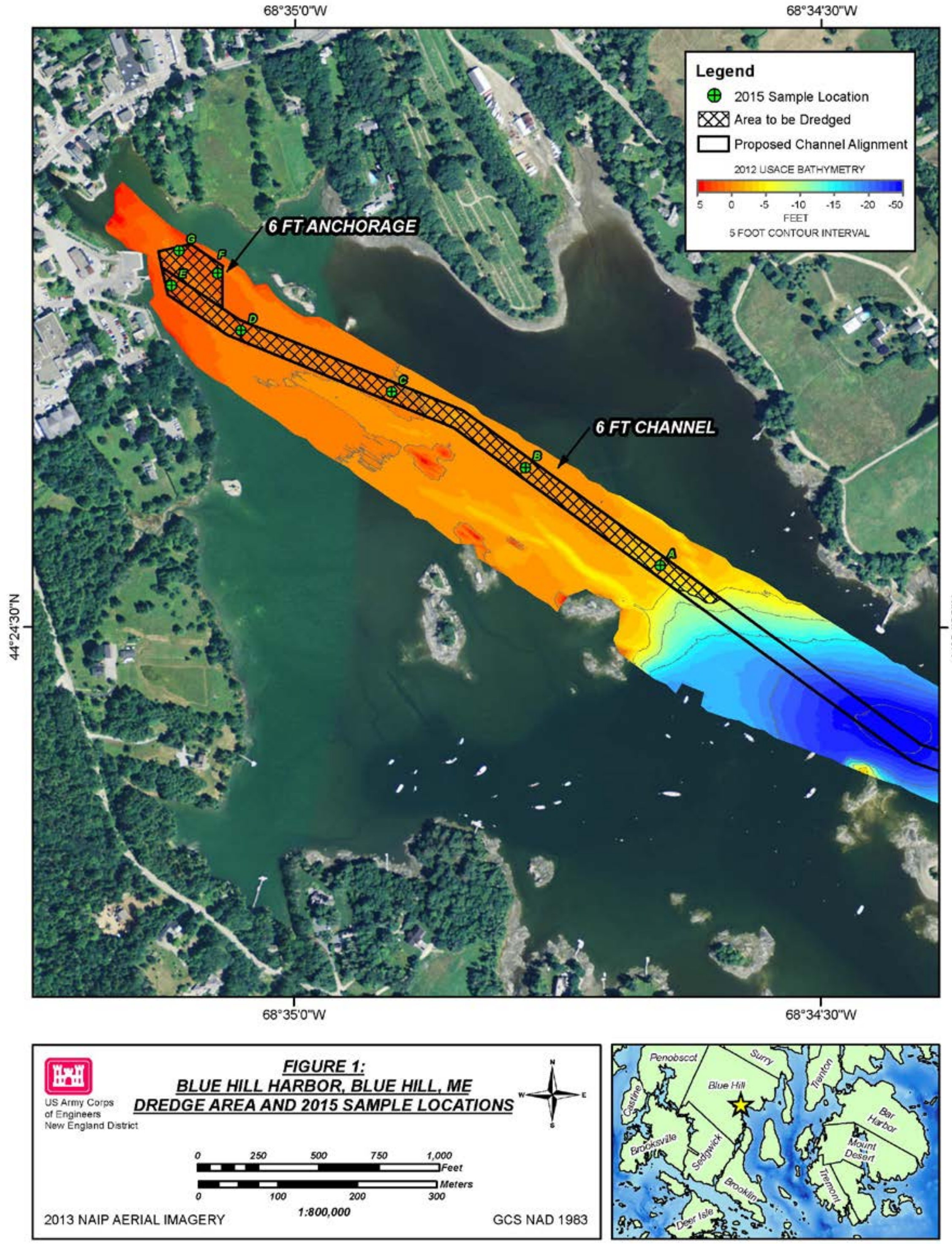


Figure C-2 - 2015 Sampling Locations

Core penetration at the inner harbor stations (D, E, F, and G) was limited due to gravel and sand deposits near the sediment surface and was 2.0 feet or less at Stations D, F, and G. Due to the inability to penetrate inner harbor sediments to the design depth and determine the vertical extent of the elevated PAH levels, the Town of Blue Hill dug four test pits in October 2016 (Figure C-3). The Town's contractor placed timber mats across the harbor at low tide and used an excavator to dig 4 to 9-foot-deep test pits at predetermined locations. USACE personnel were on-site to describe the lithology of the pit walls and subsample the sediment in two-foot horizons for PAH analysis. Results from this analysis are presented in Appendix F and show the extent of PAH contamination is limited to the upper two feet of the harbor sediments.

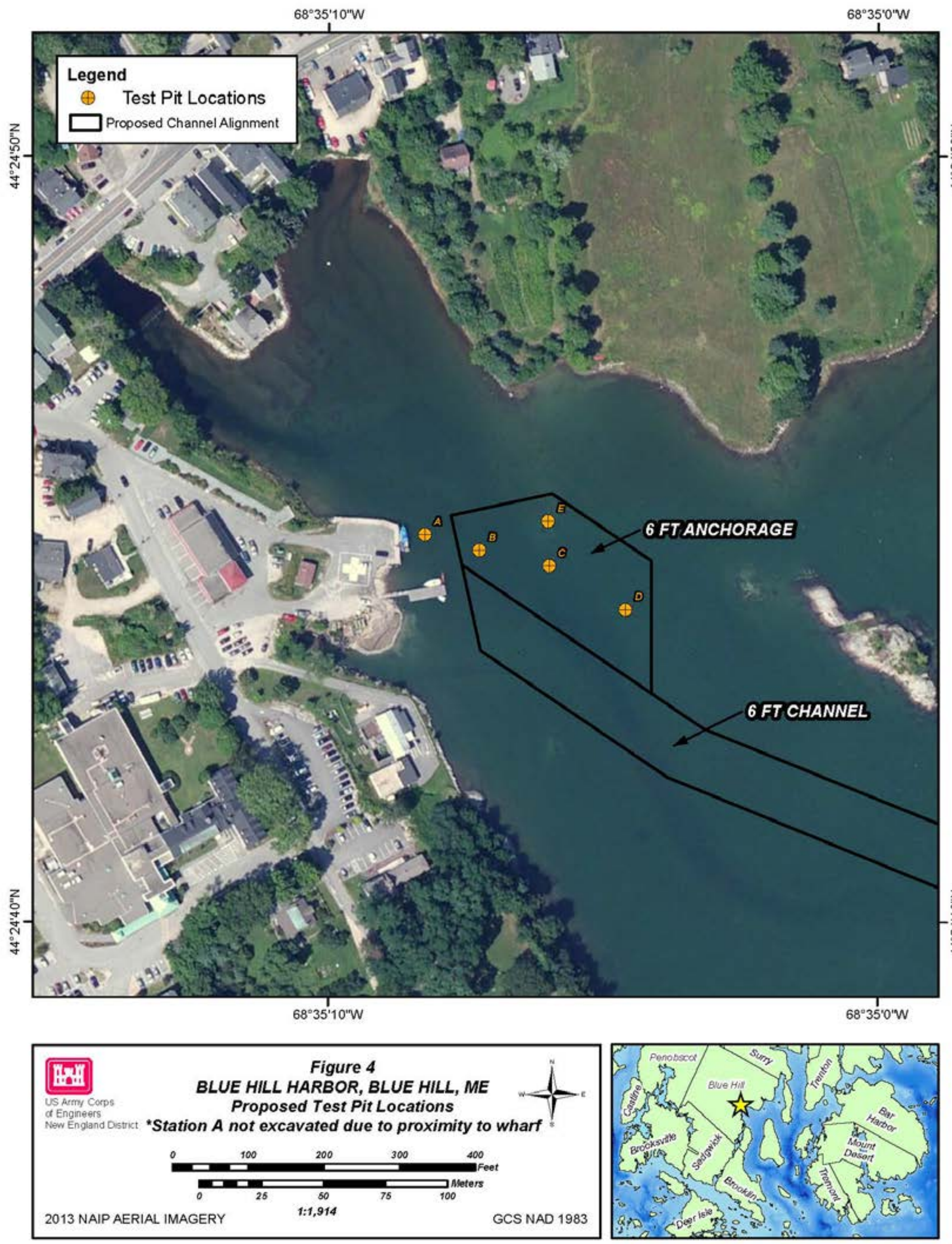


Figure C-3 - 2016 Test Pit Locations

Sediment Sampling and Analysis

During the October 23, 2016 sampling event, USACE personnel described each sediment core in the field and composited the length of each individual core for analysis of grain size, total solids, and water content. Additionally, USACE composited the core samples according to the plan outlined in the SAP for chemical analysis of the contaminants of concern (COC). Grain size results are presented in Table C-1. For more information on the chemical analysis, refer to Appendix F.

Table C-1 - Grain Size Analysis

Sample ID	% Cobble	% Gravel	% Coarse Sand	% Medium Sand	% Fine Sand	% Total Fines	% Moisture
A	0.1 (U)	0.1	2.2	6.6	21.6	69.5	55.3
B	0.1 (U)	0.1 (U)	1.7	3.5	7.4	87.4	51.2
C	0.1 (U)	1.1	1.9	4.9	12.1	80	54.5
D	0.1 (U)	4.4	13.2	34.8	35	12.6	19.6
E	0.1 (U)	1.8	8.8	26.7	37.9	24.8	33.2
F	0.1 (U)	5	14	30.6	29.8	20.6	26.8
G	0.1 (U)	45.9	12.4	16.7	16.2	8.8	21.4
U = Non-detected analytes are reported as the RL and qualified with a “U”.							

These samples indicate that the unconsolidated materials (non-ledge) in the proposed improvement areas consist of clayey silts, sands, and silty sands with the exception of the small area of ledge found in the proposed 8-foot area, all materials within the areas proposed for dredging are expected to be removable by a typical mechanical bucket dredge.

3.0 Channel and Turning Basin Design

The existing commercial fleet consists of 50 boats. The design vessel used for the channel design has a 5-foot draft, 40-foot length, and a 14-foot beam.

Channel Width

Until 2006, the U.S. Army Corps of Engineers channel design focused on dividing the channel into a maneuvering lane and a bank clearance lane. Appropriate widths were determined for each lane separately. However, the Engineering Manual, EM 1110-2-1613 was updated in 2006 and suggests this method is no longer appropriate. Rather than break the channel into separate lanes, the Corps now focuses on the channel as a whole. The new method states that the total channel width calculations should incorporate six factors: traffic pattern (one-way or two-way), design ship beam length, channel cross section shape, current speed and direction, quality and accuracy of aids to navigation, and variability of channel and currents. In a harbor with this volume of traffic and boats entering and leaving the channel at the same time of day, design for two-way traffic is essential. The width of a channel is measured at the design depth between the bottoms of the side slopes. This channel is considered to be a "trench" type channel, as opposed to a canal or shallow type channel. The passing of two powered vessels in a generally open waterway with adequate safe clearance between them, and between each boat and the channel boundary or bank, would require a width of about 4 to 6 times the vessel beam. With the largest boats having a beam of 14 feet, this equates to a channel width of about 80 feet. See EM Table 8-3 below.

EM 1110-2-1613 (dated 31 May 06)
Table 8-3 Two-Way Ship Traffic Channel Width Design Criteria

	Design Ship Beam Multipliers for Maximum Current, Knots		
	0.0 to 0.5	0.5 to 1.5	1.5 to 3.0
Channel Cross Section - Constant Cross Section, Best Aids to Navigation			
Shallow	5.00	6.00	8.00
Canal	4.00	4.50	5.50
Trench	4.50	5.50	6.00

Applying these factors for Blue Hill, ME resulted in the following channel design.

	Vessel Beam (ft)	x	Factor	=	Channel Width (feet)
Trench	14		5.50		77

"Approach Channels: A Guide for Design", a June 1997 report for the Permanent International Association of Navigation Congresses (PIANC) provided another method for determining channel width. This approach was deemed slightly more conservative than the EM 1110-2-1613 approach discussed above. However, due to the location of Blue Hill Harbor and the protection provided within the inner harbor, the EM-1110-2-1613 approach is satisfactory.

Channel Depth

Channel depth "should be adequate to safely accommodate ships with the deepest drafts expected to use the waterway" according to the EM 1110-2-1613. This statement not only addresses the physical characteristics of the design vessels, but the future use economic projection. The physical concerns include the draft of the vessel and its operability when underway. Vessels will ride deeper in the water than when at berth. The term for this is "squat." Ships are also impacted by the wave conditions and tend to roll, pitch, or heave. The EM provides technical guidance related to design depth for larger commercial vessels. The Blue Hill Harbor fleet is relatively small and protected within the inner harbor. Therefore, a channel depth between 5 and 8 feet was analyzed with 1-foot of over depth taken into consideration.

Channel Turn Configuration

In order to avoid ledge outcrops within the harbor, the channel alignment required a few turns rather than a straight line to the outer harbor. An initial design for a channel turn can be developed from the factors used in Table 8-4 of the EM. These factors are derived from empirical tests and serve as a starting point for the channel turn configurations and are presented below in Table 8-4.

EM 1110-2-1613 (dated 31 May 06)
Table 8-4 Recommended Channel Turn Configurations

Defection Angle, Deg	Ratio of Turn Radius/Ship Length	Turn Width Increase Factor (*Ship Beam)	Turn Type
0-10	0	0	Angle
10-25	3-5	2.0-1.0	Cutoff
25-35	5-7	1.0-0.7	Apex
35-50	7-10	0.7-0.5	Curved
>50	>10	0.5	Circle

The only deflection angle for the inner harbor design greater than 10 is 13.85 degrees and the ratio of turn radius/ship length is 4.5 at that point. Therefore, there was an additional 70 feet added to the channel width (turning area only) to allow for a safe cutoff turn within in the channel.

Turning Basin

The EM also provides guidance for turning basins in deep draft navigation projects. The EM recommends providing a turning basin 1.2-1.5 larger than the channel width. However, because this is not a deep draft project and taking into consideration the needs of the town, the proposed turning basin is 160 feet long and 80 feet.' wide, shown on Attachment A.

4.0 Quantity Estimates

Quantities of material to be dredged from the proposed navigation improvement area were calculated by comparing the existing bottom surface defined by the hydrographic surveys and subsurface explorations to a design bottom surface with side slopes of 1 vertical to 3 horizontal. The data was imported into a MicroStation file and through the InRoads program, a digital terrain model was created for both the existing surface and the design surface. The amount of material to be dredged was then calculated by comparing the two surfaces. A one-foot allowable over depth was calculated for ordinary material to account for dredging tolerance. Table C-2 is a summary of that work.

Table C-2 - Channel Quantities

Channel Quantities and Areas							
	Area (SF)	Required Depth (Feet)	Required Depth Suitable Quantity (CY)	Over-Depth Quantity (CY)	Total Quantity (normal material + over depth), CY)	Contaminated Quantity (Upper 2 Feet) (CY)	Total Material to be Removed (CY)
Plan A	309,970	5	37,979	11,850	49,829	10,591	60,420
Plan B	326,700	6	49,829	12,530	62,359	10,591	72,950
Plan C	346,810	7	62,359	13,220	75,579	10,591	86,170
Plan D	367,490	8	75,579	24,516	100,095	10,591	110,686
*If 9 feet of material are dredged due to 1-foot of over depth, the area to be dredged rises to 389,670 ft^2.							
Revised Plan B with Modified Channel Bend Width							
Plan B		6	48,650	12,250	60,900	10,600	71,500

5.0 CAD Cell for Contaminated Material

Results from the sediment analysis are presented in Appendix F and show the extent of PAH contamination is limited to the upper two feet of the harbor sediments, which is approximately 10,600 cubic yards of material. This information prompted the team to design a 525-foot by 150-foot CAD cell (bottom footprint is 470 feet by 140 feet) to relocate and consolidate the contaminated material. The CAD cell depth design is -9 feet MLLW and the top of the 3-foot wide cap will be -2-feet MLLW. Due to the limits of the 2012 bathymetric survey, the existing surface to be dredged to accommodate the CAD cell was estimated to be -2 feet MLLW. The quantity of material to be removed to create the CAD cell is approximately 19,500 cubic yards. Refer to Attachment A for CAD cell placement within Blue Hill Harbor.

6.0 Disposal Area

Knowledge of the nature of the material to be removed and the quantity of material enables an examination of potential disposal alternatives for the dredged material. The mixed nature of the dredged material, including cobbles, sands, silt and clay, the potential for small boulders, make use of a cutterhead pipeline dredge or other form of hydraulic plant such as a hopper dredge, impractical. The distance from shore to the dredge areas precludes use of a land-based dragline. Use of a barge-mounted bucket dredge and scows is the only feasible option for removal of the material.

A potential new site was investigated in State waters close to Bass Harbor near the mouth of Blue Hill Bay in the Eastern Passage. The site in the Eastern Passage is located about 6 miles from Bass Harbor in about 330 feet of water. The site in the Eastern Passage is close enough to Blue Hill to enable the work to be completed within the allowable dredging and disposal window in a single dredging season with only one scow.

7.0 Future Maintenance Costs

Project annual costs must include an annualized estimate of the cost of maintaining the project over the period of analysis. Since the proposed project is limited to dredging, the only annual maintenance cost is periodic maintenance dredging of the improved areas to their recommended depth. It is estimated that maintenance dredging of the improved areas would be required once during the project life, if at all. For purposes of this study, an annual shoaling rate of 0.5 percent has been incorporated into the annual cost of the alternatives.

8.0 Sea Level Change Analysis

Based on ER 1100-2-8162 and EP 1100-2-1, USACE studies must consider future rates of sea level change (SLC) to account for the potential impacts of climate change. Due to the uncertainty associated with future sea level change, USACE policy is to look at three scenarios of sea level change and investigate impacts to project feasibility. The three sea level change scenarios are illustrated by curves representing the low (historic) rate of SLC at the project site, an intermediate rate (modified NRC Curve I), and a high rate of SLC (modified NRC Curve III). All three local SLC curves include the global (eustatic) sea level rise rate (approximately 1.7 mm/year) as well as vertical land movement. These rates were calculated using the USACE Sea Level Change Calculator (Version 2019.21) (https://cwbi-app.sec.usace.army.mil/rccslc/slcc_calc.html). The tool uses the closest NOAA tide station with an adequately long water level record to determine the historical trend. The historical trend is then used with a formulation provided in the EP to determine the intermediate and high rates of change.

The Bar Harbor, ME station (NOAA 8413320) was used to approximate changes in sea level rise for Blue Hill Harbor from 2022 to 2122. This time range includes both anticipated project economic life and the planning horizon. The historic rate of sea level rise at Bar Harbor is 0.00742 feet/year (1947 to 2019). Sea level is expected to rise between 0.59 feet and 2.97 feet by 2072 and between 0.96 feet and 7.23 feet by 2122 from the 1992 midpoint of the present National Tidal Datum Epoch (1983-2001). Sea level change for each of the three scenarios is presented in Figure C-4 and Table C-3.

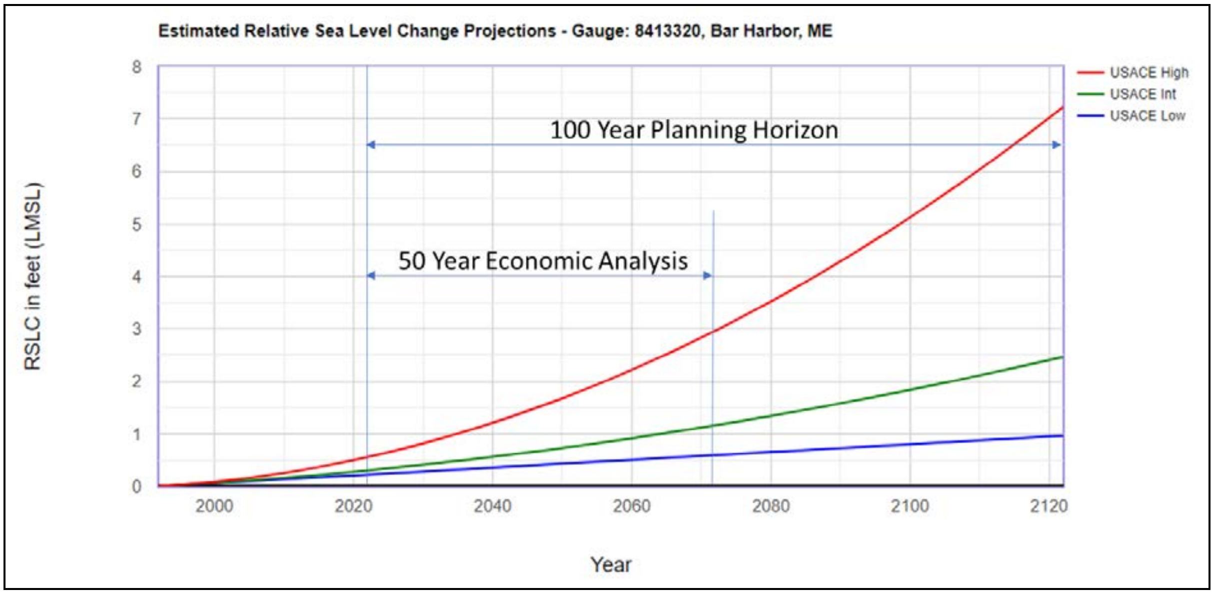


Figure C-4. Sea Level Change Projections at Bar Harbor, ME

Table C-3. USACE Sea Level Change Rates – Future Scenarios

Year	Low RSLC (Feet)	Intermediate RSLC (Feet)	High RSLC (Feet)
2072	0.59	1.16	2.97
2122	0.96	2.47	7.23
Note: Sea level change values are relative to the base year of 1992 which corresponds to the midpoint of the current National Tidal Datum Epoch of 1983-2001			

Increases in sea level will deepen the existing channel and proposed improvements, resulting in safer vessel transits with greater under-keel clearance. However, sea level change is expected to impact landside infrastructure on or access to the town wharf over time. To assess the wharf's vulnerability to sea level change, projected changes in sea level were added to existing water levels to evaluate if sea level rise will impact landslide infrastructure on or access to the wharf over the project's 50-year economic life and the 100-year planning horizon. Mean Higher High Water (MHHW) was selected to evaluate high water levels that are projected to occur daily. The 99% Annual Exceedance Probability (AEP) (1-year Annual Recurrence Interval) storm surge at Mean High Water (MHW) was used to approximate an annual storm event or nor'easter. The MHHW and 99% AEP surge at MHW levels for the years 2072 and 2172 are provided in Table C-4 for each scenario.

Table C-4. Projected Water Surface Elevations – Future Scenarios

Year	Scenario	MHHW (FT, NAVD88)	99% AEP Surge at MHW (FT, NAVD88)
2072	Low	5.93	7.42
	Intermediate	6.50	7.99
	High	8.31	9.80
2122	Low	6.30	7.79
	Intermediate	7.81	9.30
	High	12.57	14.06

The town wharf, situated at the head of the harbor, consists of a pile bulkhead on its north and east sides, boat ramp, floating dock, and parking. The wharf and bulkhead elevations are approximately 8 feet NAVD88 (13.8 feet MLLW). As shown in the oblique imagery in Figure C-5 and the topographic LiDAR surface in Figure C-6, the wharf is lower in elevation than Water Street, from which it can be accessed by two routes. The wharf elevation is highest at its northern end where parking is available landward of the bulkhead. The parking area to the south, adjacent to the boat ramp, is approximately 1-foot lower and is more susceptible to inundation by high water levels.

Figure C-5. Oblique Imagery of Town Wharf

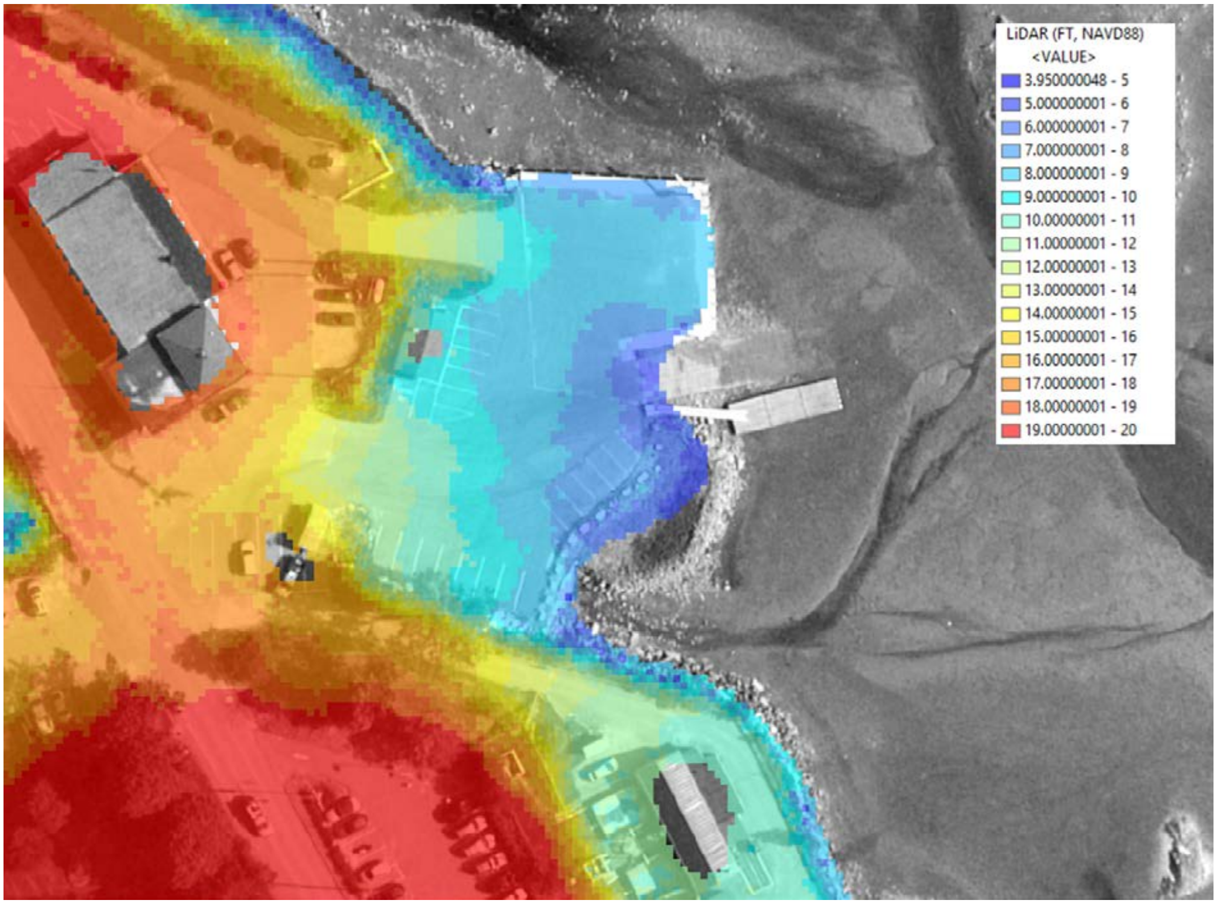


Figure C-6. Topographic LiDAR Coverage of Town Wharf

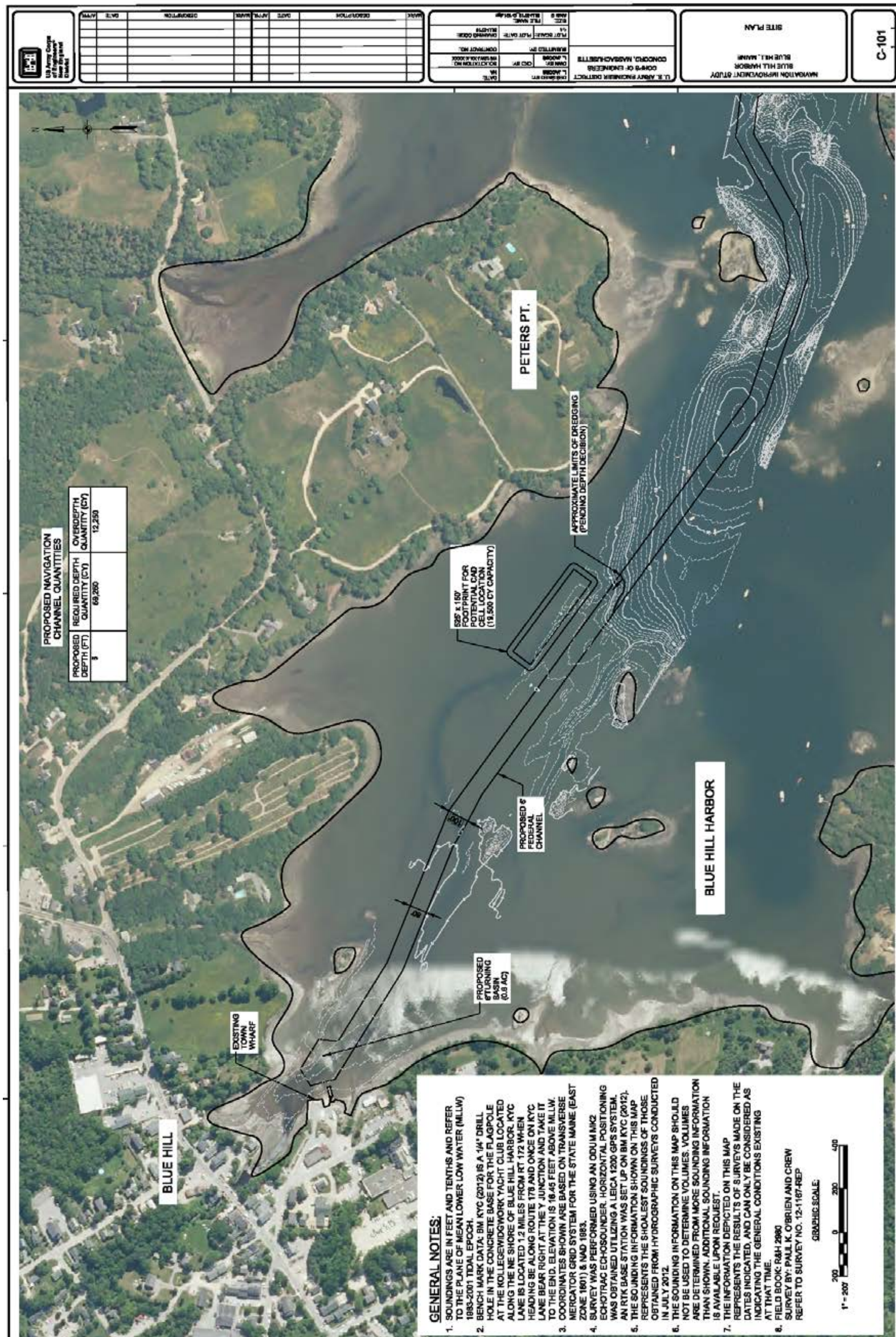
A comparison of the wharf elevation, approximately 8 feet NAVD88 (13.8 feet MLLW), to the projected water levels in Table C-4 shows that the wharf is not projected to be impacted by MHHW alone under the low and intermediate SLC scenarios through 2072. However, wharf access will be affected under the high SLC scenario as MHHW is projected to exceed the wharf elevation at the tail end of the 50-year period of economic analysis in 2068. The 2072 MHHW lines for the three SLC scenarios are shown in Figure C-7.

Figure C-7. MHHW Inundation Limits for 2072 SLC Scenarios

Looking out to 2122, the wharf will again not be exceeded by MHHW alone under the low and intermediate SLC scenarios. However, as shown in Figure C-8, the inundation at MHHW under the high SLC scenario will make the entirety of the town wharf inaccessible. If a higher sea level scenario is realized, the town will need to make improvements to the wharf area to maintain its access across the tidal cycle.

Figure C-8. MHHW Inundation Limits for 2122 SLC Scenarios

Attachment A – Recommended Plan



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BLUE HILL HARBOR
MAINE
NAVIGATION IMPROVEMENT PROJECT

APPENDIX D

COST ENGINEERING

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COST ESTIMATE

The cost estimate is based on dredge quantities developed by the Civil Engineering Section. The Recommended Plan includes constructing a new 80-ft wide, 6-ft deep channel along with a new turning basin. There is no pre-existing federal navigation project in this area.

Environmental testing in the harbor indicates that the top 2-ft of sediment are contaminated with PAHs; thus, the Recommended Plan also includes construction of a new CAD cell to place and cap this material.

Numerous alternatives were considered for this project, including different channel depths (5-ft and 7-ft), as well as overland disposal for the contaminated material. The Recommended Plan was selected through an economic analysis.

Assumptions

- Construction methodology for clean material: the CEDEP estimate assumes that mechanical dredging equipment will be used throughout the project. The estimate assumes an 8-cy bucket will place clean material directly into two 1,500-cy bottom dump scows which will be towed 14-miles to the Eastern Passage Disposal Site (EPDS) and disposed of. Some of the clean material is to be used as a cap for the CAD cell, and will therefore only be hauled for ¼-mile. The estimate assumes one 3000 HP tug will haul the scows to/from the dredge site and the disposal areas.
- Construction methodology for contaminated material: the CEDEP estimate assumes that mechanical dredging equipment will be used throughout the project. The estimate assumes an 8-cy bucket will place contaminated material directly into a 1,500-cy bottom dump scow which will be towed ¼-mile to the CAD cell and disposed of. The estimate assumes one 3000 HP tug will haul the scows to/from the dredge site and the CAD cell area. It should be noted that, due to the substantial tide changes at this site, it's assumed that there will be a "dedicated" scow for storing the contaminated material. That way, the contractor will be able to continue excavating both material types, even if he can't access the CAD cell area due to the tides.
- Estimate assumes the prime contractor will self-perform all work.
- Estimate assumes that the prime contractor will mobilize from Maine, based on historic information of available contractors in the area.
- Estimate assumes that contractor will pay Davis Bacon wage rates for Hancock County in Maine. If the winning contractor ends up coming from outside of Maine, this could cause a rise in costs due to potentially higher wage rates.
- Estimate assumes open competition and invitation for bid procurement method.

RISK ANALYSIS

Risk Mitigation was conducted through an Abbreviated Risk Analysis (ARA) of the project as it is currently presented in addition to the acknowledgement of risk in the scope and estimated quantities. The District has mitigated this risk through a conservative approach to the excavation and hauling of dredge material as well as utilizing a conservative cost of fuel. The values included in the project cost provide an amount that the PDT is confident will provide substantive costs to mitigate any issues. The District will continue to monitor and include all risks in continuing assessment of contingency and amend as necessary as an essential element to the continued development of the project. The potential risk areas identified through formal risk and sensitivity analysis were mobilization & demobilization, dredge & disposal of clean material to the EPDS and dredge & disposal of contaminated material to the CAD cell.

The ARA was developed relying on local District staff to provide expertise and information gathering. The cost engineer facilitated a risk assessment meeting with the PDT in addition to a qualitative analysis to produce a risk register that served as the framework for the risk analysis.

The ARA assumes the Project Development Stage/Alternative is "Feasibility (Recommended Plan)" with a "Low Risk" risk category based on the experience of the cost engineer and vetted with the PDT. The resultant contingencies are 15.04% for the Total Construction Estimate, 13.62% for Total Planning, Engineering & Design, and 16.83% for Total Construction Management. These contingency percentages were then utilized in the Total Project Cost Summary.

There is no one significant risk factor for this project that stands above the rest. The risks associated with the project are typical for improvement dredging and are derived from the district's standard practices for developing quantities, acquisition strategy, and cost estimate assumptions regarding what equipment will be utilized to construct the project.

TOTAL PROJECT COST SUMMARY (TPCS)

The Total Project Cost Summary (TPCS) was then computed to summarize the construction cost, project first cost, and the Total Project Cost or the Fully Funded Cost. The TPCS was utilized to calculate the construction cost estimate applied contingency and escalated to the midpoints of the features of work and the remaining work breakdown structure to include Planning, Engineering & Design (PED) and Construction Management. The inputs of the TPCS, to include percentages for the PED phase and Construction Management were obtained from the project manager.

The resultant TPCS from the cost estimate, risk analysis, and escalation is $3,138,000 with an estimated Federal cost of $2,824,000 and Non-Federal cost of $628,000 utilizing a 90%/10% Federal to Non-Federal cost split, plus an additional 10% of project costs to be paid to the US Treasury in accordance with Congressional mandates. Including feasibility study costs of $352,000, the total estimated Federal cost of the project is $3,050,000.

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**** TOTAL PROJECT COST SUMMARY ****

PROJECT: **Blue Hill Section 107**
PROJECT NO: **328230**
LOCATION: **Blue Hill, Maine**

DISTRICT: **New England District**
PREPARED: **5/19/2021**
UPDATED: **2/1/2022**
POC: **CHIEF, COST ENGINEERING, Jeffrey Gaeta**

This Estimate reflects the scope and schedule in report; Blue Hill Harbor, Section 107 Navigation Improvement Study

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)						TOTAL PROJECT COST (FULLY FUNDED)			
Dispose Dredged Material in CAD Cell								Program Year (Budget EC):		2022					
								Effective Price Level Date:		1-Oct- 21					
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST ($K)	CNTG ($K)	CNTG (%)	TOTAL ($K)	ESC (%)	COST ($K)	CNTG ($K)	REMAINING COST ($K)	Spent Thru: 1-Oct-21 ($K)	TOTAL FIRST COST ($K)	ESC (%)	COST ($K)	CNTG ($K)	FULL ($K)
12	NAVIGATION PORTS & HARBORS - MOB	$467	$70	15%	$537	11.7%	$521	$78	$599		$599	6.4%	$554	$83	$637
12	NAVIGATION PORTS & HARBORS - DREDG	$1,618	$243	15%	$1,861	11.7%	$1,807	$272	$2,078		$2,078	6.4%	$1,922	$289	$2,211
			-			-						-			
			-			-						-			
	CONSTRUCTION ESTIMATE TOTALS:	$2,085	$314		$2,398	11.7%	$2,328	$350	$2,678		$2,678	6.4%	$2,476	$372	$2,848
01	LANDS AND DAMAGES	$9			$9	8.4%	$10		$10		$10	6.4%	$10		$10
30	PLANNING, ENGINEERING & DESIGN	$304	$41	14%	$345	2.4%	$311	$42	$354		$354	3.6%	$322	$44	$366
31	CONSTRUCTION MANAGEMENT	$177	$30	17%	$207	2.4%	$181	$31	$212		$212	5.1%	$191	$32	$223
	PROJECT COST TOTALS:	$2,575	$385	15%	$2,960		$2,830	$423	$3,253		**$3,253**	6.0%	$2,999	$448	$3,447

D-5a

______________ CHIEF, COST ENGINEERING, Jeffrey Gaeta

______________ PROJECT MANAGER, Mark Habel

______________ CHIEF, REAL ESTATE, Timothy Shugert

______________ CHIEF, PLANNING, John Kennelly

______________ CHIEF, ENGINEERING, Dave Margolis

______________ CHIEF, OPERATIONS, Eric Pedersen

______________ CHIEF, CONSTRUCTION, Sean Dolan

______________ CHIEF, CONTRACTING, Sheila Winston-Vincuilla

______________ CHIEF, PM-PB, Janet Harrington

______________ CHIEF, DPM, Scott Acone

ESTIMATED TOTAL PROJECT COST:		**$3,447**
ESTIMATED FEDERAL COST:	90%	$3,103
ESTIMATED NON-FEDERAL COST:	10%	$345
ADDITIONAL 10% NON-FEDERAL COST:		$345
22 - FEASIBILITY STUDY (CAP studies):		**$352**
ESTIMATED FEDERAL COST:	64%	$226
ESTIMATED NON-FEDERAL COST:	36%	$126
ESTIMATED FEDERAL COST OF PROJECT		**$3,329**
ESTIMATED NON-FEDERAL COST OF PROJECT		$815

Filename: CAP BlueHillSection107_TPCS ver Sep 2021_rev 4_02-01-22.xlsx
TPCS - CAD DETAILED

**** TOTAL PROJECT COST SUMMARY ****

**** CONTRACT COST SUMMARY ****

PROJECT: Blue Hill Section 107
LOCATION: Blue Hill, Maine
This Estimate reflects the scope and schedule in report; Blue Hill Harbor, Section 107 Navigation Improvement Study

DISTRICT: New England District
POC: CHIEF, COST ENGINEERING, Jeffrey Gaeta

PREPARED: 5/19/2021
UPDATED: 2/1/2022

WBS Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
Dispose Dredged Material in CAD Cell		Estimate Prepared: 19-May-21 Estimate Price Level: 1-Oct-20				Program Year (Budget EC): 2022 Effective Price Level Date: 1 -Oct-21								
WBS NUMBER *A*	Civil Works Feature & Sub-Feature Description *B*	COST ($K) *C*	CNTG ($K) *D*	RISK BASED CNTG (%) *E*	TOTAL ($K) *F*	ESC (%) *G*	COST ($K) *H*	CNTG ($K) *I*	TOTAL ($K) *J*	Mid-Point Date *P*	ESC (%) *L*	COST ($K) *M*	CNTG ($K) *N*	FULL ($K) *O*
	PHASE 1 or CONTRACT 1													
12	NAVIGATION PORTS & HARBORS - MOB	$467	$70	15.0%	$537	11.7%	$521	$78	$599	2024Q1	6.4%	$554	$83	$637
12	NAVIGATION PORTS & HARBORS - DREDG	$1,618	$243	15.0%	$1,861	11.7%	$1,807	$272	$2,078	2024Q1	6.4%	$1,922	$289	$2,211
	CONSTRUCTION ESTIMATE TOTALS:	$2,085	$314	15.0%	$2,398		$2,328	$350	$2,678			$2,476	$372	$2,848
01	LANDS AND DAMAGES	$9			$9	8.4%	$10		$10	2024Q1	6.4%	$10		$10
30	PLANNING, ENGINEERING & DESIGN													
8.6%	Project Management	$40	$5	13.6%	$45	2.4%	$41	$6	$47	2023Q2	3.1%	$42	$6	$48
4.3%	Planning & Environmental Compliance	$20	$3	13.6%	$23	2.4%	$20	$3	$23	2023Q2	3.1%	$21	$3	$24
30.6%	Engineering & Design	$143	$19	13.6%	$162	2.4%	$146	$20	$166	2023Q2	3.1%	$151	$21	$172
5.4%	Reviews, ATRs, IEPRs, VE	$25	$3	13.6%	$28	2.4%	$26	$3	$29	2023Q2	3.1%	$26	$4	$30
	Life Cycle Updates (cost, schedule, risks)			13.6%										
4.3%	Contracting & Reprographics	$20	$3	13.6%	$23	2.4%	$20	$3	$23	2024Q1	5.1%	$22	$3	$24
1.3%	Engineering During Construction	$6	$1	13.6%	$7	2.4%	$6	$1	$7	2024Q1	5.1%	$6	$1	$7
6.4%	Planning During Construction	$30	$4	13.6%	$34	2.4%	$31	$4	$35	2023Q2	3.1%	$32	$4	$36
	Adaptive Management & Monitoring			13.6%										
4.3%	Project Operations	$20	$3	13.6%	$23	2.4%	$20	$3	$23	2025Q1	7.7%	$22	$3	$25
31	CONSTRUCTION MANAGEMENT													
6.0%	Construction Management	$125	$21	16.8%	$146	2.4%	$128	$22	$150	2024Q1	5.1%	$135	$23	$157
2.0%	Project Operation:			16.8%										
2.5%	Project Management	$52	$9	16.8%	$61	2.4%	$53	$9	$62	2024Q1	5.1%	$56	$9	$65
	CONTRACT COST TOTALS:	$2,575	$385		$2,960		$2,830	$423	**$3,253**			$2,999	$448	**$3,447**

Filename: CAP BlueHillSection107_TPCS ver Sep 2021_rev 4_02-01-22.xlsx
TPCS - CAD DETAILED

WALLA WALLA COST ENGINEERING MANDATORY CENTER OF EXPERTISE

COST AGENCY TECHNICAL REVIEW CERTIFICATION STATEMENT

For Project No. 32830

NAE – Blue Hill Harbor
Section 107 Navigation Improvement Project

The Blue Hill Harbor Section 107 – Navigation Improvement Project as presented by New England District, has undergone a successful Cost Agency Technical Review (Cost ATR), performed by the Walla Walla District Cost Engineering Mandatory Center of Expertise (Cost MCX) team. The Cost ATR included study of the project scope, report, cost estimates, schedules, escalation, and risk-based contingencies. This certification signifies the products meet the quality standards as prescribed in ER 1110-2-1150 Engineering and Design for Civil Works Projects and ER 1110-2-1302 Civil Works Cost Engineering.

As of June 25, 2021, the Cost MCX certifies the estimated total project cost:

FY21 Project First Cost:	$2,960,000
Fully Funded Total Project Cost:	$3,138,000
Federal Cost of Project:	$3,050,000

It remains the responsibility of the District to correctly reflect these cost values within the Final Report and to implement effective project management controls and implementation procedures including risk management through the period of Federal participation.

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Michael P. Jacobs, PE, CCE
Chief, Cost Engineering MCX
Walla Walla District

**** TOTAL PROJECT COST SUMMARY ****

PROJECT: **Blue Hill Section 107**
PROJECT NO: **328230**
LOCATION: **Blue Hill, Maine**

DISTRICT: **New England District** PREPARED: **5/19/2021**
POC: **CHIEF, COST ENGINEERING, Jeffrey Gaeta**

This Estimate reflects the scope and schedule in report; Blue Hill Harbor, Section 107 Navigation Improvement Study

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)						TOTAL PROJECT COST (FULLY FUNDED)			
Dispose Dredged Material in CAD Cell						Program Year (Budget EC): 2021 Effective Price Level Date: 1-Oct- 20									
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST ($K)	CNTG ($K)	CNTG (%)	TOTAL ($K)	ESC (%)	COST ($K)	CNTG ($K)	REMAINING COST ($K)	Spent Thru: 1-Oct-20 ($K)	TOTAL FIRST COST ($K)	ESC (%)	COST ($K)	CNTG ($K)	FULL ($K)
12	NAVIGATION PORTS & HARBORS	$2,085	$314	15%	$2,398		$2,085	$314	$2,398		$2,398	6.0%	$2,209	$332	$2,541
				-		-						-			
				-		-						-			
				-		-						-			
	CONSTRUCTION ESTIMATE TOTALS:	$2,085	$314		$2,398		$2,085	$314	$2,398		$2,398	6.0%	$2,209	$332	$2,541
01	LANDS AND DAMAGES	$9			$9		$9		$9		$9	6.0%	$10		$10
30	PLANNING, ENGINEERING & DESIGN	$304	$41	14%	$345		$304	$41	$345		$345	5.4%	$320	$44	$364
31	CONSTRUCTION MANAGEMENT	$177	$30	17%	$207		$177	$30	$207		$207	7.9%	$191	$32	$223
	PROJECT COST TOTALS:	$2,575	$385	15%	$2,960		$2,575	$385	$2,960		**$2,960**	6.0%	$2,730	$408	$3,138

ESTIMATED TOTAL PROJECT COST:		**$3,138**
ESTIMATED FEDERAL COST:	**90%**	$2,824
ESTIMATED NON-FEDERAL COST:	**10%**	$314
ADDITIONAL 10% NON-FEDERAL COST:		$314
22 - FEASIBILITY STUDY (CAP studies):		**$352**
ESTIMATED FEDERAL COST:	64%	$226
ESTIMATED NON-FEDERAL COST:	36%	$126
ESTIMATED FEDERAL COST OF PROJECT		**$3,050**
ESTIMATED NON-FEDERAL COST OF PROJECT		$754

________________ CHIEF, COST ENGINEERING, Jeffrey Gaeta

________________ PROJECT MANAGER, Mark Habel

________________ CHIEF, REAL ESTATE, Timothy Shugert

________________ CHIEF, PLANNING, John Kennelly

________________ CHIEF, ENGINEERING, Dave Margolis

________________ CHIEF, OPERATIONS, Eric Pedersen

________________ CHIEF, CONSTRUCTION, Sean Dolan

________________ CHIEF, CONTRACTING, Sheila Winston-Vincuilla

________________ CHIEF, PM-PB, Janet Harrington

________________ CHIEF, DPM, Scott Acone

Filename: CAP BlueHillSection107_TPCS ver Mar 2019_rev 3_5-19-21.xlsx
TPCS - CAD

****** TOTAL PROJECT COST SUMMARY ******

****** CONTRACT COST SUMMARY ******

PROJECT: Blue Hill Section 107
LOCATION: Blue Hill, Maine
This Estimate reflects the scope and schedule in report; Blue Hill Harbor, Section 107 Navigation Improvement Study

DISTRICT: New England District
POC: CHIEF, COST ENGINEERING, Jeffrey Gaeta

PREPARED: 5/19/2021

WBS Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
Dispose Dredged Material in CAD Cell		Estimate Prepared: 19-May-21 Estimate Price Level: 1-Oct-20				Program Year (Budget EC): 2021 Effective Price Level Date: 1 -Oct-20								
				RISK BASED										
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST ($K)	CNTG ($K)	CNTG (%)	TOTAL ($K)	ESC (%)	COST ($K)	CNTG ($K)	TOTAL ($K)	Mid-Point Date	ESC (%)	COST ($K)	CNTG ($K)	FULL ($K)
A	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*	*J*	*P*	*L*	*M*	*N*	*O*
	PHASE 1 or CONTRACT 1													
12	NAVIGATION PORTS & HARBORS	$2,085	$314	15.0%	$2,398		$2,085	$314	$2,398	2023Q1	6.0%	$2,209	$332	$2,541
	CONSTRUCTION ESTIMATE TOTALS:	$2,085	$314	15.0%	$2,398		$2,085	$314	$2,398			$2,209	$332	$2,541
01	LANDS AND DAMAGES	$9			$9		$9		$9	2023Q1	6.0%	$10		$10
30	PLANNING, ENGINEERING & DESIGN													
1.9%	Project Management	$40	$5	13.6%	$45		$40	$5	$45	2022Q2	5.0%	$42	$6	$48
1.0%	Planning & Environmental Compliance	$20	$3	13.6%	$23		$20	$3	$23	2022Q2	5.0%	$21	$3	$24
6.9%	Engineering & Design	$143	$19	13.6%	$162		$143	$19	$162	2022Q2	5.0%	$150	$20	$171
1.2%	Reviews, ATRs, IEPRs, VE	$25	$3	13.6%	$28		$25	$3	$28	2022Q2	5.0%	$26	$4	$30
	Life Cycle Updates (cost, schedule, risks)			13.6%										
1.0%	Contracting & Reprographics	$20	$3	13.6%	$23		$20	$3	$23	2023Q1	7.9%	$22	$3	$25
0.3%	Engineering During Construction	$6	$1	13.6%	$7		$6	$1	$7	2023Q1	7.9%	$6	$1	$7
1.4%	Planning During Construction	$30	$4	13.6%	$34		$30	$4	$34	2022Q2	5.0%	$31	$4	$36
	Adaptive Management & Monitoring			13.6%										
1.0%	Project Operations	$20	$3	13.6%	$23		$20	$3	$23	2023Q1	7.9%	$22	$3	$25
31	CONSTRUCTION MANAGEMENT													
6.0%	Construction Management	$125	$21	16.8%	$146		$125	$21	$146	2023Q1	7.9%	$135	$23	$158
2.0%	Project Operation:			16.8%										
2.5%	Project Management	$52	$9	16.8%	$61		$52	$9	$61	2023Q1	7.9%	$56	$9	$66
	CONTRACT COST TOTALS:	$2,575	$385		$2,960		$2,575	$385	**$2,960**			$2,730	$408	**$3,138**

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TPCS - CAD

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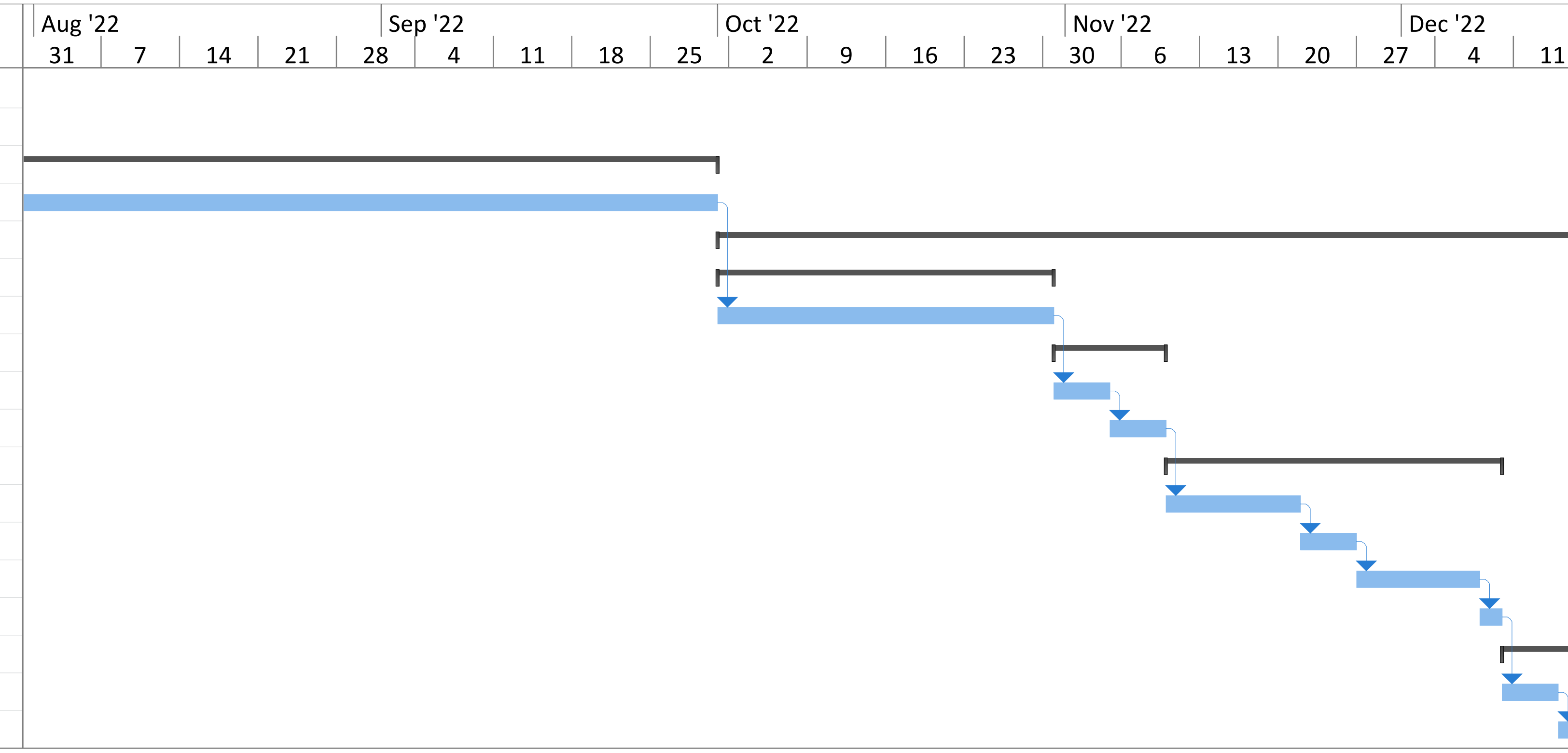
ID	Task Mode	Task Name	Duration	Start	Finish
1		**Recommended Plan: Place Material in CAD Cell**			
2					
3		**PED Phase**	**365 days**	**Fri 10/1/21**	**Sat 10/1/22**
4		Develop, Solicit, & Award Construction Contract	365 days	Fri 10/1/21	Sat 10/1/22
5		**Construction Phase**	**78 days**	**Sat 10/1/22**	**Sun 12/18/22**
6		**Pre-Construction Activities**	**30 days**	**Sat 10/1/22**	**Mon 10/31/22**
7		Pre-Con Submittals	30 days	Sat 10/1/22	Mon 10/31/22
8		**Mobilization**	**10 days**	**Mon 10/31/22**	**Thu 11/10/22**
9		Prepare for Mobilization	5 days	Mon 10/31/22	Sat 11/5/22
10		Mobilize to Site	5 days	Sat 11/5/22	Thu 11/10/22
11		**Dredging**	**30 days**	**Thu 11/10/22**	**Sat 12/10/22**
12		Dredge Clean Mat'l - Haul to EPDS	12 days	Thu 11/10/22	Tue 11/22/22
13		Dredge CAD Cell - Haul to EPDS	5 days	Tue 11/22/22	Sun 11/27/22
14		Dredge Contam Mat'l - Haul to CAD Cell	11 days	Sun 11/27/22	Thu 12/8/22
15		Place CAD Cell Cap	2 days	Thu 12/8/22	Sat 12/10/22
16		**Demobilization**	**8 days**	**Sat 12/10/22**	**Sun 12/18/22**
17		Demobilize	5 days	Sat 12/10/22	Thu 12/15/22
18		Prepare Dredge for Storage	3 days	Thu 12/15/22	Sun 12/18/22



Project: msproj11
Date: Mon 5/31/21

Task		Project Summary		Inactive Milestone		Manual Summary Rollup		Deadline	
Split		External Tasks		Inactive Summary		Manual Summary		Progress	
Milestone		External Milestone		Manual Task		Start-only		Manual Progress	
Summary		Inactive Task		Duration-only		Finish-only			

**** TOTAL PROJECT COST SUMMARY ****

PROJECT: **Blue Hill Section 107**
PROJECT NO: **328230**
LOCATION: **Blue Hill, Maine**

DISTRICT: **New England District** PREPARED: **5/19/2021**
POC: **CHIEF, COST ENGINEERING, Jeffrey Gaeta**

This Estimate reflects the scope and schedule in report; Blue Hill Harbor, Section 107 Navigation Improvement Study

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)						TOTAL PROJECT COST (FULLY FUNDED)			
Dispose Dredged Material in CAD Cell						Program Year (Budget EC): 2021; Effective Price Level Date: 1-Oct- 20									
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST ($K)	CNTG ($K)	CNTG (%)	TOTAL ($K)	ESC (%)	COST ($K)	CNTG ($K)	REMAINING COST ($K)	Spent Thru: 1-Oct-20 ($K)	TOTAL FIRST COST ($K)	ESC (%)	COST ($K)	CNTG ($K)	FULL ($K)
12	NAVIGATION PORTS & HARBORS	$2,085	$314	15%	$2,398		$2,085	$314	$2,398		$2,398	6.0%	$2,209	$332	$2,541
				-		-						-			
				-		-						-			
				-		-						-			
	CONSTRUCTION ESTIMATE TOTALS:	$2,085	$314		$2,398		$2,085	$314	$2,398		$2,398	6.0%	$2,209	$332	$2,541
01	LANDS AND DAMAGES	$9			$9		$9		$9		$9	6.0%	$10		$10
30	PLANNING, ENGINEERING & DESIGN	$304	$41	14%	$345		$304	$41	$345		$345	5.4%	$320	$44	$364
31	CONSTRUCTION MANAGEMENT	$177	$30	17%	$207		$177	$30	$207		$207	7.9%	$191	$32	$223
	PROJECT COST TOTALS:	$2,575	$385	15%	$2,960		$2,575	$385	$2,960		**$2,960**	6.0%	$2,730	$408	$3,138

_______________ CHIEF, COST ENGINEERING, Jeffrey Gaeta

_______________ PROJECT MANAGER, Mark Habel

_______________ CHIEF, REAL ESTATE, Timothy Shugert

_______________ CHIEF, PLANNING, John Kennelly

_______________ CHIEF, ENGINEERING, Dave Margolis

_______________ CHIEF, OPERATIONS, Eric Pedersen

_______________ CHIEF, CONSTRUCTION, Sean Dolan

_______________ CHIEF, CONTRACTING, Sheila Winston-Vincuilla

_______________ CHIEF, PM-PB, Janet Harrington

_______________ CHIEF, DPM, Scott Acone

ESTIMATED TOTAL PROJECT COST:		**$3,138**
ESTIMATED FEDERAL COST:	**90%**	$2,824
ESTIMATED NON-FEDERAL COST:	**10%**	$314
ADDITIONAL 10% NON-FEDERAL COST:		$314
22 - FEASIBILITY STUDY (CAP studies):		**$352**
ESTIMATED FEDERAL COST:	64%	$226
ESTIMATED NON-FEDERAL COST:	36%	$126
ESTIMATED FEDERAL COST OF PROJECT		**$3,050**
ESTIMATED NON-FEDERAL COST OF PROJECT		$754

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TPCS - CAD

**** TOTAL PROJECT COST SUMMARY ****

**** CONTRACT COST SUMMARY ****

PROJECT: Blue Hill Section 107
LOCATION: Blue Hill, Maine
This Estimate reflects the scope and schedule in report; Blue Hill Harbor, Section 107 Navigation Improvement Study

DISTRICT: New England District
POC: CHIEF, COST ENGINEERING, Jeffrey Gaeta
PREPARED: 5/19/2021

WBS Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
Dispose Dredged Material in CAD Cell		Estimate Prepared: 19-May-21 Estimate Price Level: 1-Oct-20				Program Year (Budget EC): 2021 Effective Price Level Date: 1 -Oct-20								
				RISK BASED										
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST ($K)	CNTG ($K)	CNTG (%)	TOTAL ($K)	ESC (%)	COST ($K)	CNTG ($K)	TOTAL ($K)	Mid-Point Date	ESC (%)	COST ($K)	CNTG ($K)	FULL ($K)
A	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*	*J*	*P*	*L*	*M*	*N*	*O*
	PHASE 1 or CONTRACT 1													
12	NAVIGATION PORTS & HARBORS	$2,085	$314	15.0%	$2,398		$2,085	$314	$2,398	2023Q1	6.0%	$2,209	$332	$2,541
	CONSTRUCTION ESTIMATE TOTALS:	$2,085	$314	15.0%	$2,398		$2,085	$314	$2,398			$2,209	$332	$2,541
01	LANDS AND DAMAGES	$9			$9		$9		$9	2023Q1	6.0%	$10		$10
30	PLANNING, ENGINEERING & DESIGN													
1.9%	Project Management	$40	$5	13.6%	$45		$40	$5	$45	2022Q2	5.0%	$42	$6	$48
1.0%	Planning & Environmental Compliance	$20	$3	13.6%	$23		$20	$3	$23	2022Q2	5.0%	$21	$3	$24
6.9%	Engineering & Design	$143	$19	13.6%	$162		$143	$19	$162	2022Q2	5.0%	$150	$20	$171
1.2%	Reviews, ATRs, IEPRs, VE	$25	$3	13.6%	$28		$25	$3	$28	2022Q2	5.0%	$26	$4	$30
	Life Cycle Updates (cost, schedule, risks)			13.6%										
1.0%	Contracting & Reprographics	$20	$3	13.6%	$23		$20	$3	$23	2023Q1	7.9%	$22	$3	$25
0.3%	Engineering During Construction	$6	$1	13.6%	$7		$6	$1	$7	2023Q1	7.9%	$6	$1	$7
1.4%	Planning During Construction	$30	$4	13.6%	$34		$30	$4	$34	2022Q2	5.0%	$31	$4	$36
	Adaptive Management & Monitoring			13.6%										
1.0%	Project Operations	$20	$3	13.6%	$23		$20	$3	$23	2023Q1	7.9%	$22	$3	$25
31	CONSTRUCTION MANAGEMENT													
6.0%	Construction Management	$125	$21	16.8%	$146		$125	$21	$146	2023Q1	7.9%	$135	$23	$158
2.0%	Project Operation:			16.8%										
2.5%	Project Management	$52	$9	16.8%	$61		$52	$9	$61	2023Q1	7.9%	$56	$9	$66
	CONTRACT COST TOTALS:	$2,575	$385		$2,960		$2,575	$385	**$2,960**			$2,730	$408	**$3,138**

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**** TOTAL PROJECT COST SUMMARY ****

PROJECT: **Blue Hill Section 107**
PROJECT NO: **328230**
LOCATION: **Blue Hill, Maine**

DISTRICT: **New England District** PREPARED: **5/19/2021**
POC: **CHIEF, COST ENGINEERING, Jeffrey Gaeta**

This Estimate reflects the scope and schedule in report; Blue Hill Harbor, Section 107 Navigation Improvement Study

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)						TOTAL PROJECT COST (FULLY FUNDED)			
Dispose Dredged Material at Upland Landfill						Program Year (Budget EC): 2021 Effective Price Level Date: 1-Oct- 20									
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST ($K)	CNTG ($K)	CNTG (%)	TOTAL ($K)	ESC (%)	COST ($K)	CNTG ($K)	REMAINING COST ($K)	Spent Thru: 1-Oct-20 ($K)	TOTAL FIRST COST ($K)	ESC (%)	COST ($K)	CNTG ($K)	FULL ($K)
12	NAVIGATION PORTS & HARBORS	$6,402	$963	15%	$7,365		$6,402	$963	$7,365		$7,365	6.0%	$6,783	$1,020	$7,803
			-			-						-			
			-			-						-			
			-			-						-			
	CONSTRUCTION ESTIMATE TOTALS:	$6,402	$963		$7,365		$6,402	$963	$7,365		$7,365	6.0%	$6,783	$1,020	$7,803
01	LANDS AND DAMAGES	$9			$9		$9		$9		$9	6.0%	$10		$10
30	PLANNING, ENGINEERING & DESIGN	$304	$41	14%	$345		$304	$41	$345		$345	5.4%	$320	$44	$364
31	CONSTRUCTION MANAGEMENT	$177	$30	17%	$207		$177	$30	$207		$207	7.9%	$191	$32	$223
	PROJECT COST TOTALS:	$6,892	$1,034	15%	$7,926		$6,892	$1,034	$7,926		**$7,926**	6.0%	$7,304	$1,096	$8,400

D-12

________________ CHIEF, COST ENGINEERING, Jeffrey Gaeta

________________ PROJECT MANAGER, Mark Habel

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________________ CHIEF, CONSTRUCTION, Sean Dolan

________________ CHIEF, CONTRACTING, Sheila Winston-Vincuilla

________________ CHIEF, PM-PB, Janet Harrington

________________ CHIEF, DPM, Scott Acone

ESTIMATED TOTAL PROJECT COST:		**$8,400**
ESTIMATED FEDERAL COST:	90%	$7,560
ESTIMATED NON-FEDERAL COST:	10%	$840
ADDITIONAL 10% NON-FEDERAL COST:		$840
22 - FEASIBILITY STUDY (CAP studies):		**$352**
ESTIMATED FEDERAL COST:	64%	$226
ESTIMATED NON-FEDERAL COST:	36%	$126
ESTIMATED FEDERAL COST OF PROJECT		**$7,786**
ESTIMATED NON-FEDERAL COST OF PROJECT		$1,806

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TPCS - Upland

**** TOTAL PROJECT COST SUMMARY ****

**** CONTRACT COST SUMMARY ****

PROJECT: Blue Hill Section 107
LOCATION: Blue Hill, Maine
This Estimate reflects the scope and schedule in report; Blue Hill Harbor, Section 107 Navigation Improvement Study

DISTRICT: New England District
POC: CHIEF, COST ENGINEERING, Jeffrey Gaeta

PREPARED: 5/19/2021

WBS Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
Dispose Dredged Material at Upland Landfill		Estimate Prepared: 3-Nov-20 Estimate Price Level: 1-Oct-20				Program Year (Budget EC): 2021 Effective Price Level Date: 1 -Oct-20								
				RISK BASED										
WBS NUMBER *A*	Civil Works Feature & Sub-Feature Description *B*	COST ($K) *C*	CNTG ($K) *D*	CNTG (%) *E*	TOTAL ($K) *F*	ESC (%) *G*	COST ($K) *H*	CNTG ($K) *I*	TOTAL ($K) *J*	Mid-Point Date *P*	ESC (%) *L*	COST ($K) *M*	CNTG ($K) *N*	FULL ($K) *O*
	PHASE 1 or CONTRACT 1													
12	NAVIGATION PORTS & HARBORS	$6,402	$963	15.0%	$7,365		$6,402	$963	$7,365	2023Q1	6.0%	$6,783	$1,020	$7,803
	CONSTRUCTION ESTIMATE TOTALS:	$6,402	$963	15.0%	$7,365		$6,402	$963	$7,365			$6,783	$1,020	$7,803
01	LANDS AND DAMAGES	$9			$9		$9		$9	2023Q1	6.0%	$10		$10
30	PLANNING, ENGINEERING & DESIGN													
0.6%	Project Management	$40	$5	13.6%	$45		$40	$5	$45	2022Q2	5.0%	$42	$6	$48
0.3%	Planning & Environmental Compliance	$20	$3	13.6%	$23		$20	$3	$23	2022Q2	5.0%	$21	$3	$24
2.2%	Engineering & Design	$143	$19	13.6%	$162		$143	$19	$162	2022Q2	5.0%	$150	$20	$171
0.4%	Reviews, ATRs, IEPRs, VE	$25	$3	13.6%	$28		$25	$3	$28	2022Q2	5.0%	$26	$4	$30
	Life Cycle Updates (cost, schedule, risks)			13.6%										
0.3%	Contracting & Reprographics	$20	$3	13.6%	$23		$20	$3	$23	2023Q1	7.9%	$22	$3	$25
0.1%	Engineering During Construction	$6	$1	13.6%	$7		$6	$1	$7	2023Q1	7.9%	$6	$1	$7
0.5%	Planning During Construction	$30	$4	13.6%	$34		$30	$4	$34	2022Q2	5.0%	$31	$4	$36
	Adaptive Management & Monitoring			13.6%										
0.3%	Project Operations	$20	$3	13.6%	$23		$20	$3	$23	2023Q1	7.9%	$22	$3	$25
31	CONSTRUCTION MANAGEMENT													
6.0%	Construction Management	$125	$21	16.8%	$146		$125	$21	$146	2023Q1	7.9%	$135	$23	$158
2.0%	Project Operation:			16.8%										
2.5%	Project Management	$52	$9	16.8%	$61		$52	$9	$61	2023Q1	7.9%	$56	$9	$66
	CONTRACT COST TOTALS:	$6,892	$1,034		$7,926		$6,892	$1,034	**$7,926**			$7,304	$1,096	**$8,400**

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Abbreviated Risk Analysis

Project (less than $40M): **Blue Hill Harbor Section 107 Navigation Improvement Study**

Alternative: **Tentatively Selected Plan**

Project Development Stage/Alternative: **Feasibility (Recommended Plan)**

Risk Category: **Low Risk: Typical Construction, Simple**

Meeting Date: **11/3/2020**

Total Estimated Construction Contract Cost = **$ 2,084,576**

	CWWBS	Feature of Work	Estimated Cost		% Contingency	$ Contingency	Total
	01 LANDS AND DAMAGES	Real Estate	$ 9,000		0%	$ -	$ 9,000
1	12 02 HARBORS	Mobilization & Demobilization	$ 362,733		14%	$ 50,039	$ 412,772
2	12 02 HARBORS	Dredge Channel & Dispose in EPDS	$ 1,097,721		17%	$ 183,082	$ 1,280,803
3	12 02 HARBORS	Dredge Contam Matl & Place in CAD Cell	$ 520,276		15%	$ 80,346	$ 600,622
4					0%	$ -	$ -
5					0%	$ -	$ -
6					0%	$ -	$ -
7					0%	$ -	$ -
8					0%	$ -	$ -
9					0%	$ -	$ -
10					0%	$ -	$ -
11					0%	$ -	$ -
12	All Other	Remaining Construction Items	$ 103,846	5.2%	0%	$ -	$ 103,846
13	30 PLANNING, ENGINEERING, AND DESIGN	Planning, Engineering, & Design	$ 304,000		14%	$ 41,412	$ 345,412
14	31 CONSTRUCTION MANAGEMENT	Construction Management	$ 177,000		17%	$ 29,793	$ 206,793
XX	FIXED DOLLAR RISK ADD (EQUALLY DISPERSED TO ALL, MUST INCLUDE JUSTIFICATION SEE BELOW)					$ -	

Totals	Estimated Cost	% Contingency	$ Contingency	Total
Real Estate	$ 9,000	0%	$ -	$ 9,000.00
Total Construction Estimate	$ 2,084,576	15.04%	$ 313,467	$ 2,398,043
Total Planning, Engineering & Design	$ 304,000	13.62%	$ 41,412	$ 345,412
Total Construction Management	$ 177,000	16.83%	$ 29,793	$ 206,793
Total Excluding Real Estate	**$ 2,565,576**	**14.99%**	**$ 384,672**	**$ 2,950,248**

	Base	50%	80%
Confidence Level Range Estimate ($000's)	$2,566k	$2,796k	$2,950k

* 50% based on base is at 5% CL.

Fixed Dollar Risk Add: (Allows for additional risk to be added to the risk analsyis. Must include justification. Does not allocate to Real Estate.	

Blue Hill Harbor Section 107 Navigation Improvement Study

Feasibility (Recommended Plan)

Abbreviated Risk Analysis

Meeting Date: 3-Nov-20

Risk Level

	Negligible	Marginal	Moderate	Significant	Critical
Very Likely	2	3	4	5	5
Likely	1	2	3	4	5
Possible	0	1	2	3	4
Unlikely	0	0	1	2	3

Risk Register

Risk Element	Feature of Work	Concerns	PDT Discussions & Conclusions (Include logic & justification for choice of Likelihood & Impact)	Impact	Likelihood	Risk Level
Project Management & Scope Growth					Maximum Project Growth	40%
PS-1	Mobilization & Demobilization	n/a		Negligible	Unlikely	0
PS-2	Dredge Channel & Dispose in EPDS	There is a concern that the customer, Town of Blue Hill, may request a design change to the size of the turning basin.	To date, there have been no requests to alter the existing design or to add new design components. As such, the PDT is confident that there is negligible risk associated with this concern.	Negligible	Unlikely	0
PS-3	Dredge Contam Matl & Place in CAD Cell	There is a concern that the customer, Town of Blue Hill, may request a design change to the size of the turning basin.	To date, there have been no requests to alter the existing design or to add new design components. As such, the PDT is confident that there is negligible risk associated with this concern.	Negligible	Unlikely	0
PS-13	Planning, Engineering, & Design	There is a concern that the customer, Town of Blue Hill, may request a design change to the size of the turning basin.	To date, there have been no requests to alter the existing design or to add new design components. As such, the PDT is confident that there is negligible risk associated with this concern.	Negligible	Unlikely	0
PS-14	Construction Management	n/a		Negligible	Unlikely	0
Acquisition Strategy					Maximum Project Growth	30%
AS-1	Mobilization & Demobilization	It's possible that this project will be awarded using the 8(a) or small business set aside. Setting the project aside will limit the number of contractors available to dredge (dredging is already a fairly limited market on the East Coast; dredging in Maine is an even smaller pool of contractors. A small contractor may have difficulty securing the proper equipment necessary to complete the job, thereby impeding their ability to mobilize to the site.	Professional experience indicates that, even if we were to set this project aside, USACE would likely include a DRC in the contract which requires the KTR to demonstrate they have the correct equipment and have performed similar work in the past. This DRC has been successful in the past for weeding out unqualified KTRs.	Moderate	Unlikely	1
AS-2	Dredge Channel & Dispose in EPDS	It's possible that this project will be awarded using the 8(a) or small business set aside. Setting the project aside will limit the number of contractors available to dredge (dredging is already a fairly limited market on the East Coast; dredging in Maine is an even smaller pool of contractors. A small contractor may have difficulty securing the proper equipment necessary to complete the dredging of non-contaminated material and disposing in the Eastern Passage Disposal Site.	Professional experience indicates that, even if we were to set this project aside, USACE would likely include a DRC in the contract which requires the KTR to demonstrate they have the correct equipment and have performed similar work in the past. This DRC has been successful in the past for weeding out unqualified KTRs.	Marginal	Unlikely	0
AS-3	Dredge Contam Matl & Place in CAD Cell	It's possible that this project will be awarded using the 8(a) or small business set aside. Setting the project aside will limit the number of contractors available to dredge (dredging is already a fairly limited market on the East Coast; dredging in Maine is an even smaller pool of contractors. A small contractor may not have experience constructing CAD cells.	CAD construction is a fairly straight-forward task (essentially, it's just a large hole in the ground). As such, the PDT is not concerned with a lack of experience on the part of the winning KTR. Professional experience indicates that if the KTR can dredge a channel, they can build a CAD cell.	Marginal	Unlikely	0
AS-13	Planning, Engineering, & Design	n/a		Negligible	Unlikely	0

AS-14	Construction Management	It's possible that this project will be awarded using the 8(a) or small business set aside. Setting the project aside will limit the number of contractors available to dredge (dredging is already a fairly limited market on the East Coast; dredging in Maine is an even smaller pool of contractors. A small contractor may not be familiar with USACE pre-construction submittal requirements, leading to complications in effective construction management.	Professional/historical experience indicates that many of NAE's dredging projects in Maine have been awarded to competent small businesses. It's a fair assumption that these same businesses would win the contract for this work and thus, NAE would have a KTR onsite who is familiar with USACE processes.	Moderate	Unlikely	1
Construction Elements					**Maximum Project Growth**	**15%**
CE-1	Mobilization & Demobilization	n/a		Negligible	Unlikely	0
CE-2	Dredge Channel & Dispose in EPDS	The KTR may encounter ledge/bedrock during dredging operations. Such an encounter would either require the KTR to conduct underwater blasting operations (along with rock removal) or USACE to alter the layout of the channel/anchorage. Both alternatives would represent a delay to the contract and a significant construction contract modification for differing site conditions.	The PDT performed a thorough set of geotechnical investigations in the areas where the channel is to be built, which indicate that the material is primarily sand. In the unlikely case that ledge is encountered, it's possible that the channel or anchorage could be relocated to circumvent blasting.	Significant	Unlikely	2
CE-3	Dredge Contam Matl & Place in CAD Cell	The KTR may encounter ledge/bedrock during dredging operations. Such an encounter would either require the KTR to conduct underwater blasting operations (along with rock removal) or USACE to alter the layout of the channel/anchorage. Both alternatives would represent a delay to the contract and a significant construction contract modification for differing site conditions.	The PDT performed a thorough set of geotechnical investigations in the area where the CAD cell is to be built, which indicate the material is primarily sand. If ledge was encountered, the CAD cell could easily be resized to accommodate the required dredge volume.	Moderate	Unlikely	1
CE-13	Planning, Engineering, & Design	The KTR may encounter ledge/bedrock during dredging operations. Such an encounter would either require the KTR to conduct underwater blasting operations (along with rock removal) or USACE to alter the layout of the channel/anchorage. Both alternatives would represent a delay to the contract and a significant construction contract modification for differing site conditions.	The PDT performed a thorough geotechnical investigation in the project areas, which indicate that the material is primarily sand. In the unlikely case that ledge is encountered, the design team is confident that a change could be completed quickly, such as CAD resizing or channel/anchorage relocation.	Moderate	Unlikely	1
CE-14	Construction Management	The KTR may encounter ledge/bedrock during dredging operations. Such an encounter would either require the KTR to conduct underwater blasting operations (along with rock removal) or USACE to alter the layout of the channel/anchorage. Both alternatives would represent a delay to the contract and a significant construction contract modification for differing site conditions.	The PDT performed a thorough geotechnical investigation in the project areas, which indicate that the material is primarily sand. If ledge was encountered, a construction contract mod would need to be processed; however, the team is confident that the geotech investigation has reduced this risk sufficiently.	Significant	Unlikely	2
Specialty Construction or Fabrication					**Maximum Project Growth**	**50%**
SC-1	Mobilization & Demobilization	n/a		Negligible	Unlikely	0
SC-2	Dredge Channel & Dispose in EPDS	The PDT does not have concerns regarding any "special" aspects of this feature of work.	Dredging is a rather straight-forward task and NAE has had great historical success designing, awarding, and managing these types of contracts.	Negligible	Unlikely	0
SC-3	Dredge Contam Matl & Place in CAD Cell	The KTR may not have an environment bucket on hand with which to dredge contaminated materials in the top 2-ft of the project.	The PDT intends to the use a DRC to screen out unqualified bidders. As part of the DRC, bidders will be required to submit an equipment list to demonstrate their qualifications.	Negligible	Unlikely	0
SC-13	Planning, Engineering, & Design	The PDT does not have concerns regarding any "special" aspects of this feature of work.	Dredging is a rather straight-forward task and NAE has had great historical success designing, awarding, and managing these types of contracts.	Negligible	Unlikely	0
SC-14	Construction Management	The PDT does not have concerns regarding any "special" aspects of this feature of work.	Dredging is a rather straight-forward task and NAE has had great historical success designing, awarding, and managing these types of contracts.	Negligible	Unlikely	0
Technical Design & Quantities					**Maximum Project Growth**	**20%**
T-1	Mobilization & Demobilization	n/a		Negligible	Unlikely	0

T-2	Dredge Channel & Dispose in EPDS	The design is based on a 2012 dredge survey and there is a concern that a significant amount of deposition from the tributary rivers will increase the quantity of material to be dredged between the feasibility study and contract award.	USACE has already completed multiple surveys within the harbor, which demonstrate that the rate of deposition is very low to negligible. As such, the PDT has confidence that the quantities developed during this study will be representative of field conditions at time of award.	Marginal	Unlikely	0
T-3	Dredge Contam Matl & Place in CAD Cell	The design is based on a 2012 dredge survey and there is a concern that a significant amount of deposition from the tributary rivers will increase the quantity of material to be dredged between the feasibility study and contract award.	USACE has already completed multiple surveys within the harbor, which demonstrate that the rate of deposition is very low to negligible. As such, the PDT has confidence that the quantities developed during this study will be representative of field conditions at time of award. Even if this were not the case, the USACE has authorization to dig a deeper CAD, if needed, to accomodate additional contaminated material.	Negligible	Unlikely	0
T-13	Planning, Engineering, & Design	The design is based on a 2012 dredge survey and there is a concern that a significant amount of deposition from the tributary rivers will increase the quantity of material to be dredged between the feasibility study and contract award.	USACE has already completed multiple surveys within the harbor, which demonstrate that the rate of deposition is very low to negligible. As such, the PDT has confidence that the quantities developed during this study will be representative of field conditions at time of award. Even if this were not the case, the impact to the Design of the contract would be negligible.	Negligible	Unlikely	0
T-14	Construction Management	n/a		Negligible	Unlikely	0
Cost Estimate Assumptions				**Maximum Project Growth**		**25%**
EST-1	Mobilization & Demobilization	The Mobilization & Demobilization distances used in the CEDEP file may not be sufficient to capture the winning contractor's costs for this feature of work.	The PDT is confident, based on similar dredging jobs in Maine, that a Maine-based contractor will win the work. The estimate has assumed a New York-based contractor, so it's unlikely that these costs are insufficient.	Marginal	Unlikely	0
EST-2	Dredge Channel & Dispose in EPDS	The cost estimate might not carry an adequate set of assumptions in the CEDEP file to capture the project's constraints.	The assumptions contained within the CEDEP files have been reviewed by the PDT members; no significant disagreements or concern were raised by the PDT at that time. Further reviews to be conducted in-house will be completed by both the local district and the CX, reducing the risk that a major oversight on the part of the estimator won't be found prior to PED phase.	Moderate	Unlikely	1
EST-3	Dredge Contam Matl & Place in CAD Cell	The cost estimate might not carry an adequate set of assumptions in the CEDEP file to capture the project's constraints.	The assumptions contained within the CEDEP files have been reviewed by the PDT members; no significant disagreements or concern were raised by the PDT at that time. Further reviews to be conducted in-house will be completed by both the local district and the CX, reducing the risk that a major oversight on the part of the estimator won't be found prior to PED phase.	Moderate	Unlikely	1
EST-13	Planning, Engineering, & Design	The PED phase has been estimated at $182,000; there is a concern that this number is too low because it is not based on a detailed fee estimate created by individual team members.	The FS report is to be reviewed in-house by experienced section chiefs, so, while it is possible that the budget is too low, the impacts are mitigated by this layer of review.	Marginal	Possible	1
EST-14	Construction Management	The Construction Management feature of work has been estimated at $110,000; there is a concern that this number is too low because it is not based on a detailed fee estimate created by individual team members.	The FS report is to be reviewed in-house by experienced section chiefs, so, while it is possible that the budget is too low, the impacts are mitigated by this layer of review.	Marginal	Possible	1
External Project Risks				**Maximum Project Growth**		**20%**
EX-1	Mobilization & Demobilization	It's possible that the contractor will encounter significant weather-related delays that will impede his ability to mobilize to the site. The project is in Maine, meaning there is potential for ice dams in the channel which may obstruct contractor access.	The PDT finds there to be a credible risk of cost growth related to harsh winter conditions. However, the team intends to mitigate these risks by requiring bidders to demonstrate their ability to achieve a suitable dredging production rate via the DRC.	Marginal	Possible	1

EX-2	Dredge Channel & Dispose in EPDS	It's possible that the contractor will encounter significant weather-related delays that will impede his dredging productivity. The project is in Maine, meaning there is potential for ice dams in the channel which may obstruct contractor access.	The PDT finds there to be a credible risk of cost growth related to harsh winter conditions. However, the team intends to mitigate these risks by requiring bidders to demonstrate their ability to achieve a suitable dredging production rate via the DRC.	Marginal	Possible	**1**
EX-3	Dredge Contam Matl & Place in CAD Cell	It's possible that the contractor will encounter significant weather-related delays that will impede his dredging productivity. The project is in Maine, meaning there is potential for ice dams in the channel which may obstruct contractor access.	The PDT finds there to be a credible risk of cost growth related to harsh winter conditions. However, the team intends to mitigate these risks by requiring bidders to demonstrate their ability to achieve a suitable dredging production rate via the DRC.	Marginal	Possible	**1**
EX-13	Planning, Engineering, & Design	n/a		Negligible	Unlikely	**0**
EX-14	Construction Management	n/a		Negligible	Unlikely	**0**

This estimate captures costs for the preferred alternative for dredging Blue Hill Harbor down to 6-ft below existing depth. The top 2-ft of the harbor sediments are contaminated with petroleum-based products in the tidal reaches and are is to be disposed of in the CAD cell. Alternative assumes that all clean materials will be disposed of in the Eastern Passage Disposal Site (EPDS). CEDEP was used in conjunction with MII to develop this alternative. All work is assumed to be self-performed by the prime contractor.

Escalation for non-CEDEP items taken from Q1FY16 to Q1FY21 for "Navigation Ports & Harbors". No escalation applied to CEDEP items as they are priced using Q1FY21 pricing. Note that the escalation applied in MII is intended to bring all costs to Q1FY21; the remaining escalation is applied in the TPCS report. Contingency set at 0% because it will be applied in TPCS report.

Estimated by J Masey
Designed by L. Jacobs
Prepared by Jeremiah Masey
Preparation Date 5/19/2021
Effective Date of Pricing 10/1/2020
Estimated Construction Time 90 Days

Description	Quantity	UOM	DirectCost	SubCMU	PrimeCMU	Escalation	Contingency	ProjectCost
1.1 Recommended Plan: 6-ft Channel & CAD Cell	**72,950**	**CY**	**1,579,382**	**0**	**505,194**	**0**	**0**	**2,084,576**
1.1.1 General Requirements	**2**	**MO**	**78,679**	**0**	**25,167**	**0**	**0**	**103,846**
1.1.2 Mobilization / Demobilization	**1**	**EA**	**274,825**	**0**	**87,908**	**0**	**0**	**362,733**
1.1.3 Mechanical Dredging	**71,470**	**CY**	**1,225,878**	**0**	**392,119**	**0**	**0**	**1,617,997**
1.1.3.1 Dredge Channel & Dispose in EPDS	**52,100**	**CY**	**617,385**	**0**	**197,482**	**0**	**0**	**814,867**
1.1.3.2 Dredge CAD Cell	**19,500**	**CY**	**214,305**	**0**	**68,549**	**0**	**0**	**282,854**
1.1.3.3 Fill CAD Cell w/ Contaminated Material	**10,600**	**CY**	**326,692**	**0**	**104,498**	**0**	**0**	**431,190**
1.1.3.4 Cap CAD Cell	**8,800**	**CY**	**67,496**	**0**	**21,590**	**0**	**0**	**89,086**
1.2 Alternative: 6-ft Channel & Upland Disposal	**71,470**	**CY**	**4,850,361**	**0**	**1,551,475**	**0**	**0**	**6,401,836**
1.2.1 General Requirements	**4**	**MO**	**136,663**	**0**	**43,714**	**0**	**0**	**180,378**
1.2.2 Marine Mob/Demob	**1**	**EA**	**274,825**	**0**	**87,908**	**0**	**0**	**362,733**
1.2.3 Overland Mob/Demob	**1**	**EA**	**12,456**	**0**	**3,984**	**0**	**0**	**16,440**
1.2.4 Dredging	**71,471**	**CY**	**1,214,791**	**0**	**388,573**	**0**	**0**	**1,603,363**
1.2.5 Overland Work	**10,591**	**CY**	**3,211,626**	**0**	**1,027,296**	**0**	**0**	**4,238,923**
1.2.5.1 Loading & Hauling to Offsite Treatment Plant	**1**	**EA**	**2,424,489**	**0**	**775,516**	**0**	**0**	**3,200,006**
1.2.5.2 Mat'l Dewatering & Processing	**1**	**EA**	**787,137**	**0**	**251,780**	**0**	**0**	**1,038,917**
1.2.5.2.1 Temp Power to Run Equipment	**1**	**EA**	**4,263**	**0**	**1,364**	**0**	**0**	**5,626**

Currency in US dollars

APPENDIX E
REAL ESTATE PLAN

BLUE HILL HARBOR
HANCOCK COUNTY, MAINE
NAVIGATION IMPROVEMENT PROJECT

PREPARED BY:

U.S. ARMY CORPS OF ENGINEERS
REAL ESTATE DIVISION
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

EFFECTIVE DATE:

AUGUST 2021

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B. Full Size Figure E-5, Map Showing Intertidal and Subtidal Areas to be Dredged

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APPENDIX E
REAL ESTATE PLAN

1. STATEMENT OF PURPOSE

The purpose of this Real Estate Plan is to describe the minimum Lands, Easements, Rights-of-Ways, Relocations, and Disposal Areas (LERRD) required for the construction, operation and maintenance of the Blue Hill Harbor, Hancock County, Maine Navigation Improvement Project (the “project”), A previous REP supported a 1971 Detailed Project Report that did not proceed due to project sponsor funding limitations. This REP is the first prepared for the current project and is an appendix to the project’s Detailed Project Report and Environmental Assessment. This REP was prepared during a feasibility level study. The LERRD requirements and costs presented herein are preliminary in nature and are subject to change with the optimization of the Recommended Plan.

2. PROJECT AREA DESCRIPTION

Blue Hill Harbor is the principal commercial fishing harbor of the Town of Blue Hill, located on the western shore of Blue Hill Bay in Hancock County, Maine. The harbor is located about 30 miles southeast of Bangor and 13 miles southwest of Ellsworth, Maine, as shown in Figure E-1. Blue Hill Harbor is comprised of several small coves hosting a mix of inshore commercial fishing and lobster boats and seasonal recreational craft. Much of the commercial fleet works year around and shifts the locations of their operations seasonally due to available mooring space, active offloading and servicing facilities and icing of portions of the harbor.

The purpose of the Blue Hill Harbor Project is to improve the existing navigation conditions, including navigation delays, shallow conditions and congestion issues, by creating a new federal navigation channel and dredging a waterfront turning basin from the town’s public landing 1.1 miles southeast into deep water past Sculpin Point. Improvements to the channel would allow for safe passage of both commercial and recreational craft. If approved, the project will be authorized under the authority and provisions of Section 107 of the River and Harbor Act of 1960, as amended. The non-Federal Sponsor (NFS) for the project is the Town of Blue Hill.

Figure E-1: Location Map Blue Hill, ME & indicating Bay Area.

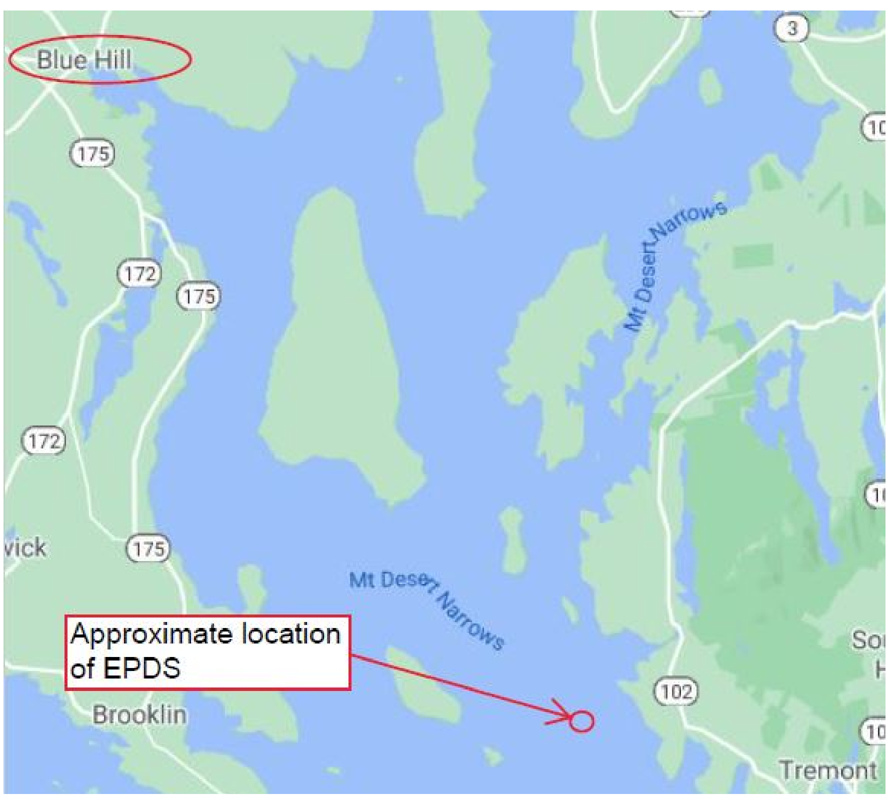
3. RECOMMENDED PLAN

a. New Channel Dredging - The principal federal interests at Blue Hill Harbor are improving the safety and efficiency of commercial navigation for vessels accessing the Town Wharf where grounding damages and tidal and congestion delays hinder vessel operation. The proposed navigation improvements would establish a new channel extending from deep water off Parker point up-harbor to the Blue Hill town landing. The Recommended Plan would establish a channel 6 feet deep by 80 feet wide by 5,400 feet in length extending from deep water off Parker Point up-harbor to the Blue Hill town Landing. Only the upper 2,600 feet of the channel length would require dredging. A turning basin, 0.6 acre in size, at the head of the channel at the Town Landing, would also be constructed by dredging. Both the turning basin and the new channel would be dredged to depth of -6 feet Mean Lower Low Water (MLLW). The proposed action would involve dredging approximately 71,500 cubic yards of mixed silty and sandy material from the channel and turning basin. Most of the dredged material will be placed at the Eastern Passage Disposal Site (EPDS). The dredged material from the upper channel reaches includes about 10,600 cubic yards of the upper two feet of material that has been determined unsuitable for unconfined open water placement and will be placed at a Confined Aquatic Disposal (CAD) cell 1.8 acres in size to be created in the harbor north of the channel by dredging approximately 15,500 cubic yards of material. That material will be placed at the EPDS.

b. Disposal Sites – The EPDS, consisting of 72 acres, is located approximately 14 miles southeast of Blue Hill Harbor and has been previously used for disposal of material from the maintenance dredging of the nearby existing Federal Navigation Projects. It was last used in 2010-2011 for disposal of material from the maintenance and improvement dredging of the nearby Bass Harbor Federal Navigation Project. The site is located in state regulated waters and is managed under the New England District Disposal Area Monitoring System (DAMOS) program. DAMOS is a program started in 1977 by the New England District to manage and monitor offshore dredged material disposal sites from Long Island Sound to Maine.

The CAD cell, consisting of 1.8 acres, will be created in the harbor north of the channel. Approximately 10,600 cubic yards of material unsuitable for placement at the EPDS will be placed in the CAD cell, and about 3,300 CY of suitable material dredged from the lower channel reached will be used to cap the CAD cell.

Figure E-2: Eastern Passage Disposal Site (EPDS)



4. REAL ESTATE MAPS

The below maps show the new federal navigation channel to be dredged and the area needed for temporary access, parking and placing an office trailer.

Figure E-3: Project Overview

Figure E-4: New Channel Showing Limits of Dredging

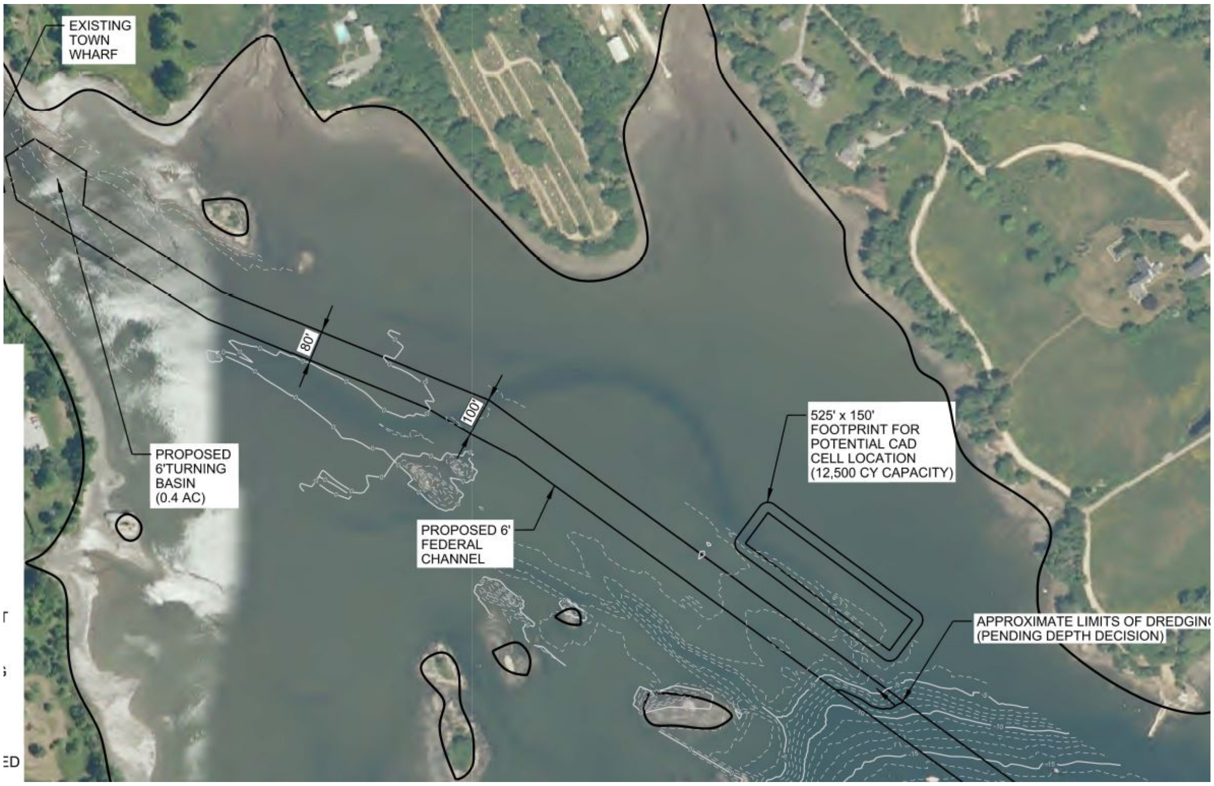


Figure E-5a - Northerly Section of Dredging Area

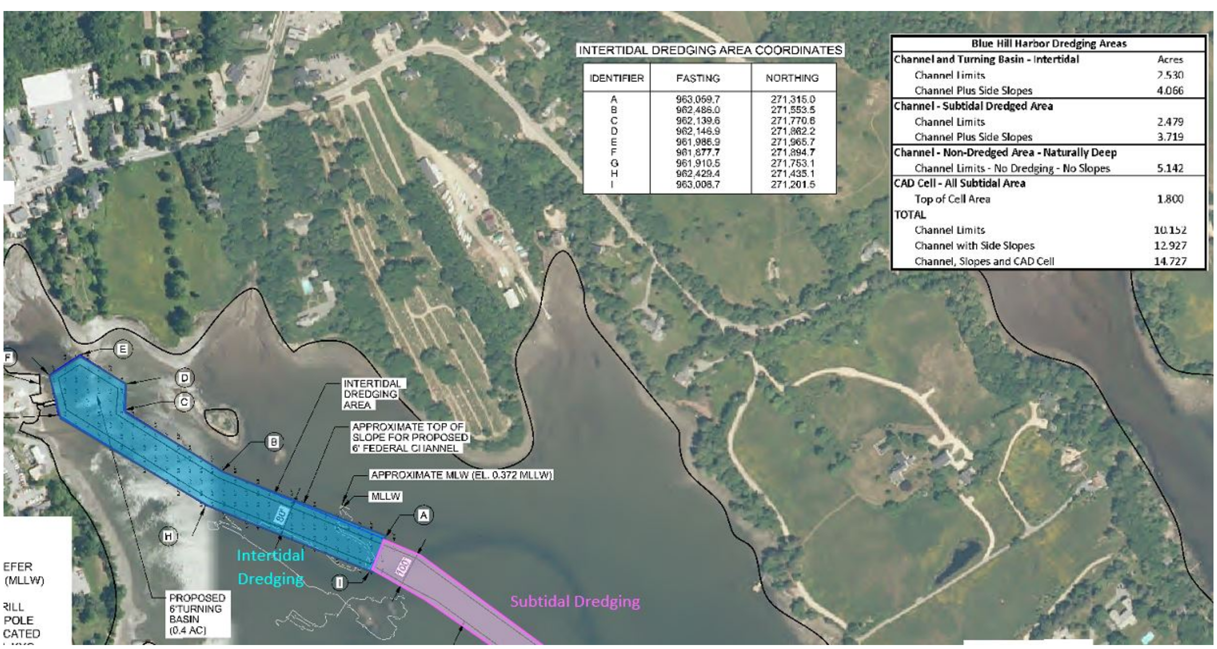
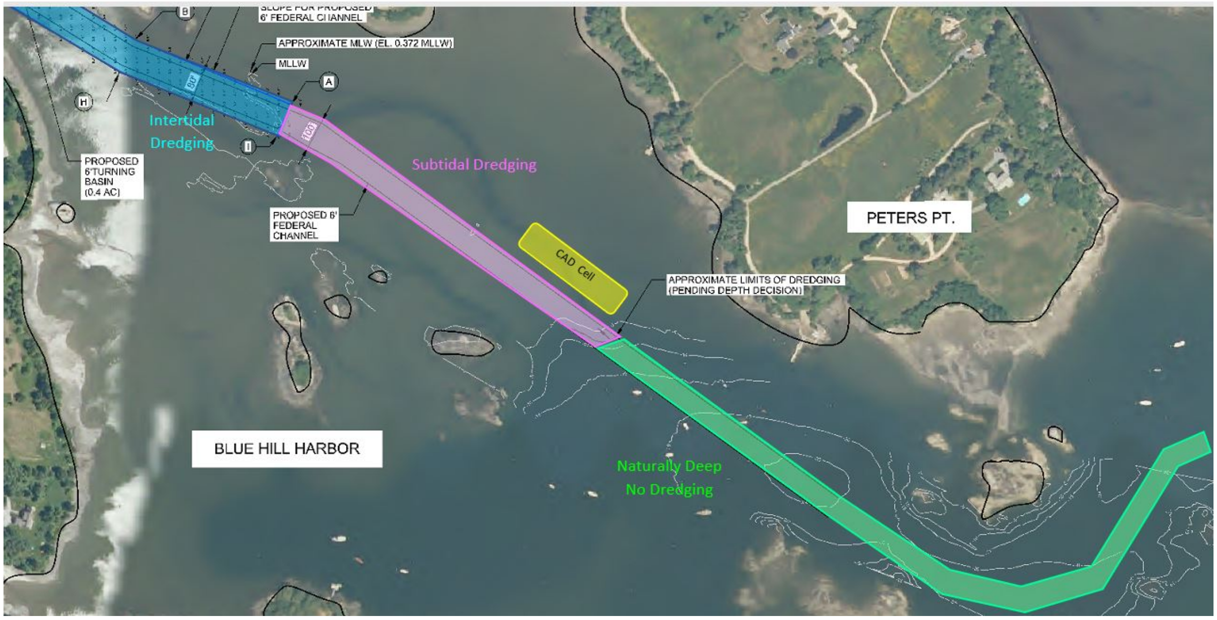


Figure E-5b – Southerly Section of Dredging Area



Figures E-6a and E-6b: Parcels Affected by Intertidal Dredging

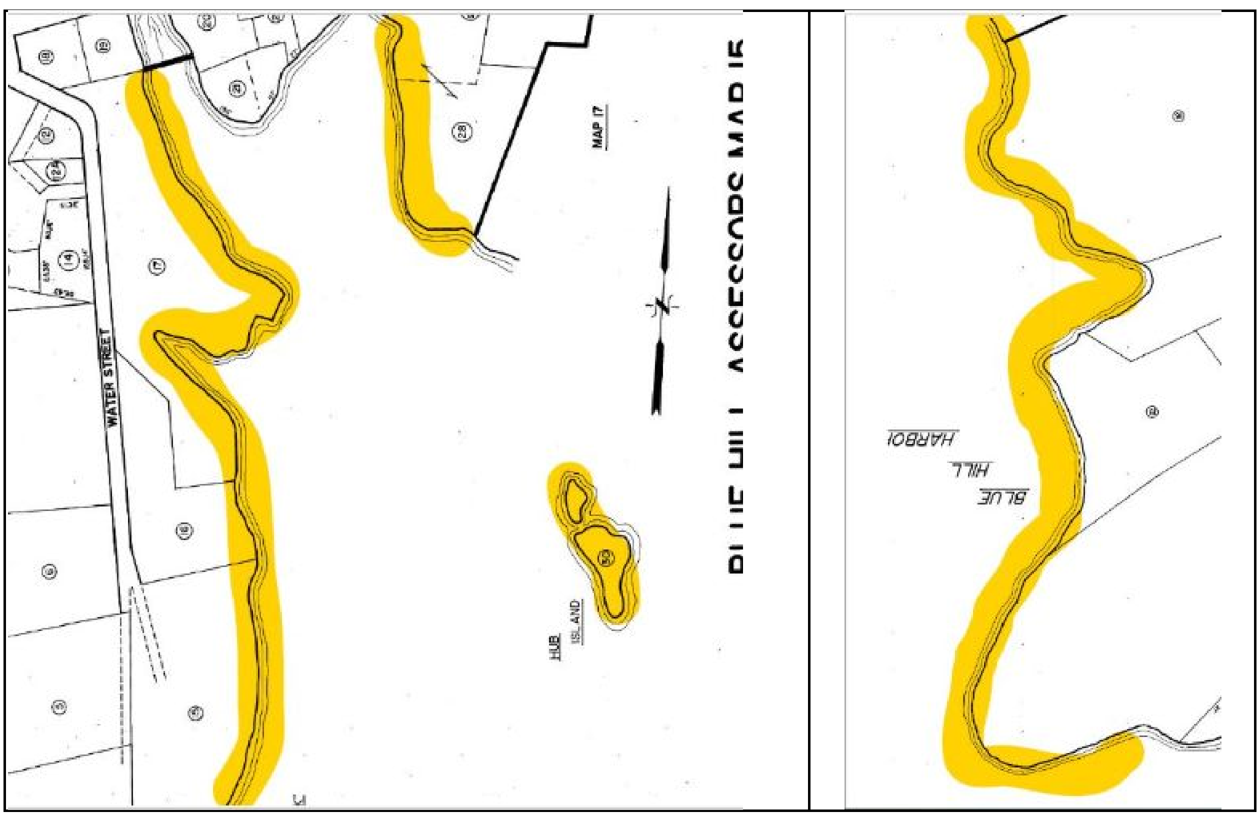


Figure E-7: Map of Temporary Easement Area (Parcel 015-017)

Parcel ID	Site Address	Owner	Required Acres	Estate Required
015-017	42 Water Street	Town of Blue Hill	0.79	Temporary Work Area Easement [TWAE] (access, parking, and office trailer)

5. REAL ESTATE REQUIREMENTS / RECOMMENDED ESTATES

The project footprint and associated LERRDs—Land, Easements, Rights-Of-Way, Relocations, and Disposal Areas—are still being identified/refined. It is anticipated that access areas may be required, mainly for parking and launching purposes and placing an office trailer, on property owned by the NFS. Approximately 0.79 acre of land (Assessors' Parcel 015-017), containing a parking lot and the Town Wharf, will be used for launching and fueling the smaller work boats, parking vehicles, and placing an office trailer. Other required equipment (dredge, scows, and tugs) will be waterborne plant. The NFS must provide a Temporary Work Area Easement (TWAE) (USACE Standard Estate No. 15). The Project does not require the use of any non-standard estates.

TEMPORARY WORK AREA EASEMENT (Standard Estate No. 15)

A temporary easement and right-of-way in, on, over and across the land described in Schedule A for a period not to exceed one year, beginning with date possession of the land is granted to the United States, for use by the United States, its representatives, agents, and contractors as a work area, including the right to move, store and remove equipment and supplies, and erect and remove temporary structures on the land and to perform any other work necessary and incident to the construction of the Blue Hill Harbor, Hancock County, Maine Navigation Improvement Project, together with the right to trim, cut, fell and remove there from all trees, underbrush, obstructions, and any other vegetation, structures, or obstacles within the limits of the right-of-way; reserving, however, to the landowners, their heirs and assigns, all such rights and privileges as may be used without interfering with or abridging the rights and easement hereby acquired; subject, however, to existing easements for public roads and highways, public utilities, railroads and pipelines.

An NAE appraiser made a cost estimate of the 0.79-acre TWAE as being in the $4,000 range plus administrative costs. This is reflected in the BCERE in Paragraph 12.

Lands required for dredging and creating the CAD cell will be used through exercise of the Federal Navigation Servitude. In Maine, coastal property rights extend to the mean low water line, The intertidal land between the high and low tide lines is considered private tidelands. There are approximately 9 parcels of land within the project boundaries that are owned to mean low water by public and private owners. The intertidal dredging area for the channel and turning basin, consisting of approximately 4.066 acres, is shown in blue in Figure 5, and the parcels with intertidal ownerships are shown in Figure 6. The subtidal dredging area, consisting of approximately 3.719 acres for the channel and 1.8 acres for the CAD cell, is shown in magenta in Figure 5. All lands required for dredging the new channel and turning basin and creating the CAD cell lie within the Federal Navigation Servitude, and Navigation Servitude will be exercised for the Recommended Plan (See paragraph 9, Navigation Servitude). NAE will notify the 9 landowners of the exercise of FNS.

Suitable dredged material will be deposited at the EPDS as discussed in paragraph 3(b). USACE is the federal agency that determines if dredged material from its Civil Works projects is suitable for placement at open water disposal sites and relies on EPA's ocean dumping criteria when evaluating dredged material suitability. The USACE prepared a Dredged Material Suitability Determination (DMSD) (See Appendix H) based on the results of sediment sampling and testing. The DMSD was coordinated with both EPA and the State. EPA concurred in the DMSD in October 2018. Both the EPDS and the in-harbor CAD cell site are located in State regulated subtidal waters. The Maine Department of Environmental Protection (MEDEP) under its delegated Clean Water Act authority reviews proposals for dredging projects and the disposal of dredged material in state regulated waters. Detailed Project Report and Environmental Assessment, including the DMSD were submitted to the State for review and approval. The MEDEP issued a Water Quality Certification for the Blue Hill Harbor project on 10 March 2021. The Maine office of Coastal Zone Management issued its concurrence with the District's Federal Consistency Determination on 16 March 2021, concluding state coordination for the project. There are no real estate acquisition requirements for the disposal of dredged material.

6. NON-STANDARD ESTATES

As of this report, there are no proposed non-standard estates for the Recommended Plan. Non-standard estates are necessary only when there is no corresponding USACE approved standard estate for the real property interest required, or when changes to a corresponding standard estate (or previously approved non-standard estate) are desired. In such situations, a non-standard estate will be drafted in collaboration with the NFS, then distributed for approval by Headquarters USACE

7. EXISTING FEDERAL PROJECTS

There are no existing Federal Projects within the proposed channel dredging and turning basin area. As discussed in paragraphs 3(b) and 5, the 72-acre EPDS site is a federally designated ocean disposal site under the control of the EPA and managed by USACE through the DAMOS program. Through the completion of the DMSD and approval of the project's Detailed Project Report Environmental Assessment, the use of the EPDS to deposit dredge material from the channel is authorized for the Recommended Plan. There is no other existing Federal project that lies fully or partially within the lands required for the Recommended Plan.

8. FEDERALLY OWNED LANDS

a. The channel to be dredged and the CAD cell to be created lie within a navigable waterway subject to the Federal Navigation Servitude. Under the Federal Navigation Servitude, the Federal Government maintains ownership and the dominant right over the navigable waters and submerged lands within the channel and turning basin area (see paragraph 10, Federal Navigation Servitude).

b. The EPDS is in state regulated waters under the control of the MEDEP and managed by USACE through the DAMOS program. Through the completion of the DMSD, approval of the project's Detailed Project Report and Environmental Assessment, and MEDEP issuance of Water Quality Certification on 10 March 2021, the use of the EPDS to deposit dredged material from the channel is authorized for the Recommended Plan.

9. LANDS OWNED BY THE NON-FEDERAL SPONSOR

The NFS owns in fee parcel 015-017 for which the NFS must provide a 0.79-acre TWAE. Following a future vote of the Town selectmen, which meets weekly, the NFS will provide an Authorization for Entry for Construction to make the lands available for the project. The existing interest is sufficient and available for the project purposes for which the NFS lands are required. Federal appraisal principles will be applied to determine market value of the NFS lands for crediting purposes.

10. FEDERAL NAVIGATION SERVITUDE

The Federal Navigation Servitude is the dominant right of the Federal Government under the Commerce Clause of the U.S. Constitution to use, control, and regulate the navigable waters of the United States, and the submerged lands thereunder, for various commerce-related purposes, including navigation and flood control. In tidal areas, the servitude extends to all lands below mean high water mark. Generally, the Federal Government does not acquire interests in real property that it already possesses or over which its use or control is, or can be, legally exercised. If navigation servitude is found to be available, then the Federal Government will generally exercise its right thereunder and, to the extent of such rights, will not acquire a real property interest in the land to which the navigation servitude applies.

The determination of the availability of the navigation servitude is a two-step process. First, the Federal Government must determine whether the project feature serves a purpose which is in the aid of commerce. Such purposes recognized by the courts include navigation, flood control, and hydro-electric power. If it is so determined, the second step is to determine whether the land at issue is located below the mean ordinary high water mark of a navigable watercourse. Since the project is a navigation project that aids in commerce and since the lands required for dredging the channel, the turning basin, and the CAD cell lie below the mean high water mark, the application of Navigation Servitude for the Recommended Plan is available. Navigation Servitude will be exercised over 9.585 acres (4.066 acres intertidal for the channel and turning basin; 3.719 acres subtidal for the channel; and 1.8 acres subtidal for the CAD cell) . The conclusion of the availability of Navigation Servitude for the Recommended Plan was coordinated with New England District Office of Counsel.

11. INDUCED FLOODING

The project will not induce flooding in new areas or increase flooding in existing flood prone areas.

12. BASELINE COST ESTIMATE FOR REAL ESTATE

Project Cost Category	Non-Federal Cost	Federal Cost	Total Costs
01-Lands and Damages	$4,000	$5,000	$9,000
Total BCERE	$4,000	$5,000	$9,000

13. PUBLIC LAW 91-646 RELOCATION ASSISTANCE BENEFITS

As of this report, there is no need for displacement of residences and/or businesses.

14. MINERAL AND TIMBER ACTIVITY

There is no present or anticipated mining and drilling activity in the vicinity of the project that may affect project purposes and the operation thereof. No timber harvesting activities are anticipated to occur within the proposed project footprint.

15. ASSESSMENT OF NON-FEDERAL SPONSOR ACQUISITION CAPABILITY

The Recommended Plan requires no acquisition of real estate (the NFS must provide a TWAE over land it owns). However, the NFS is fully capable of acquiring real property rights, including utilization of condemnation authority, should a change of the real estate requirements occur. The Assessment of Non-Federal Sponsor's Real Estate Acquisition Capability is provided in Exhibit "A".

16. LAND USE ZONING

There are no zoning ordinances currently proposed in lieu of or to facilitate land acquisition inconnection with this project.

17. ACQUISITION SCHEDULE

A projected schedule has been developed based on the assumption that funding will be available. The tentative schedule for project completion is represented as follows:

ESTIMATED SCHEDULE

Milestones	Date
Execution of the Project Partnership Agreement	Dec 2021
Notice to Proceed with Real Estate Acquisition to Sponsor	July 2022
Sponsor's Authorization for Entry for Construction	July 2022
USACE's Certification of Real Estate	July 2022
Solicitation of the First Construction Contract	Sept 2022

18. UTILITY AND FACILITY RELOCATIONS

There are no utility or facility relocations anticipated or currently required within the proposed project footprint.

19. HAZARDOUS, TOXIC AND RADIOACTIVE WASTE (HTRW)

There are no known or suspected presence of HTRW contaminants regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) within the submerged lands of the proposed dredging site and EPDS. There are no known "Superfund" sites or sites presently under CERCLA remediation or response orders identified in the project area.

20. PROJECT SUPPORT

Residents and business interests will benefit from safe passage of both commercial and recreational craft resulting from the proposed project. Public review of the draft report was conducted in March to April 2020. State regulatory review of the project, incusing further public outreach, was concluded in March 2021. No adverse comment was received and there is no anticipated opposition to the project.

21. RISK NOTIFICATION TO NON-FEDERAL SPONSOR

Although there are no real estate acquisition requirements for the Recommended Plan (the NFS must provide a TWAE over lands they currently own), should changes to the real estate requirement occur, by letter dated April 6 2021, a formal written notice was provided to the NFS informing them of the risks associated with acquiring real estate in advance of an executed Project Partnership Agreement and USACE's written notice to acquire real estate.

Prepared by:
BRADSTREET.PAMELA.S.1239511682 Digitally signed by BRADSTREET.PAMELA.S.1239511682 Date: 2021.06.28 10:27:24 -04'00'

Pamela S. Bradstreet
Realty Specialist

Approved by:
Digitally signed by SHUGERT.TIMOTHY.W.1238587243 Date: 2021.06.28 10:13:15 -07'00'

Timothy W. Shugert
Chief, Real Estate Division

Exhibit A (Assessment of Non-Federal Sponsor Acquisition Capability)
Project Name: Blue Hill 107 Navigation Improvement Project
Project Location: Blue Hill Maine
Non-Federal Sponsor: Town of Blue Hill, Maine

ASSESSMENT OF NON-FEDERAL SPONSOR'S
REAL ESTATE ACQUISITION CAPABILITY

There are no acquisitions involved in this action.

I. Legal Authority:

Name and Title of Sponsor's representative providing answers to this section

Shawna Ambrose, Town Administrator

a. Does the Town of Blue Hill (the "sponsor") have legal authority to acquire and hold title to real property for project purposes?

Yes. The legal authority is the Town Charter/Maine State Law. This authority is generally set forth in Article VIII, Part Second, of the Maine Constitution, which establishes the home rule authority of municipalities. Section 2 discusses the authority to issue notes and bonds for the purpose of purchasing land. In addition, a municipality is established as a "body corporate" in 30-A M.R.S.A. Sec. 2002

b. Does the sponsor have "quick-take" authority for this project?

Yes, the town has condemnation authority, however it is not necessary at this time as there are no acquisitions anticipated for this project. If the situation were to change the town has "quick take" authority.

c. Are any of the lands/interests in land required for the project located outside the sponsor's political boundary?

No, all lands required for the project are located inside the sponsor's political boundary.

d. Are any of the lands/interests in land required for the project owned by an entity whose property the sponsor cannot condemn?

No, there are no acquisitions required for this project.

II. Human Resource Requirements

a. Will the sponsor's in-house staff require training to become familiar with the real estate requirements of Federal projects including P.L. 91- 646, as amended?

No, due to no acquisitions/relocations, at this time there is not a need for training regarding P.L. 91-646. However, if the situation should change training would be available.

b. Does the sponsor's in-house staff have sufficient real estate acquisition experience to meet its responsibilities for the project?

Yes, the in-house staff and counsel would have the experience, but in this project acquisition experience is not necessary as there are no acquisitions.

c. Is the sponsor's projected in-house staffing level sufficient considering its other workload, if any, and the project schedule?

Yes, however due to no acquisitions for this project, the in-house staffing is sufficient to work on any requirements necessary.

d. Can the sponsor obtain contractor support, if required in a timely fashion?

Yes, the town can obtain contract support in a timely fashion if at any time acquisition is deemed necessary.

e. Will the sponsor likely request USACE assistance in acquiring real estate?

Yes, the sponsor would likely request assistance, but no acquisition of real estate is anticipated at this time.

III. Other Project Variables

a. Will the sponsor's staff be located within reasonable proximity to the project site?

Yes, the NFS staff is located less than 2 miles from the project site.

b. Has the sponsor approved the project/real estate schedule/milestones?

Yes, the NFS is aware of the project real estate schedule/milestones as indicated below. A projected schedule has been developed based on the assumption that funding will be available. The tentative schedule for project completion is represented as follows:

Project Name: Blue Hill 107 Navigation Improvement Project
Project Location: Blue Hill Maine
Non-Federal Sponsor: Town of Blue Hill, Maine

Estimated Dates

Milestones	Date
Execution of the Project Partnership Agreement	Dec 2021
Notice to Proceed with Real Estate Acquisition to Sponsor	Jul 2022
Sponsor's Authorization for Entry for Construction	Jul 2022
USACE's Certification of Real Estate	Jul 2022
Solicitation of the First Construction Contract	Sept 2022

IV. Overall Assessment

a. Has the sponsor performed satisfactorily on other USACE projects?

The NFS has had no other projects with the USACE.

b. With regards to this project, the sponsor is anticipated to be, highly capable/fully capable/moderately capable/marginally capable/ insufficiently capable.

The NFS is moderately capable regarding this project.

V. Coordination

a. Has this assessment been coordinated with the sponsor?

This assessment was coordinated with the sponsor to obtain feedback and ensure a factual assessment on the sponsor's capabilities and experience. There are no LERRDs required for the project. Coordination is shown by the sponsor's signature on the assessment.

b. Does the sponsor concur with this assessment?

Yes, see signature of the NFS below.

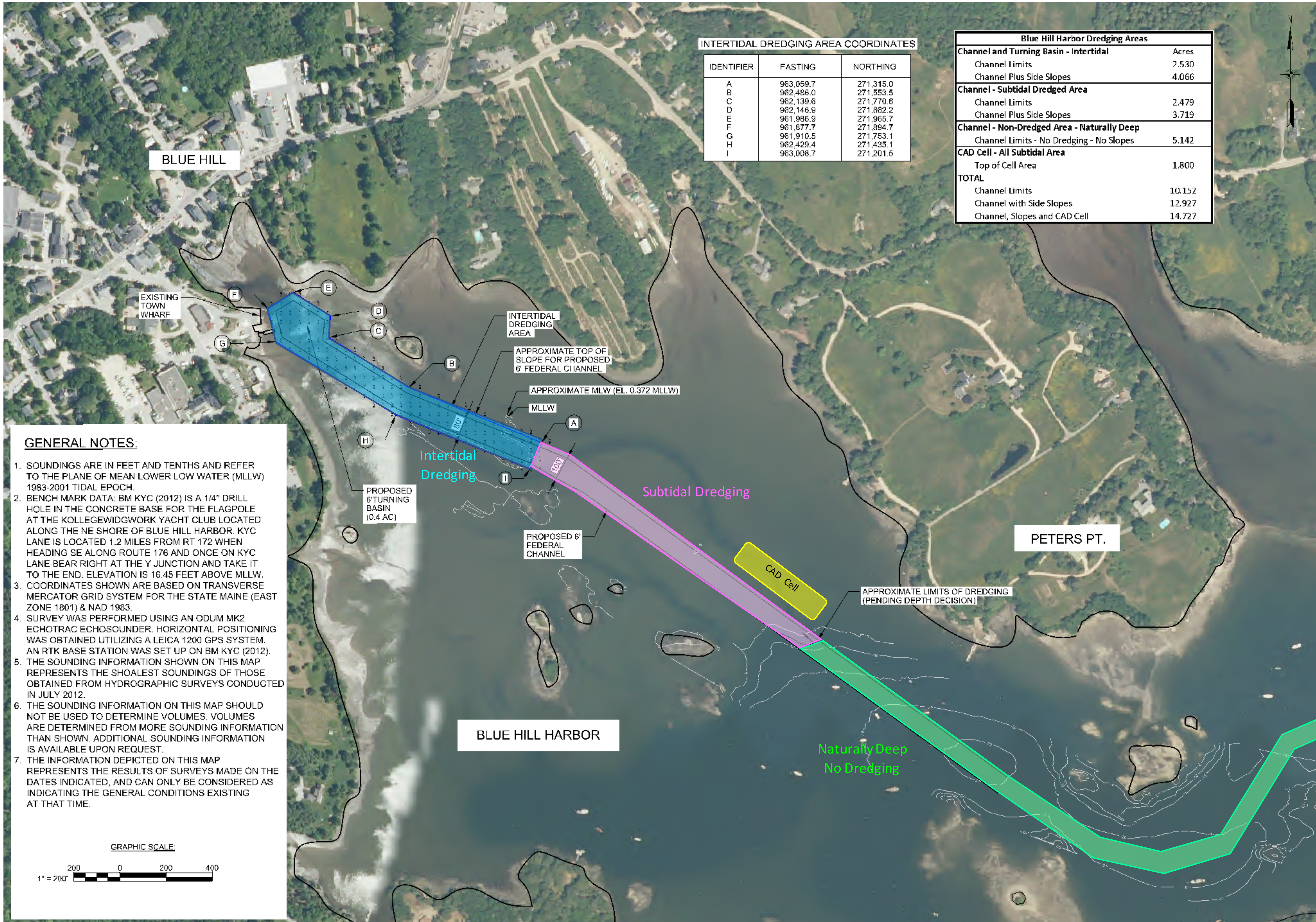
Shawna Ambrose
Town Administrator
Town of Blue Hill

Pamela S. Bradstreet

Pamela S. Bradstreet
Realty Specialist

Digitally signed by
SHUGERT.TIMOTHY.W.1238587243
Date: 2021.06.24 08:17:09 -07'00'

Timothy W. Shugert
Chief, Real Estate Division



INTERTIDAL DREDGING AREA COORDINATES

IDENTIFIER	FASTING	NORTHING
A	963,059.7	271,315.0
B	962,486.0	271,553.5
C	962,139.6	271,770.6
D	962,146.9	271,862.2
E	961,986.9	271,965.7
F	961,877.7	271,894.7
G	961,910.5	271,753.1
H	962,429.4	271,435.1
I	963,008.7	271,201.5

Blue Hill Harbor Dredging Areas	
Channel and Turning Basin - Intertidal	Acres
Channel Limits	2.530
Channel Plus Side Slopes	4.066
Channel - Subtidal Dredged Area	
Channel Limits	2.479
Channel Plus Side Slopes	3.719
Channel - Non-Dredged Area - Naturally Deep	
Channel Limits - No Dredging - No Slopes	5.142
CAD Cell - All Subtidal Area	
Top of Cell Area	1.800
TOTAL	
Channel Limits	10.152
Channel with Side Slopes	12.927
Channel, Slopes and CAD Cell	14.727

GENERAL NOTES:

1. SOUNDINGS ARE IN FEET AND TENTHS AND REFER TO THE PLANE OF MEAN LOWER LOW WATER (MLLW) 1983-2001 TIDAL EPOCH.
2. BENCH MARK DATA: BM KYC (2012) IS A 1/4" DRILL HOLE IN THE CONCRETE BASE FOR THE FLAGPOLE AT THE KOLLEGEWIDGWORK YACHT CLUB LOCATED ALONG THE NE SHORE OF BLUE HILL HARBOR. KYC LANE IS LOCATED 1.2 MILES FROM RT 172 WHEN HEADING SE ALONG ROUTE 176 AND ONCE ON KYC LANE BEAR RIGHT AT THE Y JUNCTION AND TAKE IT TO THE END. ELEVATION IS 16.45 FEET ABOVE MLLW.
3. COORDINATES SHOWN ARE BASED ON TRANSVERSE MERCATOR GRID SYSTEM FOR THE STATE MAINE (EAST ZONE 1801) & NAD 1983.
4. SURVEY WAS PERFORMED USING AN ODUM MK2 ECHOTRAC ECHOSOUNDER. HORIZONTAL POSITIONING WAS OBTAINED UTILIZING A LEICA 1200 GPS SYSTEM. AN RTK BASE STATION WAS SET UP ON BM KYC (2012).
5. THE SOUNDING INFORMATION SHOWN ON THIS MAP REPRESENTS THE SHOALEST SOUNDINGS OF THOSE OBTAINED FROM HYDROGRAPHIC SURVEYS CONDUCTED IN JULY 2012.
6. THE SOUNDING INFORMATION ON THIS MAP SHOULD NOT BE USED TO DETERMINE VOLUMES. VOLUMES ARE DETERMINED FROM MORE SOUNDING INFORMATION THAN SHOWN. ADDITIONAL SOUNDING INFORMATION IS AVAILABLE UPON REQUEST.
7. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED, AND CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME.

US Army Corps of Engineers
New England District

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

NAVIGATION IMPROVEMENT STUDY
BLUE HILL HARBOR
BLUE HILL, MAINE

Exhibit C-1 – Table of Intertidal Area Owners

BLUE HILL HARBOR, BLUE HILL, MAINE, NAVIGATION IMPROVEMENT PROJECT

LIST OF INTERTIDAL REAL ESTATE OWNERS

Assumed from shore frontage adjacent to intertidal dredging areas of project's upstream end

Date of Assessor's Sheet - 17 March 2021

Assessor's Map #	Lot #	Address	Owner	Owner Address	Notes
Southwest Shoreline Listed Upstream to Downstream					
15	17	42 Water Street	Town of Blue Hill, Fire Department	P.O. Box 1301 Blue Hill, ME 04614	Town Landing
15	16	82 Water Street	Blue Hill Memorial Hospital	43 Whiting Hill Road, Suite 350 Brewer, Maine 04412	
15	15	Water Street-Town Park	Town of Blue Hill	P.O. Box 1301 Blue Hill, ME 04614	Town Park
Northeast Shoreline Listed Upstream to Downstream					
15	28	119 Main Street	Estate of Rufus Helendale	c/o William Helendal 533 1/2 Diamond Street San Francisco, CA 94114-3223	
17	16	151 Main Street	Christopher A. Austin and Marcia A. McKeague	P.O. Box 951 Blue Hill, Maine 04614	
15	30	Hub Island	Christopher A. Austin and Marcia A. McKeague	P.O. Box 951 Blue Hill, Maine 04614	Ledge Outcrop
17	17	169 Main Street	Chalmers C. Clark	FAMA Nancy P. Clark 61 Simonson Avenue Staten Island, NY 20303	
17	19	33 Greens Field Lane	Daniel G. Coit and Catherine M. Coit	402 East 64th Street, Apt 7D New York, NY 10021	
17	20	Seaside Cemetery 18 Union Street	Town of Blue Hill	Seaside Cemetery 18 Union Street Blue Hill, Maine 04614	Town Cemetery

Exhibit C-2 – Town Assessors Map 15

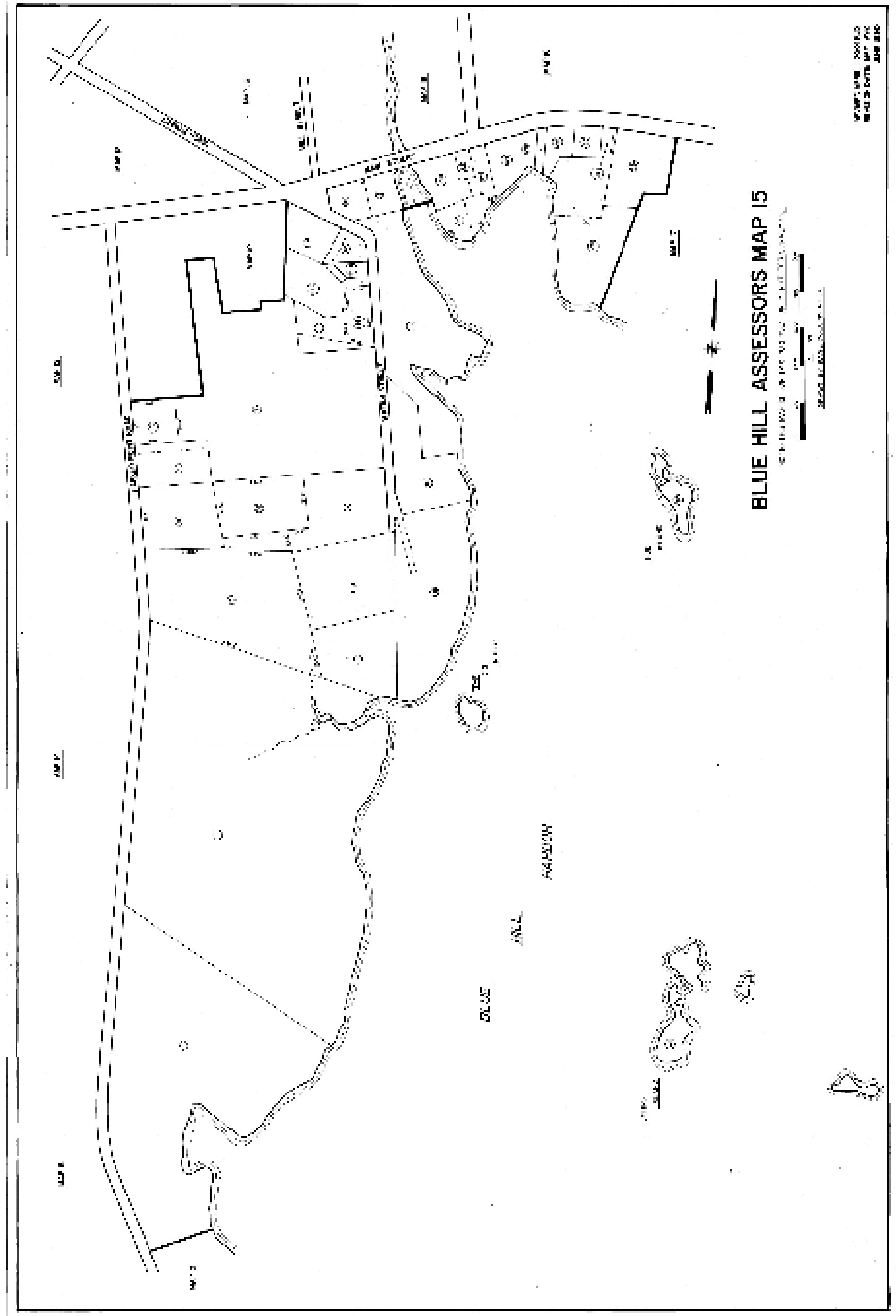
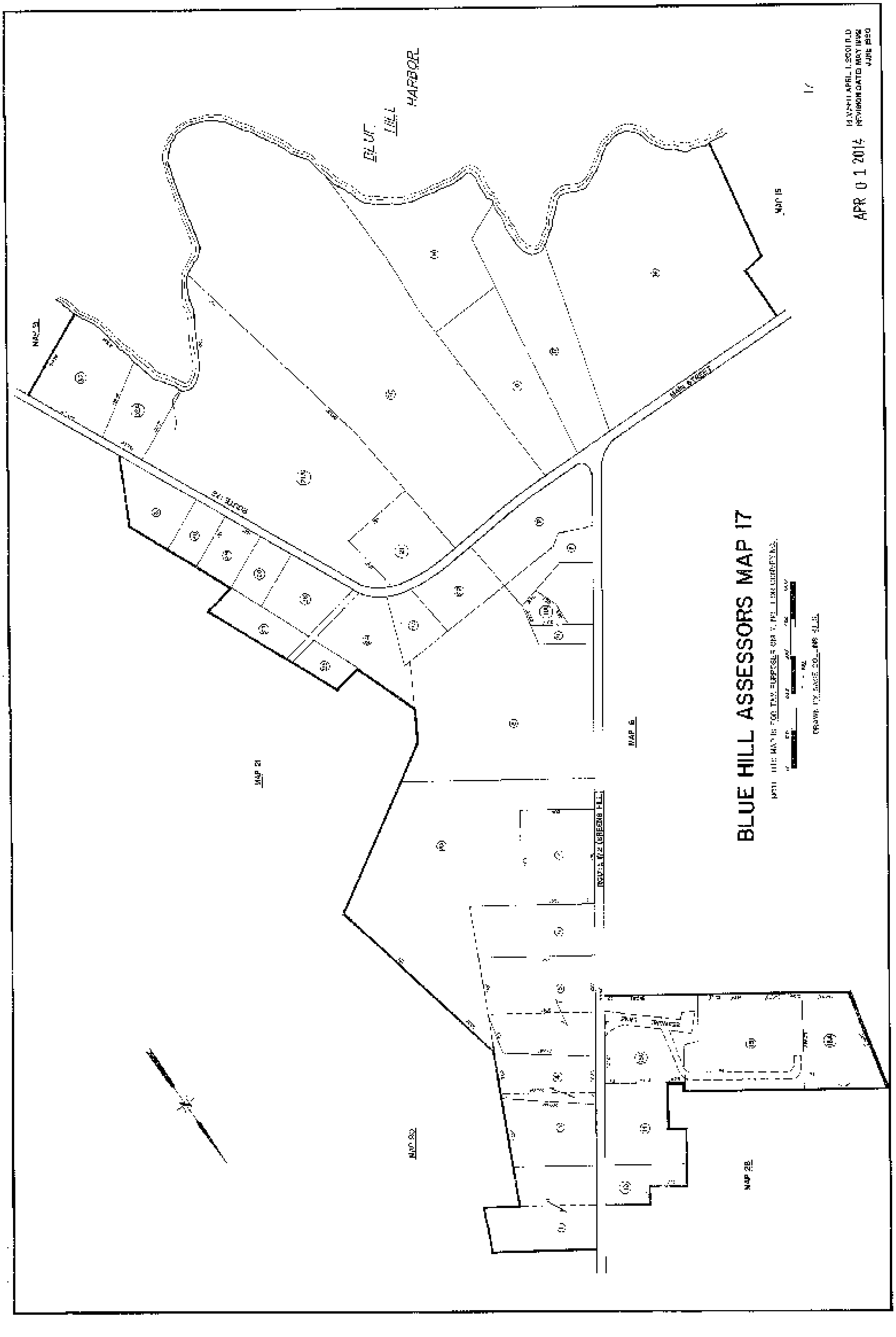


Exhibit C-3 – Town Assessors Map 17



BLUE HILL HARBOR
MAINE
NAVIGATION IMPROVEMENT PROJECT

APPENDIX F

SEDIMENT SAMPLING AND TESTING

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SEDIMENT SAMPLING AND TESTING

IN SUPPORT OF DREDGED MATERIAL

SUITABILITY DETERMINATION

BLUE HILL HARBOR
NAVIGATION IMPROVEMENT PROJECT

BLUE HILL, MAINE

January, 2016

Prepared by:

Engineering/Planning Division
Environmental Resources Section
U.S. Army Corps of Engineers
New England District
Concord, Massachusetts

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1.0 INTRODUCTION

Blue Hill Harbor is the principal commercial fishing harbor of the Town of Blue Hill, located on the western shore of Blue Hill Bay in Hancock County, Maine. The harbor is located in the northwest end of Blue Hill Bay west-northwest of Long Island. The inner harbor contains the Town Wharf and docks which are dry at mean low water.

The Town of Blue Hill, as part of its waterfront economic plan, requested that the New England District (NAE) of the U.S. Army Corps of Engineers (USACE) investigate the potential of establishing a federal channel and turning basin to allow full time vessel traffic to the inner harbor. The results of this study determined that a 1 acre turning basin and a 60 to 80 foot wide waterfront channel extending from the central Town Wharf approximately 2,500 feet southeast into deep water would be required to meet the project objectives. Both the turning basin/anchorage and channel would be dredged to a depth of 6 feet at mean lower low water (MLLW) plus 1 foot of allowable over depth. This would produce approximately 62,500 cubic yards of mixed gravel, sand, and silt. It is expected that this material would be mechanically dredged and placed at either the Tupper Ledge Disposal Site (TLDS) or Eastern Passage Disposal Site (EPDS).

The purpose of the sampling effort described in this report was to collect sediment cores from 7 locations within the proposed dredge area in order to evaluate suitable disposal options. The sampling effort was conducted in accordance with the sampling and analysis plan (SAP) (Appendix A) dated October 23, 2015 that was developed by the Environmental Resources Section (ERS) of NAE, and coordinated with Maine Department of Environmental Protection (ME DEP), the National Marine Fisheries Service (NMFS), and the United States Environmental Protection Agency (EPA) Region 1. This report describes the field methods employed, site conditions encountered, and results of physical and chemical analysis.

2.0 MATERIALS AND METHODS

Sediment sampling efforts were conducted on October 28, 2015. Work was carried out onboard the R/V Gloria H., a 24 foot pontoon style workboat outfitted with an a-frame and electric winch for sampling through a moon pool located in the center of the vessel. A three point anchor system was used to hold the boat in position while sampling. Positioning was achieved using a WAAS enabled Simrad NSS7 sonar/chart plotter with external LGC-4000 GPS receiver antenna, and verified with a Trimble GeoXM Differential Global Positioning System (DGPS), both with an accuracy of 3 meters or less. Depth measurements were made using the Simrad unit and 50/200 kHz transducer with lead line verification. Tidal corrections to Mean Lower Low Water (MLLW) were made using data for the Blue Hill Harbor tide station, accessed in the field through the tides and currents feature of Navionics Mobile software.

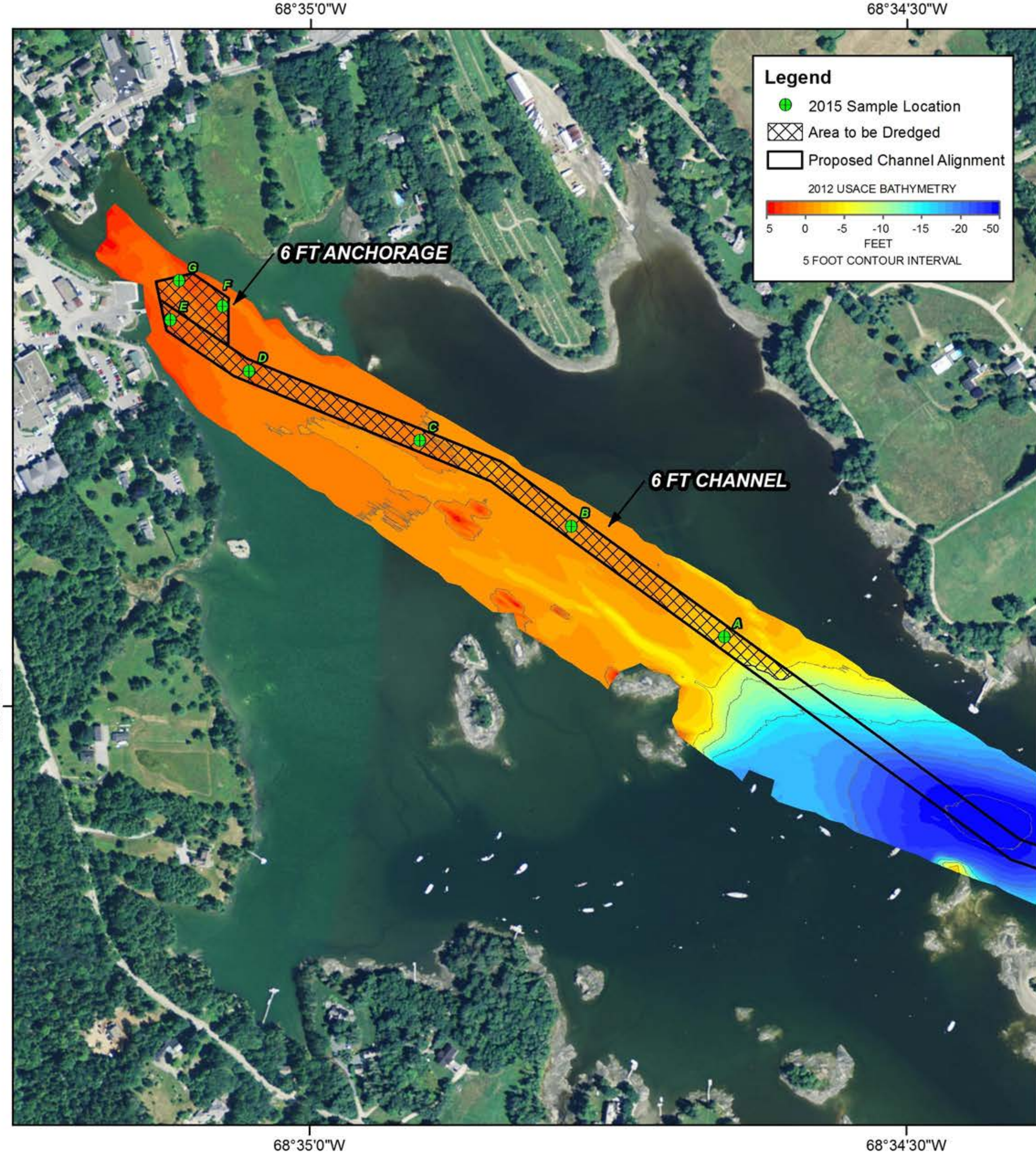
2.1 Sample Collections

Sediment cores were collected to project depth (proposed depth plus one foot of overdepth) or refusal from all 7 sample stations (Figure 1) using a Navco pneumatic vibracorer and 2.75” i.d. polycarbonate tubing. Upon collection the cores were secured in an upright position until transport to the onshore staging area for processing. Sampling equipment was cleaned with a brush and alconox solution then rinsed with site water prior to sampling and between each sample station. The core liners were assumed to be clean as-received from the supplier but were rinsed in site water prior to use.

Corrected water depths in the vicinity of the sample locations ranged from +1.3 to -2.6 feet MLLW. No significant deviations from the 2012 project conditions survey were noted. Sediments in the outer portion of the proposed channel (stations A-C) were predominantly gray, poorly graded medium to coarse sands overlying marine clay deposits. Fine woody organic debris was noted in the cores from all stations in this area. Station A, in the outermost portion of the proposed channel, contained a 1 foot thick layer of fine wood chips approximately 1 foot below the water sediment interface. Sediment core penetration decreased significantly in the inner harbor (stations D-G) where marine clay and coarse fluvial deposits were encountered closer to the surface. Surficial deposits in these areas were generally medium to coarse sands overlain by a thin layer of loose fine sand and silt. The area surrounding the town dock was composed of mixed sand, gravel, and silt, generally 6 inches thick, over a cobble and gravel substrate. Sediment collection data is summarized in Table 1. Sampling logs are presented in Appendix B.

Table 1: Summary of Blue Hill Harbor Sediment Collection Data

Station ID	Latitude (NAD 83)	Longitude (NAD 83)	Time (EDT)	Corrected Water Depth (FT MLLW)	Penetration/ Recovery (FT)	# Attempts
A	-68.577540	44.409033	9:49	-2.6	4.2	2
B	-68.579677	44.410136	10:17	-0.3	3.1	3
C	-68.581801	44.410997	10:45	-0.4	5.9	3
D	-68.584183	44.411691	11:09	0.2	2.0	4
E	-68.585284	44.412200	11:34	1.2	3.2	5
F	-68.584558	44.412338	11:50	1.3	1.8	5
G	-68.585163	44.412593	12:16	0.9	0.5	6



US Army Corps of Engineers
New England District

FIGURE 1:
BLUE HILL HARBOR, BLUE HILL, ME
2015 SAMPLE LOCATIONS

0 250 500 750 1,000 Feet
0 100 200 300 Meters
1:8,000

2013 NAIP AERIAL IMAGERY

GCS NAD 1983

2.2 Sample Processing

Sample processing took place at an on-shore staging area located adjacent to the town dock in the innermost portion of the harbor. Sediment cores were transported to the processing area upon completion of the sampling effort. Upon arrival the cores were secured in an upright position and allowed to settle. After settling, the cores were measured, and clear excess water was carefully drained from the top of the core tube by drilling a small hole in the liner above the water/sediment interface. Measured cores were placed horizontally into a PVC trough and secured by hand. Each core liner was cut lengthwise using electric shears in two places, approximately 180° apart, and clean stainless steel wire was then used to slice the length of the core into two halves. Immediately after a core was split and exposed to the atmosphere, it was photographed, described, and transferred into a stainless steel pan for sampling. Sample processing equipment was cleaned with a brush and alconox solution then rinsed with deionized water prior to sampling and between each sample.

Each split core was photographed before undergoing the description process. All core photos included a stadia rod for scale and for referencing the depth below surface. A photograph of the complete core was taken, as well as close-ups of discrete layering down core, and sediment strata horizons/transitions of interest.

Cores were examined from the top of the core, downward to the bottom, using a stadia rod to define sediment layer thicknesses and depth below the surface (top of core at sediment–water interface). Each core was classified in accordance with ASTM D 2488, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure), and notes on relative grain sizes, color, odor, strata, and other pertinent observations were recorded in the environmental sampling logs (Appendix B).

After being described, the material from each core was transferred into a stainless steel pan and homogenized using stainless steel spatulas and spoons. Representative portions from all 7 core samples were placed in clean zip-loc bags to be analyzed for grain size, total solids, and percent moisture. The remaining material from samples that were determined to be visually and texturally similar during the classification process were composited according to the preliminary compositing plan (Table 2) developed by ERS. Material from samples to be composited was combined in a stainless steel pan and re-homogenized using clean stainless steel spatulas and spoons. Representative portions from each composite were placed into appropriate sample containers to be analyzed for the parameters listed in Table 3.

One equipment blank was collected as part of this sampling effort. The blank was collected by pouring several liters of deionized water through a length of clean core tube and into a sample processing pan containing a spoon and spatula used for sample homogenization and transfer. This water was then decanted into the appropriate sample jars.

All samples were maintained in coolers on ice for the duration of sampling activities and delivered to Alpha Analytical Laboratory in Mansfield, MA upon conclusion of the field sampling effort. The Chain of Custody forms are presented in Appendix C.

Table 2: Sample Compositing Plan for Chemical Analysis

Station ID	Composite Group
A	1
B	2
C	2
D	3
E	3
F	4
G	4

3.0 PHYSICAL AND CHEMICAL TESTING

This section summarizes the analytical methods used for physical and chemical testing of the samples collected from the proposed Blue Hill Harbor navigation improvement project in Blue Hill, ME. All testing was performed by Alpha Analytical Laboratory in Mansfield, MA. Physical testing included grain size analysis, total solids, and percent moisture measurements. Chemical analysis included total organic carbon (TOC), metals analyses, polycyclic aromatic hydrocarbons (PAH), polychlorinated biphenyls (PCBs), and pesticides. A complete list of parameters and target detection limits is provided in Table 3. A routine set of quality control (QC) samples was prepared with each set of samples, by parameter and media, to monitor data quality in terms of accuracy and precision. The frequency and type of QC samples and QC acceptance criteria is discussed in the laboratory report (Appendix C).

Table 3: Analytical Methods and Reporting Limits

Parameter	Method Reference	Method Number	Project Required RL	RL Units
Physical Tests				
Total Solids/Water Content	ASTM	D-2216	1.0	%
Grain Size (#4, 10, 40, 200)	ASTM	D-422	N/A	%
Total Organic Carbon (TOC)				
Total Organic Carbon	SW-846	9060	0.1	%
Metals				
Arsenic	SW 846	6020A	0.4	ppm
Cadmium	SW 846	6020A	0.07	ppm
Chromium	SW 846	6020A	0.5	ppm
Copper	SW 846	6020A	0.5	ppm
Lead	SW 846	6020A	0.5	ppm
Mercury	SW 846	7474	0.02	ppm
Nickel	SW 846	6020A	0.5	ppm
Zinc	SW 846	6020A	1.0	ppm
Polychlorinated Biphenyls (PCBs)				
Congeners 8, 18, 28, 44, 49, 52, 66, 87, 101, 105, 118, 128, 138, 153, 170, 180, 183, 184, 187, 195, 206, 209	SW-846	8082	0.001	ppm
Semivolatiles				
Poly-Aromatic Hydrocarbons	SW-846	8270C-SIM	0.01	ppm
Organochlorine Pesticides				
Pesticides	SW-846	8081B	0.001	ppm

3.1 Quality Assurance/Quality Control Procedures

All field and analytical activities used in the collection and analysis of sediments for physical and chemical testing followed approved SOPs, referenced approved agency methods, or are detailed in the project SAP (Appendix A).

3.1.1 Measurement Quality Objectives

Project specific Measurement Quality Objectives (MQOs), against which all data from this project were evaluated, are presented in Table 4. Physical and chemical data were evaluated against the MQOs and the laboratory based reporting limits. Organic compounds and metals analyzed for but not detected above the laboratory Practical Quantitation Limit (PQL) were recorded as the Reporting Limit (RL) and flagged with the qualifier "U".

Table 4: Measurement Quality Objectives

QC Parameter	Measure of Acceptance Criteria[a]	Corrective Action
Sediment and Water Chemistry	*Blank*: <5xMDL (or<5xMDL for metals)	Reextract, reanalyze, and/or document and justify corrective actions
Accuracy: Lab Control Sample (LCS)	*Organics:* 30-130% Recovery *Metals:*80-120% Recovery	As above
Accuracy: Matrix Spike/Matrix spike Duplicate	*Organics:* 50-120% Recovery *Metals:* 75 to 125% Recovery	As above
Accuracy: Standard Reference Material (SRM)	Must be within limits provided by the vendor (i.e. for organics, 40-140% recovery from certified concentrations for SRM 1944)	Evaluate LCS, MS/MSD & surrogates in sample, reanalyze if necessary, qualify data and issue narrative
Accuracy: Surrogate Internal Standard (SIS)	*Organics:* 30-150% Recovery	Reextract, reanalyze, and/or document and justify corrective actions
Precision	*Replicates:* MS/MSD: ≤30% RPD[b] between % recoveries *Sample Duplicate*: ≤30% RPD[c] between values *TOC*: RPD ≤25% Grain Size: RPD <25%	As Above

MDL = method detection limit: RPD = relative percent difference
[a] Quality control samples are based on analytical batch size of 20
[b] Analyte concentration in MS must be >5x background concentration to be used for data quality assessment

3.1.2 Chain of Custody

Sample custody forms accompanied all samples from the field to the laboratory. Copies of sample chain of custody forms are provided in the laboratory report (Appendix C).

3.1.3 Data Audits/ QA Review

All data received internal verification and validation following established procedures at the laboratory where the data were generated. QA/QC narratives are provided in the laboratory report (Appendix C). These narratives include a discussion of the chemistry QC results, a description of MQO exceedances, and the impact, if any, the exceedances may have on the overall field sample data.

3.1.4 Protocol Deviations

There were no deviations from the established laboratory testing protocols.

4.0 RESULTS AND DISCUSSION

This section summarizes results obtained from physical and chemical testing of sediments and a rinsate blank sample collected from the proposed Blue Hill Harbor navigation improvement project in Blue Hill, ME in October of 2015. Sediment samples from 7 individual stations were analyzed for grain size, total solids, and percent moisture. Based on the results of this physical analysis, the 4 composite groups described in section 2.2 as well as the rinsate blank were analyzed for metals, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and pesticides. A summary of the results of physical and chemical analysis are presented in Tables 5 through 10. Complete testing results for are provided in the laboratory report (Appendix C).

Table 5: Summary of Grain Size and Moisture Content Results

Sample ID	% Cobble	% Gravel	% Coarse Sand	% Medium Sand	% Fine Sand	% Total Fines	% Moisture
A	0.1 (U)	0.1	2.2	6.6	21.6	69.5	55.3
B	0.1 (U)	0.1 (U)	1.7	3.5	7.4	87.4	51.2
C	0.1 (U)	1.1	1.9	4.9	12.1	80	54.5
D	0.1 (U)	4.4	13.2	34.8	35	12.6	19.6
E	0.1 (U)	1.8	8.8	26.7	37.9	24.8	33.2
F	0.1 (U)	5	14	30.6	29.8	20.6	26.8
G	0.1 (U)	45.9	12.4	16.7	16.2	8.8	21.4

U = Non-detected analytes are reported as the RL and qualified with a "U".

Table 6: Summary of TOC and Total Solids Results

Sample ID	% TOC Average Value	% Total Solids
A	8.32	44.7
COMP BC	3.735	48
COMP DE	1.76	73.3
COMP FG	0.883	71.7

Table 7: Summary of Total Metals Results

Parameter	A	COMP BC	COMP DE	COMP FG
Arsenic, Total	4.51	7.69	5.24	6.32
Cadmium, Total	0.644	0.833	0.12	0.161
Chromium, Total	21.1	30.9	12.3	10.8
Copper, Total	17.6	16.5	14.3	6.9
Lead, Total	21.7	21.8	23	10.5
Mercury, Total	0.033	0.029	0.017	0.015 (U)
Nickel, Total	15.6	23.6	10.3	9.4
Zinc, Total	54.2	64.1	40.6	37.9

U = Non-detected analytes are reported as the RL and qualified with a "U".
All concentrations are presented as mg/kg
Results are reported as dry weight

Table 8: Summary of PAH Results

Parameter	A	COMP BC	COMP DE	COMP FG
Acenaphthene	10.4 (U)	9.99 (U)	7.9	83.4
Acenaphthylene	26.8	16.1	108	448
Anthracene	17	10.6	78.3	1250
Benz(a)anthracene	102	68.9	532	2760
Benzo(a)pyrene	119	84	526	2090
Benzo(b)fluoranthene	116	88.5	537	2340
Benzo(ghi)perylene	86.5	61.8	345	1170
Benzo(k)fluoranthene	127	80.6	402	1850
Chrysene	136	101	604	2880
Dibenz(a,h)anthracene	22.5	14.5	87.7	529
Fluoranthene	257	191	1010	7090
Fluorene	10.4 (U)	9.99 (U)	27	789
Indeno(1,2,3-cd)Pyrene	95.2	66.8	363	1380
Naphthalene	10.4 (U)	9.99 (U)	17.6	37.9
Phenanthrene	121	96.7	407	4780
Pyrene	242	170	943	4740

U = Non-detected analytes are reported as the RL and qualified with a "U".
All concentrations are presented as µg/kg
Results are reported as dry weight

Table 9: Summary of PCB Results

Parameter	A	COMP BC	COMP DE	COMP FG
Cl2-BZ#8*	1.04 (U)	0.999 (U)	0.675 (U)	0.658 (U)
Cl3-BZ#18*	1.04 (U)	0.999 (U)	0.675 (U)	0.658 (U)
Cl3-BZ#28*	1.04 (U)	0.999 (U)	0.675 (U)	0.658 (U)
Cl4-BZ#44*	1.04 (U)	0.999 (U)	0.675 (U)	0.658 (U)
Cl4-BZ#49	1.04 (U)	0.999 (U)	0.675 (U)	0.658 (U)
Cl4-BZ#52*	1.04 (U)	0.999 (U)	0.675 (U)	0.658 (U)
Cl4-BZ#66*	1.04 (U)	0.999 (U)	0.675 (U)	0.658 (U)
Cl5-BZ#87	1.04 (U)	0.999 (U)	0.675 (U)	0.658 (U)
Cl5-BZ#101*	1.04 (U)	0.999 (U)	0.757	0.658 (U)
Cl5-BZ#105*	1.04 (U)	0.999 (U)	0.675 (U)	0.658 (U)
Cl5-BZ#118*	1.04 (U)	0.999 (U)	0.809	0.658 (U)
Cl6-BZ#128*	1.04 (U)	0.999 (U)	0.675 (U)	0.658 (U)
Cl6-BZ#138*	1.04 (U)	0.999 (U)	1.06	0.658 (U)
Cl6-BZ#153*	1.04 (U)	0.999 (U)	0.679	0.658 (U)
Cl7-BZ#170*	1.04 (U)	0.999 (U)	0.675 (U)	0.658 (U)
Cl7-BZ#180*	1.04 (U)	0.999 (U)	0.675 (U)	0.658 (U)
Cl7-BZ#183	1.04 (U)	0.999 (U)	0.675 (U)	0.658 (U)
Cl7-BZ#184	1.04 (U)	0.999 (U)	0.675 (U)	0.658 (U)
Cl7-BZ#187*	1.04 (U)	0.999 (U)	0.675 (U)	0.658 (U)
Cl8-BZ#195*	1.04 (U)	0.999 (U)	0.675 (U)	0.658 (U)
Cl9-BZ#206*	1.04 (U)	0.999 (U)	0.675 (U)	0.658 (U)
Cl10-BZ#209*	1.04 (U)	0.999 (U)	0.675 (U)	0.658 (U)
Total PCBs[1]	17.68 (U)	11.322 (U)	14.442	11.645 (U)

U = Non-detected analytes are reported as the RL and qualified with a “U”.
All concentrations are presented as µg/kg
Results are reported as dry weight
[1] Total PCBs calculated by summing the 18 PCB congeners marked with a “*” (using ½ the RL for non-detects) and multiplying the total by 2

Table 10: Summary of Pesticides Results

Parameter	A	COMP BC	COMP DE	COMP FG
4,4'-DDD	0.523 (U)	0.499 (U)	0.814	0.329 (U)
4,4'-DDE	0.523 (U)	0.499 (U)	0.338 (U)	0.329 (U)
4,4'-DDT	0.523 (U)	0.499 (U)	0.592 (IP)	0.329 (U)
Aldrin	0.523 (U)	0.499 (U)	0.338 (U)	0.329 (U)
cis-Chlordane	0.523 (U)	0.499 (U)	0.338 (U)	0.329 (U)
cis-Nonachlor	0.523 (U)	0.499 (U)	0.338 (U)	0.329 (U)
Dieldrin	0.523 (U)	0.499 (U)	0.338 (U)	0.329 (U)
Endosulfan I	0.523 (U)	0.499 (U)	0.338 (U)	0.329 (U)
Endosulfan II	0.523 (U)	0.499 (U)	0.338 (U)	0.329 (U)
Endrin	0.523 (U)	0.499 (U)	0.338 (U)	0.329 (U)
gamma-BHC	0.523 (U)	0.499 (U)	0.338 (U)	0.329 (U)
Heptachlor	0.523 (U)	0.499 (U)	0.338 (U)	0.329 (U)
Heptachlor epoxide	1.04 (U)	0.999 (U)	0.675 (U)	0.658 (U)
Hexachlorobenzene	1.04 (U)	0.999 (U)	0.675 (U)	0.658 (U)
Methoxychlor	5.23 (U)	4.99 (U)	3.64 (P)	3.29 (U)
Oxychlordane	1.04 (U)	0.999 (U)	0.675 (U)	0.658 (U)
Toxaphene	26.2 (U)	25.1 (U)	17 (U)	16.5 (U)
trans-Chlordane	0.523 (U)	0.499 (U)	0.338 (U)	0.329 (U)
trans-Nonachlor	0.523 (U)	0.499 (U)	0.338 (U)	0.329 (U)

U = Non-detected analytes are reported as the RL and qualified with a “U”.
P - The RPD between the results for the two columns exceeds the method-specified criteria.
I P = The RPD between the results for the two columns exceeds the method-specified criteria; however, the lower value has been reported due to obvious interference
All concentrations are presented as µg/kg
Results are reported as dry weight

4.1 Rinsate Blank

One rinsate blank sample consisting of deionized water that was exposed to an unused section of core liner and the decontaminated sample processing equipment was analyzed for metals, PAHs, PCBs, and pesticides. Concentrations of the PAH Naphthalene (0.017 µg/l) were present in the rinsate blank. This concentration was several orders of magnitude lower than what was found in the sediments from Blue Hill Harbor, therefore no corrective action was taken. No other target analytes were detected in the rinsate blank sample.

APPENDIX A SAMPLING AND ANALYSIS PLAN

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CENAE–EPV 23 October 2015

MEMORANDUM FOR: William Bartlett, Project Manager, CENAE-EPP

SUBJECT: Sampling and Analysis Plan for the Blue Hill Harbor Section 107 Navigation Improvement Project in Blue Hill, Maine.

1. **Background:** Blue Hill Harbor is the principal commercial fishing harbor of the Town of Blue Hill, located on the western shore of Blue Hill Bay in Hancock County, Maine. Blue Hill Harbor is located off the northwest end of Blue Hill Bay just west-northwest of Long Island and due west of Union River Bay. The inner harbor contains the Town Wharf and docks which are dry at mean low water.

The Town of Blue Hill, as part of its waterfront economic plan, requested that the New England District (NAE) of the U.S. Army Corps of Engineers (USACE) investigate the potential of establishing a federal channel and turning basin to allow full time vessel traffic to the inner harbor. The results of this study determined that a 1 acre turning basin and a 60 to 80 foot wide waterfront channel extending from the central Town Wharf approximately 2,500 feet southeast into deep water would be required to meet the project objectives. Both the turning basin/anchorage and channel would be dredged to a depth of 6 feet at mean lower low water (MLLW) plus 1 foot of allowable over depth. This would produce approximately 62,500 cubic yards of mixed gravel, sand, and silt. It is expected that this material would be mechanically dredged and placed at either the Tupper Ledge Disposal Site (TLDS) or Eastern Passage Disposal Site (EPDS).

The purpose of the sampling and analysis plan described below is to gather information to support a suitability determination for the proposed disposal option(s). Sediment from the proposed dredge area will be collected and shall undergo physical and chemical analysis. The results of analysis will be evaluated against recently collected samples from the TLDS and EPDS reference areas.

2. **Methodology:** All sampling and analysis activities shall follow the requirements set forth in the “Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters" (RIM) dated May 6, 2004. All laboratories used for this project must have an approved Laboratory Quality Assurance Plan (LQAP) on file with NAE. Any data produced from a lab without an approved LQAP will not be accepted. The RIM, a list of laboratories with approved LQAPs, and the reporting format and requirements for electronic submission of data are available for download through the NAE website:

http://www.nae.usace.army.mil/Missions/Regulatory/DredgedMaterialProgram/RegionalImplementationManual.aspx

3. **Known Sources of Contamination:** Based on a review of historic data and communication with local officials it has been determined that there have been no recent spills in the vicinity of the proposed project. There is one storm water outfall that runs from the Town Wharf to a point approximately 2000 feet to the south where it empties into Mellos Cove. This is not expected to have an impact on the sediments to be dredged.

4. **Sample Collection:** Sediment cores shall be taken from the area to be dredged at the seven locations specified in Table 1 (also see Figures 1). Core samples shall be taken to the proposed dredge depth plus the overdepth amount or refusal. The cores shall be inspected in the field for stratification. If the cores show significant stratification, in the opinion of the sampling crew, subsamples shall be made of each layer. Sufficient material shall be collected for grain size and bulk sediment chemistry analyses as described in the sections below.

All sediment and water being held for testing shall be stored in accordance with the requirements in Table 2 (from Table 8-2 in Evaluation of Dredged Material Proposed for Ocean Disposal, Testing Manual, 1991).

5. **Positioning:** The latitude and longitude for each sample location shall be reported in the Geographic NAD 83 coordinate system in decimal degree format. The horizontal accuracy of each sample location shall be ten feet or less. The horizontal accuracy at each sample location shall be reported along with the coordinates.

6. **Grain Size:** Each core or core layer shall be individually analyzed for grain size and the results reported to the Environmental Resources Section (ERS) project technical manager before any compositing is performed. The final compositing plan will be determined based on sample proximity, sediment type, and physical characteristics. Grain size analysis shall also be performed on the reference site sample. The results of physical analysis may be used to support compliance with one or more of the three exclusionary criteria in 40 CFR 227.13(b) for ocean disposal or support a determination that the material is not a carrier of contaminants under 40 CFR 230.60(a) for other open water disposal.

7. **Sediment Chemistry**: Bulk sediment chemistry shall be performed on the individual or composite sediment samples from the dredge area according to the final compositing plan. Testing parameters, analytical methods, and

reporting limits to be used are outlined in Table 2 (Extracted from Tables 1, 2, and 3 of the RIM). The listed analytical methods are recommended but can be replaced by other methods that will give the required reporting limits. The Total Organic Carbon analysis (TOC) shall be performed in duplicate on each composited sample and a TOC Standard Reference Material (SRM) shall be run with the sample batch. Additional guidance on the physical and chemical analysis of sediments can be found in Chapter 5 of the RIM.

8. **Reporting:** All sediment testing data is required to be submitted electronically in the electronic data deliverable (EDD) format available on the RIM website. Hard copy data submission is also required but may be substituted with a printer friendly, easy-to-read format (e.g., PDF, MS Word). Any analytes not detected shall be reported as the reporting limit and qualified with a “U”. Non-detects shall not be reported as the method detection limit (MDL). RIM quality control summary tables are required to be submitted with each project dataset. These tables are found in Appendix II of the RIM and are available on the RIM website

9. Any questions should be directed to Richard Loyd (978-318-8048)

Prepared by:

RICHARD B. LOYD
Marine Ecologist
Environmental Resources Section

TABLE 1: SAMPLE LOCATIONS AND ESTIMATED PENETRATION

Station	X (NAD 83)	Y (NAD 83)	Survey Depth (Feet MLLW)	Project Depth (Feet MLLW)	Allowable Overdepth (Feet)	Estimated Core Length (Feet)
A	-68.577540	44.409033	-3.5	-6	-1	3.5
B	-68.579677	44.410136	-0.6	-6	-1	6.4
C	-68.581801	44.410997	0.1	-6	-1	7.1
D	-68.584183	44.411691	1.0	-6	-1	8.0
E	-68.585284	44.412200	1.9	-6	-1	8.9
F	-68.584558	44.412338	1.1	-6	-1	8.1
G	-68.585163	44.412593	1.8	-6	-1	8.8

Table 2: RECOMMENDED PROCEDURES FOR SAMPLE COLLECTION, PRESERVATION, AND STORAGE

Analyses	Collection Method	Sample Volume	Container	Preservation Technique	Storage Conditions	Holding Time[d]
Sediment						
Chemical/Physical Analyses						
Metals	Grab/corer	200 mL	Precleaned polyethylene jar[c]	Dry ice[c]	≤ 20° C[c]	Hg - 30 days Others - 6 Months[d]
Organic Compounds	Grab/corer	475 mL	Solvent-rinsed glass jar with Teflon lid[c]	Dry ice[c]	≤ 20° C/dark[d]	10 days[d]
Particle Size	Grab/corer	75 mL	Whirl-pac bag[c]	Dry ice[c]	≤ 20° C[c]	Undetermined
Total Organic Carbon	Grab/corer	3 L	Heat treated glass vial with Teflon lined lid[c]	Dry ice or freezer storage for extended storages; otherwise refrigerate	≤ 20° C[c]	Undetermined
Sediment From Which Elutriate is Prepared	Grab/corer	Dependant on tests performed	Glass with Teflon lined lid	Completely fill and Refrigerate	≤ 4° C/dark/airtight	Undetermined

[a] *This table contains only a summary of collection, preservation, and storage procedures for samples. The cited references should be consulted for a more detailed description of these procedures.*

[b] *These holding times are for sediment, water, and tissue based on guidance that is sometimes administrative rather than technical in nature. There are no promulgated, scientifically based holding time criteria for sediments, tissues, or elutriates. References should be consulted if holding times for sample extracts are desired. Holding times are from the time of sample collection.*

[c] *NOAA (1989).*

[d] *Tetra Tech (1986a)*

TABLE 3: BULK SEDIMENT TESTING PARAMETERS

Parameter	Analytical Method	Reporting Limit (ppm)
Metals		
Arsenic	6010B, 6020, 7060, 7061	0.4
Cadmium	6010B, 6020, 7130, 7131	0.07
Chromium	6010B, 6020, 7190, 7191	0.5
Copper	6010B, 6020, 7210	0.5
Lead	6010B, 6020, 7420, 7421	0.5
Mercury	7471	0.02
Nickel	6010B, 6020, 7520	0.5
Zinc	6010B, 6020, 7950	1.0
PCBs (total by NOAA summation of congeners)		
See next page	8082A	0.001
Pesticides	NOAA (1993), 8081B	0.001
Aldrin	Heptachlor epoxide	
cis- & trans-Chlordane	Hexachlorobenzene	
4,4'-DDT, DDD, DDE	Lindane	
Dieldrin	Methoxychlor	
α & β Endosulfan	cis- & trans-Nonachlor	
Endrin	Oxychlordane	
Heptachlor	Toxaphene	0.025
Polycyclic Aromatic Hydrocarbons (PAHs)	8270C-SIM	0.01
Acenaphthene	Chrysene	
Acenaphthylene	Dibenzo(a,h)anthracene	
Anthracene	Fluoranthene	
Benzo(a)anthracene	Fluorene	
Benzo(a)pyrene	Indeno(1, 2, 3-cd)pyrene	
Benzo(b)fluoranthene	Naphthalene	
Benzo(k)fluoranthene	Phenanthrene	
Benzo(g, h, i)perylene	Pyrene	
Total Organic Carbon	Plumb (1981), APHA (1995)	0.1%
Percent Moisture	Plumb (1981), EPA (1992), PSEP (1986)	1.0%
Grain Size	Wet Sieve (#4, 10, 40, 200)	

TABLE 3: BULK SEDIMENT TESTING PARAMETERS (CONTINUED)

PCB CONGENERS

Analytical Method: NOAA (1993), 8082A

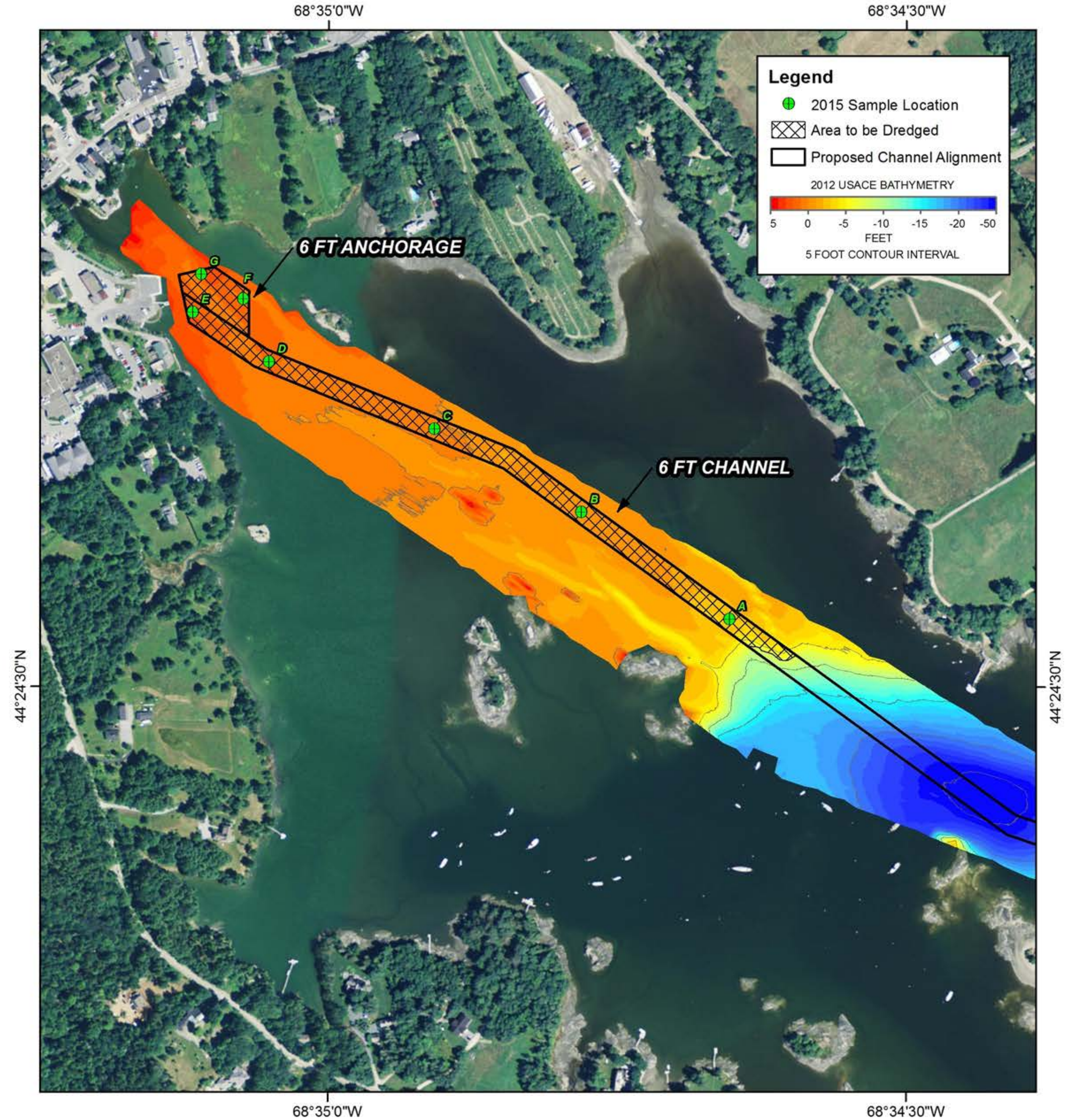
Reporting Limit: 1 ppb

Congeners:

8*	2,4' diCB
18*	2,2',5 triCB
28*	2,4,4' triCB
44*	2,2',3,5' tetraCB
49	2,2',4',5 tetraCB
52*	2,2',5,5' tetraCB
66*	2,3',4,4' tetraCB
87	2,2',3,4,5' pentaCB
101*	2,2',4,5,5' pentaCB
105*	2,3,3',4,4' pentaCB
118*	2,3',4,4',5 pentaCB
128*	2,3,3',4,4' hexaCB
138*	2,2',3,4,4',5' hexaCB
153*	2,2',4,4',5,5' hexaCB
170*	2,2',3,3',4,4',5 heptaCB
180*	2,2',3,4,4',5,5' heptaCB
183	2,2',3,4,4',5',6 heptaCB
184	2,2',3,4,4',6,6' heptaCB
187*	2,2',3,4',5,5',6 heptaCB
195*	2,2',3,3',4,4',5,6 octaCB
206*	2,2',3,3',4,4',5,5',6 nonaCB
209*	2,2',3,3',4,4',5,5',6,6' decaCB

* denotes a congener to be used in estimating Total PCB. To calculate Total PCB, sum the concentrations of all eighteen congeners marked with a "*" and multiply by 2.

The specified methods are recommendations only. Other acceptable methodologies capable of meeting the Reporting Limits can be used. Sample preparation methodologies (e.g. extraction and cleanup) and sample size may need to be modified to achieve the required Reporting Limits.



US Army Corps of Engineers New England District

FIGURE 1:
BLUE HILL HARBOR, BLUE HILL, ME
2015 SAMPLE LOCATIONS

N W E S

0 250 500 750 1,000 Feet
0 100 200 300 Meters
1:8,000

2013 NAIP AERIAL IMAGERY

GCS NAD 1983

APPENDIX B SAMPLING LOGS

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PROJECT: Blue Hill Harbor DATE: 10/28/2015

SAMPLING PERSONNEL: RBL, ADH, TAR

SEA STATE: Calm WEATHER CODE: Overcast

LOCATION METHOD: DGPS

SAMPLE ID: A SAMPLER TYPE: Vibracore

TIME: 09:34

SOUNDING: -14.5’ CORRECTED DEPTH: -2.6’ MLLW

COORDINATES: N 44.409033 E -68.577540

PENETRATION/RECOVERY: 4.2’ NO. OF ATTEMPTS: 2

MATERIAL DESCRIPTION: Poorly graded fine sand and silt with wood chips over marine clay

CORE PHOTO:	NOTES:
	Core taken to refusal in clay. 0-1.3: SP/SM – Gray, poorly graded fine sand and silt with scattered woody debris. Soft and moist. Top 0.2 is loose and wet. 1.3-2.3: OL – Woody debris with fine sand. Loose and wet. Wood chips are 0.25-0.5”. 2.3-2.7: SP/SM - Gray, poorly graded fine sand and silt with scattered woody debris. Soft and moist. 2.7-4.2: CL – Light gray clay with fine sand, scattered woody debris and shell fragments. Firm and moist. H2S odor. Sample interval from 0-4.2’ at 14:53

PROJECT: Blue Hill Harbor DATE: 10/28/2015

SAMPLING PERSONNEL: RBL, ADH, TAR

SEA STATE: Calm WEATHER CODE: Overcast

LOCATION METHOD: DGPS

SAMPLE ID: B SAMPLER TYPE: Vibracore

TIME: 10:17

SOUNDING: - CORRECTED DEPTH: -0.3'MLLW

COORDINATES: N 44.410136 E -68.579677

PENETRATION/RECOVERY: 3.1' NO. OF ATTEMPTS: 3

MATERIAL DESCRIPTION: Fine sand and marine clay with shell fragments and woody organic debris

CORE PHOTO:	NOTES:
	Core taken to refusal in clay. 0-0.3: SP/SM – Dark gray, poorly graded fine sand and silt. Loose and wet. 0.3-3.1: CL - Olive gray sandy clay with scattered shell fragments and woody organic debris. Moist. Increasing firmness with depth (soft to very firm) H2S odor. Sample interval from 0-3.1' at 14:46

PROJECT: Blue Hill Harbor DATE: 10/28/2015

SAMPLING PERSONNEL: RBL, ADH, TAR

SEA STATE: Calm WEATHER CODE: Overcast

LOCATION METHOD: DGPS

SAMPLE ID: C SAMPLER TYPE: Vibracore

TIME: 10:12

SOUNDING: -13.3’ CORRECTED DEPTH: -0.4’ MLLW

COORDINATES: N 44.410997 E -68.581801

PENETRATION/RECOVERY: 5.9’ NO. OF ATTEMPTS: 3

MATERIAL DESCRIPTION: Fine sand and marine clay with shell fragments and woody organic debris

<table>
<tr><th>CORE PHOTO:</th><th>NOTES:</th></tr>
<tr><td></td><td>Core taken to refusal in clay.

Multiple attempts with variable penetration. Longest core retained for sample.

0-0.5: SP/SM - Dark gray, poorly graded fine sand and silt. Loose and wet.

0.5-2.4: SP - Dark gray clayey sand with scattered shell fragments. Layer of packed woody debris from 1.2-1.3. Soft and moist.

2.4-5.9: CL – Olive gray sandy clay with scattered shell fragments and woody organic debris. Firm and moist.

H2S odor.

Sample interval from 0-5.9’ at 14:33</td></tr>
</table>

PROJECT: Blue Hill Harbor DATE: 10/28/2015

SAMPLING PERSONNEL: RBL, ADH, TAR

SEA STATE: Calm WEATHER CODE: Overcast

LOCATION METHOD: DGPS

SAMPLE ID: D SAMPLER TYPE: Vibracore

TIME: 11:09

SOUNDING: -12.6’ CORRECTED DEPTH: +0.2’ MLLW

COORDINATES: N 43.001885 E -70.751137

PENETRATION/RECOVERY: 2.0’ NO. OF ATTEMPTS: 4

MATERIAL DESCRIPTION: Poorly graded M/C sand with shell fragments and woody organic debris

CORE PHOTO:	NOTES:
	Core taken to refusal in clayey sand. Plug was lost at water surface. 0-0.4: SP/SM - Dark gray, poorly graded fine sand and silt. Loose and wet. 0.4-2.0: SP- Gray, poorly graded medium to coarse sand with scattered shell fragments and woody organic debris. Increasingly coarse with depth. Very firm and moist. H2S odor. Sample interval from 0-2.0’ at 14:22

PROJECT: Blue Hill Harbor DATE: 10/28/2015

SAMPLING PERSONNEL: RBL, ADH, TAR

SEA STATE: Calm WEATHER CODE: Overcast

LOCATION METHOD: DGPS

SAMPLE ID: E SAMPLER TYPE: Vibracore

TIME: 11:34

SOUNDING: -11.3 CORRECTED DEPTH: +1.2’ MLLW

COORDINATES: N 44.412200 E -68.585284

PENETRATION/RECOVERY: 3.2 NO. OF ATTEMPTS: 5

MATERIAL DESCRIPTION: Poorly graded medium to coarse sand with woody organic debris

CORE PHOTO:	NOTES:
	Core taken to refusal on hard packed sand. 0-1.7: SP/SM – Gray, poorly graded fine sand and silt with scattered shell fragments and woody debris. Soft and moist. Top 0.1 is loose and wet. 1.7-3.1: SP – Dark gray, poorly graded medium to coarse sand with scattered shell fragments and woody organic debris. Increasingly coarse with depth. A lense of clam shell fragments is present from 2.2-2.4. Firm and moist. 3.1-3.2: SP – Dark gray, poorly graded coarse sand mixed with woody debris. Firm and moist. H2S odor. Sample interval from 0-3.2’ at 14:13

PROJECT: Blue Hill Harbor DATE: 10/28/2015

SAMPLING PERSONNEL: RBL, ADH, TAR

SEA STATE: Calm WEATHER CODE: Overcast

LOCATION METHOD: DGPS

SAMPLE ID: F SAMPLER TYPE: Vibracore

TIME: 11:50

SOUNDING: -10.8’ CORRECTED DEPTH: +1.3’ MLLW

COORDINATES: N 44.412338 E -68.584558

PENETRATION/RECOVERY: 1.8’ NO. OF ATTEMPTS: 5

MATERIAL DESCRIPTION: Poorly graded medium to coarse sand over marine clay

CORE PHOTO:	NOTES:
	Core taken to refusal in clay. Multiple attempts in vicinity of station with poor penetration. Longest core retained for sample. 0-0.1: SP/SM - Dark gray, poorly graded fine sand and silt. Loose and wet. 0.1-1.2: SP - Dark gray poorly graded medium to coarse sand with scattered shell fragments. Firm and moist. 1.2-1.8: CL – Olive gray clay with scattered woody organic debris. Very firm and moist. H2S odor. Sample interval from 0-1.8’ at 14:00

PROJECT: Blue Hill Harbor | DATE: 10/28/2015

SAMPLING PERSONNEL: RBL, ADH, TAR

SEA STATE: Calm | WEATHER CODE: Overcast

LOCATION METHOD: DGPS

SAMPLE ID: G | SAMPLER TYPE: Vibracore

TIME: 12:16

SOUNDING: -10.3 | CORRECTED DEPTH: +0.9’ MLLW

COORDINATES: N 44.412593 | E -68.585163

PENETRATION/RECOVERY: 0.5 | NO. OF ATTEMPTS: 6

MATERIAL DESCRIPTION:

CORE PHOTO:	NOTES:
	Multiple attempts in vicinity of station with less than 6 inches of penetration. Sediment at this location consists of mixed sand, gravel, silt, and shell fragments over cobble and gravel deposits. Sample taken from multiple 6” long cores at 13:45.

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APPENDIX C LABORATORY REPORT

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Matrix Spike Analysis
Batch Quality Control

Project Name: BLUE HILL HARBOR **Lab Number:** L1527873
Project Number: Not Specified **Report Date:** 11/19/15

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Organic Carbon - Mansfield Lab Associated sample(s): 01,04,07,10 QC Batch ID: WG842407-4 QC Sample: L1527873-07 Client ID: COMP DE												
Total Organic Carbon (Rep1)	1.99	0.543	2.19	**37**	Q	-	-		75-125	-		25
Total Organic Carbon (Rep2)	1.53	0.921	3.01	**161**	Q	-	-		75-125	-		25

ANALYTICAL REPORT

Lab Number:	L1527873
Client:	U.S. Army Corps of Engineers 696 Virginia Road Concord, MA 01742-2751
ATTN:	Richard Loyd
Phone:	(978) 318-8048
Project Name:	BLUE HILL HARBOR
Project Number:	Not Specified
Report Date:	11/19/15

Certifications & Approvals: NY (11627), CT (PH-0141), NH (2206), NJ NELAP (MA015), RI (LAO00299), ME (MA00030), PA (68-02089), VA (460194), LA NELAP (03090), FL (E87814), TX (T104704419), WA (C954), USFWS (Permit #LE2069641), USDA (Permit #P330-11-00109), US Army Corps of Engineers.

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: BLUE HILL HARBOR
Project Number: Not Specified

Lab Number: L1527873
Report Date: 11/19/15

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1527873-01	A	SOIL	BLUE HILL, ME	10/28/15 14:53	10/29/15
L1527873-02	B	SOIL	BLUE HILL, ME	10/28/15 14:46	10/29/15
L1527873-03	C	SOIL	BLUE HILL, ME	10/28/15 14:33	10/29/15
L1527873-04	COMP BC	SOIL	BLUE HILL, ME	10/28/15 14:46	10/29/15
L1527873-05	D	SOIL	BLUE HILL, ME	10/28/15 14:22	10/29/15
L1527873-06	E	SOIL	BLUE HILL, ME	10/28/15 14:13	10/29/15
L1527873-07	COMP DE	SOIL	BLUE HILL, ME	10/28/15 14:22	10/29/15
L1527873-08	F	SOIL	BLUE HILL, ME	10/28/15 14:00	10/29/15
L1527873-09	G	SOIL	BLUE HILL, ME	10/28/15 13:43	10/29/15
L1527873-10	COMP FG	SOIL	BLUE HILL, ME	10/28/15 14:00	10/29/15
L1527873-11	DUP(C)	SOIL	BLUE HILL, ME	10/28/15 14:33	10/29/15
L1527873-12	BLANK	WATER	BLUE HILL, ME	10/28/15 14:53	10/29/15

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Case Narrative (continued)

Semivolatile Organics

L1527873-10 was re-analyzed on dilution in order to quantify the sample within the calibration range. The results should be considered estimated, and are qualified with an E flag, for any compounds that exceeded the calibration range in the initial analysis. The re-analysis was performed only for the compounds that exceeded the calibration range.

The WG836995-6 Laboratory Duplicate RPDs, performed on L1527873-04, are outside the acceptance criteria for Acenaphthylene (31%), Phenanthrene (46%), Anthracene (106%), Fluoranthene (37%), Pyrene (40%), Benz(a)anthracene (53%), Chrysene (38%), Benzo(b)fluoranthene (31%), Benzo(k)fluoranthene (36%), Benzo(a)pyrene (39%) and Dibenz(a,h)anthracene (33%). The elevated RPD's have been attributed to the non-homogeneous nature of the native sample.

WG836995-4/-5 MD/MSD performed on L1527873-07: Fluoranthene response exceeded the calibration range. The concentrations are considered estimated and qualified with an (E) flag. The percent recoveries for Fluoranthene met the acceptance criteria therefore no further action was taken.

The continuing calibration standard, associated with the 25X dilution of L1527873-10 had the response for DBOB (20.2%D) above the acceptance criteria for the method.

Pesticides

Samples L1527873-01 and -10 had the surrogate BZ198 (186%/490%) recovered above the acceptance criteria for column A. The surrogate recoveries for column B were within acceptance criteria as were the recoveries for the surrogate DBOB. No further action was taken.

The opening continuing calibration WG838057-1, associated with L1527873-12 and the extraction QC WG836523-1, -2 and -3, had the response for 4,4'-DDD (23.9%D column A) above the acceptance criteria. This represents a potential high bias and the associated sample was non-detect; therefore no further action was taken.

Case Narrative (continued)

The WG836523-1 (Method Blank) and WG836523-3 (LCSD), associated with sample L1527873-12, had the surrogate BZ198 (164%/166%) recovered above the acceptance criteria for column A. The surrogate recoveries for column B were within acceptance criteria as were the recoveries for the surrogate DBOB. No further action was taken.

The WG836998-3 (LCSD), associated with samples L1527873-01, -04, -07 and -10, had the surrogate BZ198 (199%) recovered above the acceptance criteria for column A. The surrogate recovery for column B was within acceptance criteria as were the recoveries for the surrogate DBOB. No further action was taken.

The WG836998-4/-5 (MS/MSD), performed on sample L1527873-07, had the surrogate BZ198 (242%/492%) recovered above the acceptance criteria for column A. The surrogate recoveries for column B were within acceptance criteria as were the recoveries for the surrogate DBOB. No further action was taken.

The WG836998-7 (SRM), recovered trans-Nonachlor (449%) and the surrogate BZ198 (240%) above the acceptance criteria due to matrix interference. All other monitered compounds and surrogates recovered within the acceptance criteria. No further action was taken.

Metals
L1527873-12: The Field Blank has a concentration above the reporting limit for Arsenic. The results were confirmed.

The low level calibration check (LLC), associated with WG840344, has a concentration above the reporting limit for Copper and Lead. Since the associated sample concentrations are greater than 10x the low level calibration check concentration for this analyte, no corrective action is required.

The WG839678-6 Laboratory Duplicate RPD, performed on L1527873-04, is outside the acceptance criteria for Mercury (91%). The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

Project Name: BLUE HILL HARBOR **Lab Number:** L1527873
Project Number: Not Specified **Report Date:** 11/19/15

Case Narrative (continued)

Total Organic Carbon

The WG842407-4 MS recoveries for Total Organic Carbon (Rep1) (37%) and Total Organic Carbon (Rep2) (161%), performed on L1527873-07, are outside the 75-125% acceptance criteria, possibly due to sample matrix. The associated SRM recoveries are within criteria indicating the sample batch was in control, and all sample results were accepted.

Grain Size

The WG842455-1 Laboratory Duplicate RPD, performed on L1527873-03, is outside the acceptance criteria for %Coarse Sand.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Peter Henriksen

Title: Technical Director/Representative Date: 11/19/15

ORGANICS

SEMIVOLATILES

Project Name: BLUE HILL HARBOR **Lab Number:** L1527873

Project Number: Not Specified **Report Date:** 11/19/15

SAMPLE RESULTS

Lab ID:	L1527873-01	Date Collected:	10/28/15 14:53
Client ID:	A	Date Received:	10/29/15
Sample Location:	BLUE HILL, ME	Field Prep:	Not Specified
Matrix:	Soil	Extraction Method:	EPA 3570
Analytical Method:	105,8270D-SIM/680(M)	Extraction Date:	11/03/15 18:24
Analytical Date:	11/05/15 20:15	Cleanup Method:	EPA 3630
Analyst:	SF	Cleanup Date:	11/04/15
Percent Solids:	45%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	10.4	--	1
Acenaphthylene	26.8		ug/kg	10.4	--	1
Acenaphthene	ND		ug/kg	10.4	--	1
Fluorene	ND		ug/kg	10.4	--	1
Phenanthrene	121		ug/kg	10.4	--	1
Anthracene	17.0		ug/kg	10.4	--	1
Fluoranthene	257		ug/kg	10.4	--	1
Pyrene	242		ug/kg	10.4	--	1
Benz(a)anthracene	102		ug/kg	10.4	--	1
Chrysene	136		ug/kg	10.4	--	1
Benzo(b)fluoranthene	116		ug/kg	10.4	--	1
Benzo(k)fluoranthene	127		ug/kg	10.4	--	1
Benzo(a)pyrene	119		ug/kg	10.4	--	1
Indeno(1,2,3-cd)Pyrene	95.2		ug/kg	10.4	--	1
Dibenz(a,h)anthracene	22.5		ug/kg	10.4	--	1
Benzo(ghi)perylene	86.5		ug/kg	10.4	--	1
Cl2-BZ#8	ND		ug/kg	1.04	--	1
Cl3-BZ#18	ND		ug/kg	1.04	--	1
Cl3-BZ#28	ND		ug/kg	1.04	--	1
Cl4-BZ#44	ND		ug/kg	1.04	--	1
Cl4-BZ#49	ND		ug/kg	1.04	--	1
Cl4-BZ#52	ND		ug/kg	1.04	--	1
Cl4-BZ#66	ND		ug/kg	1.04	--	1
Cl5-BZ#87	ND		ug/kg	1.04	--	1
Cl5-BZ#101	ND		ug/kg	1.04	--	1
Cl5-BZ#105	ND		ug/kg	1.04	--	1
Cl5-BZ#118	ND		ug/kg	1.04	--	1
Cl6-BZ#128	ND		ug/kg	1.04	--	1
Cl6-BZ#138	ND		ug/kg	1.04	--	1
Cl6-BZ#153	ND		ug/kg	1.04	--	1

Project Name: BLUE HILL HARBOR **Lab Number:** L1527873

Project Number: Not Specified **Report Date:** 11/19/15

SAMPLE RESULTS

Lab ID: L1527873-01 Date Collected: 10/28/15 14:53
Client ID: A Date Received: 10/29/15
Sample Location: BLUE HILL, ME Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	1.04	--	1
Cl7-BZ#180	ND		ug/kg	1.04	--	1
Cl7-BZ#183	ND		ug/kg	1.04	--	1
Cl7-BZ#184	ND		ug/kg	1.04	--	1
Cl7-BZ#187	ND		ug/kg	1.04	--	1
Cl8-BZ#195	ND		ug/kg	1.04	--	1
Cl9-BZ#206	ND		ug/kg	1.04	--	1
Cl10-BZ#209	ND		ug/kg	1.04	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	62		30-150
Pyrene-d10	60		30-150
Benzo(b)fluoranthene-d12	61		30-150
DBOB	75		30-150
BZ 198	69		30-150

Project Name: BLUE HILL HARBOR | **Lab Number:** L1527873

Project Number: Not Specified | **Report Date:** 11/19/15

SAMPLE RESULTS

Lab ID:	L1527873-04	Date Collected:	10/28/15 14:46
Client ID:	COMP BC	Date Received:	10/29/15
Sample Location:	BLUE HILL, ME	Field Prep:	Not Specified
Matrix:	Soil	Extraction Method:	EPA 3570
Analytical Method:	105,8270D-SIM/680(M)	Extraction Date:	11/03/15 18:24
Analytical Date:	11/05/15 20:49	Cleanup Method:	EPA 3630
Analyst:	SF	Cleanup Date:	11/04/15
Percent Solids:	48%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	ND		ug/kg	9.99	--	1
Acenaphthylene	16.1		ug/kg	9.99	--	1
Acenaphthene	ND		ug/kg	9.99	--	1
Fluorene	ND		ug/kg	9.99	--	1
Phenanthrene	96.7		ug/kg	9.99	--	1
Anthracene	10.6		ug/kg	9.99	--	1
Fluoranthene	191		ug/kg	9.99	--	1
Pyrene	170		ug/kg	9.99	--	1
Benz(a)anthracene	68.9		ug/kg	9.99	--	1
Chrysene	101		ug/kg	9.99	--	1
Benzo(b)fluoranthene	88.5		ug/kg	9.99	--	1
Benzo(k)fluoranthene	80.6		ug/kg	9.99	--	1
Benzo(a)pyrene	84.0		ug/kg	9.99	--	1
Indeno(1,2,3-cd)Pyrene	66.8		ug/kg	9.99	--	1
Dibenz(a,h)anthracene	14.5		ug/kg	9.99	--	1
Benzo(ghi)perylene	61.8		ug/kg	9.99	--	1
Cl2-BZ#8	ND		ug/kg	0.999	--	1
Cl3-BZ#18	ND		ug/kg	0.999	--	1
Cl3-BZ#28	ND		ug/kg	0.999	--	1
Cl4-BZ#44	ND		ug/kg	0.999	--	1
Cl4-BZ#49	ND		ug/kg	0.999	--	1
Cl4-BZ#52	ND		ug/kg	0.999	--	1
Cl4-BZ#66	ND		ug/kg	0.999	--	1
Cl5-BZ#87	ND		ug/kg	0.999	--	1
Cl5-BZ#101	ND		ug/kg	0.999	--	1
Cl5-BZ#105	ND		ug/kg	0.999	--	1
Cl5-BZ#118	ND		ug/kg	0.999	--	1
Cl6-BZ#128	ND		ug/kg	0.999	--	1
Cl6-BZ#138	ND		ug/kg	0.999	--	1
Cl6-BZ#153	ND		ug/kg	0.999	--	1

Project Name: BLUE HILL HARBOR **Lab Number:** L1527873

Project Number: Not Specified **Report Date:** 11/19/15

SAMPLE RESULTS

Lab ID:	L1527873-04	Date Collected:	10/28/15 14:46
Client ID:	COMP BC	Date Received:	10/29/15
Sample Location:	BLUE HILL, ME	Field Prep:	Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	0.999	--	1
Cl7-BZ#180	ND		ug/kg	0.999	--	1
Cl7-BZ#183	ND		ug/kg	0.999	--	1
Cl7-BZ#184	ND		ug/kg	0.999	--	1
Cl7-BZ#187	ND		ug/kg	0.999	--	1
Cl8-BZ#195	ND		ug/kg	0.999	--	1
Cl9-BZ#206	ND		ug/kg	0.999	--	1
Cl10-BZ#209	ND		ug/kg	0.999	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	72		30-150
Pyrene-d10	72		30-150
Benzo(b)fluoranthene-d12	73		30-150
DBOB	88		30-150
BZ 198	86		30-150

Project Name: BLUE HILL HARBOR | **Lab Number:** L1527873

Project Number: Not Specified | **Report Date:** 11/19/15

SAMPLE RESULTS

Lab ID:	L1527873-07	Date Collected:	10/28/15 14:22
Client ID:	COMP DE	Date Received:	10/29/15
Sample Location:	BLUE HILL, ME	Field Prep:	Not Specified
Matrix:	Soil	Extraction Method:	EPA 3570
Analytical Method:	105,8270D-SIM/680(M)	Extraction Date:	11/03/15 18:24
Analytical Date:	11/05/15 21:56	Cleanup Method:	EPA 3630
Analyst:	SF	Cleanup Date:	11/04/15
Percent Solids:	73%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	17.6		ug/kg	6.75	--	1
Acenaphthylene	108		ug/kg	6.75	--	1
Acenaphthene	7.90		ug/kg	6.75	--	1
Fluorene	27.0		ug/kg	6.75	--	1
Phenanthrene	407		ug/kg	6.75	--	1
Anthracene	78.3		ug/kg	6.75	--	1
Fluoranthene	1010		ug/kg	6.75	--	1
Pyrene	943		ug/kg	6.75	--	1
Benz(a)anthracene	532		ug/kg	6.75	--	1
Chrysene	604		ug/kg	6.75	--	1
Benzo(b)fluoranthene	537		ug/kg	6.75	--	1
Benzo(k)fluoranthene	402		ug/kg	6.75	--	1
Benzo(a)pyrene	526		ug/kg	6.75	--	1
Indeno(1,2,3-cd)Pyrene	363		ug/kg	6.75	--	1
Dibenz(a,h)anthracene	87.7		ug/kg	6.75	--	1
Benzo(ghi)perylene	345		ug/kg	6.75	--	1
Cl2-BZ#8	ND		ug/kg	0.675	--	1
Cl3-BZ#18	ND		ug/kg	0.675	--	1
Cl3-BZ#28	ND		ug/kg	0.675	--	1
Cl4-BZ#44	ND		ug/kg	0.675	--	1
Cl4-BZ#49	ND		ug/kg	0.675	--	1
Cl4-BZ#52	ND		ug/kg	0.675	--	1
Cl4-BZ#66	ND		ug/kg	0.675	--	1
Cl5-BZ#87	ND		ug/kg	0.675	--	1
Cl5-BZ#101	0.757		ug/kg	0.675	--	1
Cl5-BZ#105	ND		ug/kg	0.675	--	1
Cl5-BZ#118	0.809		ug/kg	0.675	--	1
Cl6-BZ#128	ND		ug/kg	0.675	--	1
Cl6-BZ#138	1.06		ug/kg	0.675	--	1
Cl6-BZ#153	0.679		ug/kg	0.675	--	1

Project Name: BLUE HILL HARBOR **Lab Number:** L1527873
Project Number: Not Specified **Report Date:** 11/19/15

SAMPLE RESULTS

Lab ID: L1527873-07 Date Collected: 10/28/15 14:22
Client ID: COMP DE Date Received: 10/29/15
Sample Location: BLUE HILL, ME Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	0.675	--	1
Cl7-BZ#180	ND		ug/kg	0.675	--	1
Cl7-BZ#183	ND		ug/kg	0.675	--	1
Cl7-BZ#184	ND		ug/kg	0.675	--	1
Cl7-BZ#187	ND		ug/kg	0.675	--	1
Cl8-BZ#195	ND		ug/kg	0.675	--	1
Cl9-BZ#206	ND		ug/kg	0.675	--	1
Cl10-BZ#209	ND		ug/kg	0.675	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	79		30-150
Pyrene-d10	79		30-150
Benzo(b)fluoranthene-d12	79		30-150
DBOB	100		30-150
BZ 198	97		30-150

Project Name: BLUE HILL HARBOR **Lab Number:** L1527873

Project Number: Not Specified **Report Date:** 11/19/15

SAMPLE RESULTS

Lab ID:	L1527873-10	Date Collected:	10/28/15 14:00
Client ID:	COMP FG	Date Received:	10/29/15
Sample Location:	BLUE HILL, ME	Field Prep:	Not Specified
Matrix:	Soil	Extraction Method:	EPA 3570
Analytical Method:	105,8270D-SIM/680(M)	Extraction Date:	11/03/15 18:24
Analytical Date:	11/05/15 23:37	Cleanup Method:	EPA 3630
Analyst:	SF	Cleanup Date:	11/04/15
Percent Solids:	72%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	37.9		ug/kg	6.58	--	1
Acenaphthylene	448		ug/kg	6.58	--	1
Acenaphthene	83.4		ug/kg	6.58	--	1
Fluorene	789		ug/kg	6.58	--	1
Phenanthrene	4590	E	ug/kg	6.58	--	1
Anthracene	1250		ug/kg	6.58	--	1
Fluoranthene	6940	E	ug/kg	6.58	--	1
Pyrene	4550	E	ug/kg	6.58	--	1
Benz(a)anthracene	2980	E	ug/kg	6.58	--	1
Chrysene	3000	E	ug/kg	6.58	--	1
Benzo(b)fluoranthene	2450	E	ug/kg	6.58	--	1
Benzo(k)fluoranthene	1880	E	ug/kg	6.58	--	1
Benzo(a)pyrene	2190	E	ug/kg	6.58	--	1
Indeno(1,2,3-cd)Pyrene	1550	E	ug/kg	6.58	--	1
Dibenz(a,h)anthracene	529		ug/kg	6.58	--	1
Benzo(ghi)perylene	1380	E	ug/kg	6.58	--	1
Cl2-BZ#8	ND		ug/kg	0.658	--	1
Cl3-BZ#18	ND		ug/kg	0.658	--	1
Cl3-BZ#28	ND		ug/kg	0.658	--	1
Cl4-BZ#44	ND		ug/kg	0.658	--	1
Cl4-BZ#49	ND		ug/kg	0.658	--	1
Cl4-BZ#52	ND		ug/kg	0.658	--	1
Cl4-BZ#66	ND		ug/kg	0.658	--	1
Cl5-BZ#87	ND		ug/kg	0.658	--	1
Cl5-BZ#101	ND		ug/kg	0.658	--	1
Cl5-BZ#105	ND		ug/kg	0.658	--	1
Cl5-BZ#118	ND		ug/kg	0.658	--	1
Cl6-BZ#128	ND		ug/kg	0.658	--	1
Cl6-BZ#138	ND		ug/kg	0.658	--	1
Cl6-BZ#153	ND		ug/kg	0.658	--	1

Project Name: BLUE HILL HARBOR | **Lab Number:** L1527873
Project Number: Not Specified | **Report Date:** 11/19/15

SAMPLE RESULTS

Lab ID: L1527873-10 | Date Collected: 10/28/15 14:00
Client ID: COMP FG | Date Received: 10/29/15
Sample Location: BLUE HILL, ME | Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ug/kg	0.658	--	1
Cl7-BZ#180	ND		ug/kg	0.658	--	1
Cl7-BZ#183	ND		ug/kg	0.658	--	1
Cl7-BZ#184	ND		ug/kg	0.658	--	1
Cl7-BZ#187	ND		ug/kg	0.658	--	1
Cl8-BZ#195	ND		ug/kg	0.658	--	1
Cl9-BZ#206	ND		ug/kg	0.658	--	1
Cl10-BZ#209	ND		ug/kg	0.658	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	79		30-150
Pyrene-d10	78		30-150
Benzo(b)fluoranthene-d12	75		30-150
DBOB	94		30-150
BZ 198	92		30-150

Project Name: BLUE HILL HARBOR | **Lab Number:** L1527873
Project Number: Not Specified | **Report Date:** 11/19/15

SAMPLE RESULTS

Lab ID:	L1527873-10 D	Date Collected:	10/28/15 14:00
Client ID:	COMP FG	Date Received:	10/29/15
Sample Location:	BLUE HILL, ME	Field Prep:	Not Specified
Matrix:	Soil	Extraction Method:	EPA 3570
Analytical Method:	105,8270D-SIM/680(M)	Extraction Date:	11/03/15 18:24
Analytical Date:	11/06/15 11:40	Cleanup Method:	EPA 3630
Analyst:	SF	Cleanup Date:	11/04/15
Percent Solids:	72%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Phenanthrene	4780		ug/kg	164	--	25
Fluoranthene	7090		ug/kg	164	--	25
Pyrene	4740		ug/kg	164	--	25
Benz(a)anthracene	2760		ug/kg	164	--	25
Chrysene	2880		ug/kg	164	--	25
Benzo(b)fluoranthene	2340		ug/kg	164	--	25
Benzo(k)fluoranthene	1850		ug/kg	164	--	25
Benzo(a)pyrene	2090		ug/kg	164	--	25
Indeno(1,2,3-cd)Pyrene	1380		ug/kg	164	--	25
Benzo(ghi)perylene	1170		ug/kg	164	--	25

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	71		30-150
Pyrene-d10	72		30-150
Benzo(b)fluoranthene-d12	69		30-150
DBOB	92		30-150
BZ 198	94		30-150

Project Name: BLUE HILL HARBOR **Lab Number:** L1527873

Project Number: Not Specified **Report Date:** 11/19/15

SAMPLE RESULTS

Lab ID:	L1527873-12	Date Collected:	10/28/15 14:53
Client ID:	BLANK	Date Received:	10/29/15
Sample Location:	BLUE HILL, ME	Field Prep:	Not Specified
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	105,8270D-SIM/680(M)	Extraction Date:	11/02/15 13:00
Analytical Date:	11/03/15 16:08		
Analyst:	SF		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Naphthalene	11.7		ng/l	10.8	--	1
Acenaphthylene	ND		ng/l	10.8	--	1
Acenaphthene	ND		ng/l	10.8	--	1
Fluorene	ND		ng/l	10.8	--	1
Phenanthrene	ND		ng/l	10.8	--	1
Anthracene	ND		ng/l	10.8	--	1
Fluoranthene	ND		ng/l	10.8	--	1
Pyrene	ND		ng/l	10.8	--	1
Benz(a)anthracene	ND		ng/l	10.8	--	1
Chrysene	ND		ng/l	10.8	--	1
Benzo(b)fluoranthene	ND		ng/l	10.8	--	1
Benzo(k)fluoranthene	ND		ng/l	10.8	--	1
Benzo(a)pyrene	ND		ng/l	10.8	--	1
Indeno(1,2,3-cd)Pyrene	ND		ng/l	10.8	--	1
Dibenz(a,h)anthracene	ND		ng/l	10.8	--	1
Benzo(ghi)perylene	ND		ng/l	10.8	--	1
Cl2-BZ#8	ND		ng/l	1.08	--	1
Cl3-BZ#18	ND		ng/l	1.08	--	1
Cl3-BZ#28	ND		ng/l	1.08	--	1
Cl4-BZ#44	ND		ng/l	1.08	--	1
Cl4-BZ#49	ND		ng/l	1.08	--	1
Cl4-BZ#52	ND		ng/l	1.08	--	1
Cl4-BZ#66	ND		ng/l	1.08	--	1
Cl5-BZ#87	ND		ng/l	1.08	--	1
Cl5-BZ#101	ND		ng/l	1.08	--	1
Cl5-BZ#105	ND		ng/l	1.08	--	1
Cl5-BZ#118	ND		ng/l	1.08	--	1
Cl6-BZ#128	ND		ng/l	1.08	--	1
Cl6-BZ#138	ND		ng/l	1.08	--	1
Cl6-BZ#153	ND		ng/l	1.08	--	1

Project Name: BLUE HILL HARBOR **Lab Number:** L1527873

Project Number: Not Specified **Report Date:** 11/19/15

SAMPLE RESULTS

Lab ID:	L1527873-12	Date Collected:	10/28/15 14:53
Client ID:	BLANK	Date Received:	10/29/15
Sample Location:	BLUE HILL, ME	Field Prep:	Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab						
Cl7-BZ#170	ND		ng/l	1.08	--	1
Cl7-BZ#180	ND		ng/l	1.08	--	1
Cl7-BZ#183	ND		ng/l	1.08	--	1
Cl7-BZ#184	ND		ng/l	1.08	--	1
Cl7-BZ#187	ND		ng/l	1.08	--	1
Cl8-BZ#195	ND		ng/l	1.08	--	1
Cl9-BZ#206	ND		ng/l	1.08	--	1
Cl10-BZ#209	ND		ng/l	1.08	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	65		30-150
Pyrene-d10	85		30-150
Benzo(b)fluoranthene-d12	84		30-150
DBOB	73		30-150
BZ 198	77		30-150

Project Name: BLUE HILL HARBOR | **Lab Number:** L1527873
Project Number: Not Specified | **Report Date:** 11/19/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 105,8270D-SIM/680(M)
Analytical Date: 11/03/15 10:30
Analyst: SF

Extraction Method: EPA 3510C
Extraction Date: 11/02/15 13:00

Parameter	Result	Qualifier	Units	RL	MDL
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab for sample(s): 12 Batch: WG836522-1					
Naphthalene	ND		ng/l	10.0	--
Acenaphthylene	ND		ng/l	10.0	--
Acenaphthene	ND		ng/l	10.0	--
Fluorene	ND		ng/l	10.0	--
Phenanthrene	ND		ng/l	10.0	--
Anthracene	ND		ng/l	10.0	--
Fluoranthene	ND		ng/l	10.0	--
Pyrene	ND		ng/l	10.0	--
Benz(a)anthracene	ND		ng/l	10.0	--
Chrysene	ND		ng/l	10.0	--
Benzo(b)fluoranthene	ND		ng/l	10.0	--
Benzo(k)fluoranthene	ND		ng/l	10.0	--
Benzo(a)pyrene	ND		ng/l	10.0	--
Indeno(1,2,3-cd)Pyrene	ND		ng/l	10.0	--
Dibenz(a,h)anthracene	ND		ng/l	10.0	--
Benzo(ghi)perylene	ND		ng/l	10.0	--
Cl2-BZ#8	ND		ng/l	1.00	--
Cl3-BZ#18	ND		ng/l	1.00	--
Cl3-BZ#28	ND		ng/l	1.00	--
Cl4-BZ#44	ND		ng/l	1.00	--
Cl4-BZ#49	ND		ng/l	1.00	--
Cl4-BZ#52	ND		ng/l	1.00	--
Cl4-BZ#66	ND		ng/l	1.00	--
Cl5-BZ#87	ND		ng/l	1.00	--
Cl5-BZ#101	ND		ng/l	1.00	--
Cl5-BZ#105	ND		ng/l	1.00	--
Cl5-BZ#118	ND		ng/l	1.00	--
Cl6-BZ#128	ND		ng/l	1.00	--
Cl6-BZ#138	ND		ng/l	1.00	--

Project Name: BLUE HILL HARBOR | **Lab Number:** L1527873
Project Number: Not Specified | **Report Date:** 11/19/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 105,8270D-SIM/680(M)
Analytical Date: 11/03/15 10:30
Analyst: SF

Extraction Method: EPA 3510C
Extraction Date: 11/02/15 13:00

Parameter	Result	Qualifier	Units	RL	MDL
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab for sample(s): 12 Batch: WG836522-1					
Cl6-BZ#153	ND		ng/l	1.00	--
Cl7-BZ#170	ND		ng/l	1.00	--
Cl7-BZ#180	ND		ng/l	1.00	--
Cl7-BZ#183	ND		ng/l	1.00	--
Cl7-BZ#184	ND		ng/l	1.00	--
Cl7-BZ#187	ND		ng/l	1.00	--
Cl8-BZ#195	ND		ng/l	1.00	--
Cl9-BZ#206	ND		ng/l	1.00	--
Cl10-BZ#209	ND		ng/l	1.00	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	86		30-150
Pyrene-d10	96		30-150
Benzo(b)fluoranthene-d12	104		30-150
DBOB	75		30-150
BZ 198	78		30-150

Project Name:	BLUE HILL HARBOR	**Lab Number:**	L1527873
Project Number:	Not Specified	**Report Date:**	11/19/15

Method Blank Analysis
Batch Quality Control

Analytical Method:	105,8270D-SIM/680(M)	Extraction Method:	EPA 3570
Analytical Date:	11/05/15 18:01	Extraction Date:	11/03/15 18:24
Analyst:	SF	Cleanup Method:	EPA 3630
		Cleanup Date:	11/04/15

Parameter	Result	Qualifier	Units	RL	MDL
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab for sample(s): 01,04,07,10 Batch: WG836995-1					
Naphthalene	ND		ug/kg	5.00	--
Acenaphthylene	ND		ug/kg	5.00	--
Acenaphthene	ND		ug/kg	5.00	--
Fluorene	ND		ug/kg	5.00	--
Phenanthrene	ND		ug/kg	5.00	--
Anthracene	ND		ug/kg	5.00	--
Fluoranthene	ND		ug/kg	5.00	--
Pyrene	ND		ug/kg	5.00	--
Benz(a)anthracene	ND		ug/kg	5.00	--
Chrysene	ND		ug/kg	5.00	--
Benzo(b)fluoranthene	ND		ug/kg	5.00	--
Benzo(k)fluoranthene	ND		ug/kg	5.00	--
Benzo(a)pyrene	ND		ug/kg	5.00	--
Indeno(1,2,3-cd)Pyrene	ND		ug/kg	5.00	--
Dibenz(a,h)anthracene	ND		ug/kg	5.00	--
Benzo(ghi)perylene	ND		ug/kg	5.00	--
Cl2-BZ#8	ND		ug/kg	0.500	--
Cl3-BZ#18	ND		ug/kg	0.500	--
Cl3-BZ#28	ND		ug/kg	0.500	--
Cl4-BZ#44	ND		ug/kg	0.500	--
Cl4-BZ#49	ND		ug/kg	0.500	--
Cl4-BZ#52	ND		ug/kg	0.500	--
Cl4-BZ#66	ND		ug/kg	0.500	--
Cl5-BZ#87	ND		ug/kg	0.500	--
Cl5-BZ#101	ND		ug/kg	0.500	--
Cl5-BZ#105	ND		ug/kg	0.500	--
Cl5-BZ#118	ND		ug/kg	0.500	--
Cl6-BZ#128	ND		ug/kg	0.500	--
Cl6-BZ#138	ND		ug/kg	0.500	--

Project Name: BLUE HILL HARBOR
Project Number: Not Specified

Lab Number: L1527873
Report Date: 11/19/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 105,8270D-SIM/680(M)
Analytical Date: 11/05/15 18:01
Analyst: SF

Extraction Method: EPA 3570
Extraction Date: 11/03/15 18:24
Cleanup Method: EPA 3630
Cleanup Date: 11/04/15

Parameter	Result	Qualifier	Units	RL	MDL
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab for sample(s): 01,04,07,10 Batch: WG836995-1					
Cl6-BZ#153	ND		ug/kg	0.500	--
Cl7-BZ#170	ND		ug/kg	0.500	--
Cl7-BZ#180	ND		ug/kg	0.500	--
Cl7-BZ#183	ND		ug/kg	0.500	--
Cl7-BZ#184	ND		ug/kg	0.500	--
Cl7-BZ#187	ND		ug/kg	0.500	--
Cl8-BZ#195	ND		ug/kg	0.500	--
Cl9-BZ#206	ND		ug/kg	0.500	--
Cl10-BZ#209	ND		ug/kg	0.500	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	86		30-150
Pyrene-d10	80		30-150
Benzo(b)fluoranthene-d12	82		30-150
DBOB	98		30-150
BZ 198	95		30-150

Lab Control Sample Analysis
Batch Quality Control

Project Name: BLUE HILL HARBOR
Project Number: Not Specified
Lab Number: L1527873
Report Date: 11/19/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 12 Batch: WG836522-2 WG836522-3								
Naphthalene	83		82		50-120	1		30
Acenaphthylene	79		78		50-120	1		30
Acenaphthene	81		80		50-120	1		30
Fluorene	82		80		50-120	2		30
Phenanthrene	87		87		50-120	0		30
Anthracene	76		73		50-120	4		30
Fluoranthene	87		82		50-120	6		30
Pyrene	85		81		50-120	5		30
Benz(a)anthracene	88		84		50-120	5		30
Chrysene	86		83		50-120	4		30
Benzo(b)fluoranthene	91		95		50-120	4		30
Benzo(k)fluoranthene	99		84		50-120	16		30
Benzo(a)pyrene	86		82		50-120	5		30
Indeno(1,2,3-cd)Pyrene	79		74		50-120	7		30
Dibenz(a,h)anthracene	86		82		50-120	5		30
Benzo(ghi)perylene	86		81		50-120	6		30
Cl2-BZ#8	86		93		50-120	8		30
Cl3-BZ#18	88		93		50-120	6		30
Cl3-BZ#28	88		94		50-120	7		30
Cl4-BZ#44	93		97		50-120	4		30
Cl4-BZ#49	87		90		50-120	3		30

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Lab Control Sample Analysis
Batch Quality Control

Project Name: BLUE HILL HARBOR
Project Number: Not Specified

Lab Number: L1527873
Report Date: 11/19/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 12 Batch: WG836522-2 WG836522-3								
Cl4-BZ#52	95		102		50-120	7		30
Cl4-BZ#66	91		96		50-120	5		30
Cl5-BZ#87	92		96		50-120	4		30
Cl5-BZ#101	94		98		50-120	4		30
Cl5-BZ#105	91		96		50-120	5		30
Cl5-BZ#118	92		95		50-120	3		30
Cl6-BZ#128	88		92		50-120	4		30
Cl6-BZ#138	90		94		50-120	4		30
Cl6-BZ#153	93		94		50-120	1		30
Cl7-BZ#170	88		90		50-120	2		30
Cl7-BZ#180	89		93		50-120	4		30
Cl7-BZ#183	86		89		50-120	3		30
Cl7-BZ#184	91		95		50-120	4		30
Cl7-BZ#187	88		93		50-120	6		30
Cl8-BZ#195	88		92		50-120	4		30
Cl9-BZ#206	89		92		50-120	3		30
Cl10-BZ#209	95		100		50-120	5		30

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Lab Control Sample Analysis
Batch Quality Control

Project Name: BLUE HILL HARBOR

Project Number: Not Specified

Lab Number: L1527873

Report Date: 11/19/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 12 Batch: WG836522-2 WG836522-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Methylnaphthalene-d10	80		78		30-150
Pyrene-d10	90		87		30-150
Benzo(b)fluoranthene-d12	96		92		30-150
DBOB	74		78		30-150
BZ 198	87		88		30-150

Lab Control Sample Analysis
Batch Quality Control

Project Name: BLUE HILL HARBOR

Project Number: Not Specified

Lab Number: L1527873

Report Date: 11/19/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01,04,07,10 Batch: WG836995-2 WG836995-3								
Naphthalene	75		78		50-120	4		30
Acenaphthylene	72		73		50-120	1		30
Acenaphthene	74		74		50-120	0		30
Fluorene	76		75		50-120	1		30
Phenanthrene	76		72		50-120	5		30
Anthracene	69		65		50-120	6		30
Fluoranthene	74		72		50-120	3		30
Pyrene	70		66		50-120	6		30
Benz(a)anthracene	73		70		50-120	4		30
Chrysene	72		69		50-120	4		30
Benzo(b)fluoranthene	75		72		50-120	4		30
Benzo(k)fluoranthene	82		77		50-120	6		30
Benzo(a)pyrene	72		69		50-120	4		30
Indeno(1,2,3-cd)Pyrene	80		71		50-120	12		30
Dibenz(a,h)anthracene	78		74		50-120	5		30
Benzo(ghi)perylene	75		71		50-120	5		30
Cl2-BZ#8	76		71		50-120	7		30
Cl3-BZ#18	77		72		50-120	7		30
Cl3-BZ#28	77		73		50-120	5		30
Cl4-BZ#44	80		76		50-120	5		30
Cl4-BZ#49	74		72		50-120	3		30

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Lab Control Sample Analysis
Batch Quality Control

Project Name: BLUE HILL HARBOR
Project Number: Not Specified

Lab Number: L1527873
Report Date: 11/19/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01,04,07,10 Batch: WG836995-2 WG836995-3								
Cl4-BZ#52	83		75		50-120	10		30
Cl4-BZ#66	73		70		50-120	4		30
Cl5-BZ#87	81		78		50-120	4		30
Cl5-BZ#101	82		79		50-120	4		30
Cl5-BZ#105	82		77		50-120	6		30
Cl5-BZ#118	79		76		50-120	4		30
Cl6-BZ#128	81		78		50-120	4		30
Cl6-BZ#138	82		79		50-120	4		30
Cl6-BZ#153	81		80		50-120	1		30
Cl7-BZ#170	87		84		50-120	4		30
Cl7-BZ#180	85		81		50-120	5		30
Cl7-BZ#183	82		80		50-120	2		30
Cl7-BZ#184	86		82		50-120	5		30
Cl7-BZ#187	85		81		50-120	5		30
Cl8-BZ#195	92		89		50-120	3		30
Cl9-BZ#206	89		87		50-120	2		30
Cl10-BZ#209	100		94		50-120	6		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: BLUE HILL HARBOR
Project Number: Not Specified
Lab Number: L1527873
Report Date: 11/19/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01,04,07,10 Batch: WG836995-2 WG836995-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Methylnaphthalene-d10	80		82		30-150
Pyrene-d10	78		73		30-150
Benzo(b)fluoranthene-d12	82		77		30-150
DBOB	93		87		30-150
BZ 198	87		85		30-150

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Matrix Spike Analysis
Batch Quality Control

Project Name: BLUE HILL HARBOR
Project Number: Not Specified

Lab Number: L1527873
Report Date: 11/19/15

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01,04,07,10 QC Batch ID: WG836995-4 WG836995-5 QC Sample: L1527873-07 Client ID: COMP DE												
Naphthalene	17.6	335	267	74		256	73		50-120	4		30
Acenaphthylene	108	335	363	76		338	71		50-120	7		30
Acenaphthene	7.90	335	250	72		237	70		50-120	5		30
Fluorene	27.0	335	306	83		293	82		50-120	4		30
Phenanthrene	407	335	771	109		751	106		50-120	3		30
Anthracene	78.3	335	346	80		328	77		50-120	5		30
Fluoranthene	1010	335	1360E	104		1320E	95		50-120	3		30
Pyrene	943	335	1280	101		1230	88		50-120	4		30
Benz(a)anthracene	532	335	800	80		763	71		50-120	5		30
Chrysene	604	335	888	85		838	72		50-120	6		30
Benzo(b)fluoranthene	537	335	777	72		749	65		50-120	4		30
Benzo(k)fluoranthene	402	335	717	94		691	89		50-120	4		30
Benzo(a)pyrene	526	335	803	83		765	73		50-120	5		30
Indeno(1,2,3-cd)Pyrene	363	335	720	107		672	95		50-120	7		30
Dibenz(a,h)anthracene	87.7	335	372	85		361	84		50-120	3		30
Benzo(ghi)perylene	345	335	624	83		584	73		50-120	7		30
Cl2-BZ#8	ND	67	50.1	75		48.7	75		50-120	3		30
Cl3-BZ#18	ND	67	50.4	75		48.8	75		50-120	3		30
Cl3-BZ#28	ND	67	51.4	77		49.7	76		50-120	3		30
Cl4-BZ#44	ND	67	54.5	81		52.6	81		50-120	4		30
Cl4-BZ#49	ND	67	51.4	77		50.0	77		50-120	3		30

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Matrix Spike Analysis
Batch Quality Control

Project Name: BLUE HILL HARBOR

Project Number: Not Specified

Lab Number: L1527873

Report Date: 11/19/15

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01,04,07,10 QC Batch ID: WG836995-4 WG836995-5 QC Sample: L1527873-07 Client ID: COMP DE												
Cl4-BZ#52	ND	67	53.1	79		51.5	79		50-120	3		30
Cl4-BZ#66	ND	67	49.9	75		48.1	74		50-120	4		30
Cl5-BZ#87	ND	67	55.3	83		52.8	81		50-120	5		30
Cl5-BZ#101	0.757	67	56.1	83		54.6	83		50-120	3		30
Cl5-BZ#105	ND	67	57.1	85		54.4	83		50-120	5		30
Cl5-BZ#118	0.809	67	54.4	80		52.7	80		50-120	3		30
Cl6-BZ#128	ND	67	56.4	84		54.0	83		50-120	4		30
Cl6-BZ#138	1.06	67	57.6	84		55.2	83		50-120	4		30
Cl6-BZ#153	0.679	67	56.4	83		54.7	83		50-120	3		30
Cl7-BZ#170	ND	67	61.6	92		59.5	91		50-120	3		30
Cl7-BZ#180	ND	67	57.8	86		55.5	85		50-120	4		30
Cl7-BZ#183	ND	67	57.2	85		54.8	84		50-120	4		30
Cl7-BZ#184	ND	67	58.5	87		56.5	87		50-120	3		30
Cl7-BZ#187	ND	67	57.7	86		55.9	86		50-120	3		30
Cl8-BZ#195	ND	67	63.8	95		60.3	93		50-120	6		30
Cl9-BZ#206	ND	67	61.3	92		59.3	91		50-120	3		30
Cl10-BZ#209	ND	67	66.2	99		64.6	99		50-120	2		30

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	77		75		30-150

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Matrix Spike Analysis
Batch Quality Control

Project Name: BLUE HILL HARBOR
Project Number: Not Specified
Lab Number: L1527873
Report Date: 11/19/15

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01,04,07,10 QC Batch ID: WG836995-4 WG836995-5 QC Sample: L1527873-07 Client ID: COMP DE												

Surrogate	*MS % Recovery*	*MS Qualifier*	*MSD % Recovery*	*MSD Qualifier*	*Acceptance Criteria*
BZ 198	94		90		30-150
Benzo(b)fluoranthene-d12	76		72		30-150
DBOB	95		92		30-150
Pyrene-d10	76		74		30-150

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Lab Duplicate Analysis
Batch Quality Control

Project Name: BLUE HILL HARBOR
Project Number: Not Specified

Lab Number: L1527873
Report Date: 11/19/15

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01,04,07,10 QC Batch ID: WG836995-6 QC Sample: L1527873-04 Client ID: COMP BC						
Naphthalene	ND	ND	ug/kg	NC		30
Acenaphthylene	16.1	22.0	ug/kg	**31**	Q	30
Acenaphthene	ND	ND	ug/kg	NC		30
Fluorene	ND	17.5	ug/kg	NC		30
Phenanthrene	96.7	155	ug/kg	**46**	Q	30
Anthracene	10.6	34.7	ug/kg	**106**	Q	30
Fluoranthene	191	279	ug/kg	**37**	Q	30
Pyrene	170	256	ug/kg	**40**	Q	30
Benz(a)anthracene	68.9	118	ug/kg	**53**	Q	30
Chrysene	101	149	ug/kg	**38**	Q	30
Benzo(b)fluoranthene	88.5	121	ug/kg	**31**	Q	30
Benzo(k)fluoranthene	80.6	116	ug/kg	**36**	Q	30
Benzo(a)pyrene	84.0	125	ug/kg	**39**	Q	30
Indeno(1,2,3-cd)Pyrene	66.8	90.1	ug/kg	30		30
Dibenz(a,h)anthracene	14.5	20.2	ug/kg	**33**	Q	30
Benzo(ghi)perylene	61.8	82.8	ug/kg	29		30
Cl2-BZ#8	ND	ND	ug/kg	NC		30
Cl3-BZ#18	ND	ND	ug/kg	NC		30
Cl3-BZ#28	ND	ND	ug/kg	NC		30

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Lab Duplicate Analysis
Batch Quality Control

Project Name: BLUE HILL HARBOR
Project Number: Not Specified
Lab Number: L1527873
Report Date: 11/19/15

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01,04,07,10 QC Batch ID: WG836995-6 QC Sample: L1527873-04 Client ID: COMP BC					
Cl4-BZ#44	ND	ND	ug/kg	NC	30
Cl4-BZ#49	ND	ND	ug/kg	NC	30
Cl4-BZ#52	ND	ND	ug/kg	NC	30
Cl4-BZ#66	ND	ND	ug/kg	NC	30
Cl5-BZ#87	ND	ND	ug/kg	NC	30
Cl5-BZ#101	ND	ND	ug/kg	NC	30
Cl5-BZ#105	ND	ND	ug/kg	NC	30
Cl5-BZ#118	ND	ND	ug/kg	NC	30
Cl6-BZ#128	ND	ND	ug/kg	NC	30
Cl6-BZ#138	ND	ND	ug/kg	NC	30
Cl6-BZ#153	ND	ND	ug/kg	NC	30
Cl7-BZ#170	ND	ND	ug/kg	NC	30
Cl7-BZ#180	ND	ND	ug/kg	NC	30
Cl7-BZ#183	ND	ND	ug/kg	NC	30
Cl7-BZ#184	ND	ND	ug/kg	NC	30
Cl7-BZ#187	ND	ND	ug/kg	NC	30
Cl8-BZ#195	ND	ND	ug/kg	NC	30
Cl9-BZ#206	ND	ND	ug/kg	NC	30
Cl10-BZ#209	ND	ND	ug/kg	NC	30

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Lab Duplicate Analysis
Batch Quality Control

Project Name: BLUE HILL HARBOR
Project Number: Not Specified
Lab Number: L1527873
Report Date: 11/19/15

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
RIM PAHs/PCB Congeners by GC/MS - Mansfield Lab Associated sample(s): 01,04,07,10 QC Batch ID: WG836995-6 QC Sample: L1527873-04 Client ID: COMP BC					

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
2-Methylnaphthalene-d10	72		72		30-150
Pyrene-d10	72		72		30-150
Benzo(b)fluoranthene-d12	73		73		30-150
DBOB	88		90		30-150
BZ 198	86		85		30-150

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Project Name: BLUE HILL HARBOR **Lab Number:** L1527873
Project Number: Not Specified **Report Date:** 11/19/15

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG836995-7

Parameter	% Recovery	Qual	QC Criteria
Phenanthrene	60		40-140
Fluoranthene	66		40-140
Pyrene	53		40-140
Benz(a)anthracene	56		40-140
Chrysene	72		40-140
Benzo(b)fluoranthene	64		40-140
Benzo(k)fluoranthene	96		40-140
Benzo(a)pyrene	48		40-140
Indeno(1,2,3-cd)Pyrene	62		40-140
Dibenz(a,h)anthracene	130		40-140
Benzo(ghi)perylene	59		40-140
Cl2-BZ#8	67		40-140
Cl3-BZ#18	82		40-140
Cl3-BZ#28	47		40-140
Cl4-BZ#44	78		40-140
Cl4-BZ#49	73		40-140
Cl4-BZ#52	69		40-140
Cl4-BZ#66	54		40-140
Cl5-BZ#87	70		40-140
Cl5-BZ#101	77		40-140
Cl5-BZ#105	78		40-140
Cl5-BZ#118	67		40-140
Cl6-BZ#128	101		40-140
Cl6-BZ#138	90		40-140
Cl6-BZ#153	62		40-140
Cl7-BZ#170	93		40-140
Cl7-BZ#180	77		40-140
Cl7-BZ#183	77		40-140
Cl7-BZ#187	90		40-140
Cl9-BZ#206	84		40-140
Cl10-BZ#209	81		40-140
2-Methylnaphthalene-d10 (Surrogate)	68		30-150
Pyrene-d10 (Surrogate)	67		30-150
Benzo(b)fluoranthene-d12 (Surrogate)	67		30-150
DBOB (Surrogate)	85		30-150
BZ 198 (Surrogate)	79		30-150

PESTICIDES

Project Name: BLUE HILL HARBOR | **Lab Number:** L1527873
Project Number: Not Specified | **Report Date:** 11/19/15

SAMPLE RESULTS

Lab ID:	L1527873-01	Date Collected:	10/28/15 14:53
Client ID:	A	Date Received:	10/29/15
Sample Location:	BLUE HILL, ME	Field Prep:	Not Specified
Matrix:	Soil	Extraction Method:	EPA 3570
Analytical Method:	1,8081B	Extraction Date:	11/03/15 18:24
Analytical Date:	11/06/15 19:10	Cleanup Method:	EPA 3630
Analyst:	SA	Cleanup Date:	11/04/15
Percent Solids:	45%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	1.04	--	1	A
gamma-BHC	ND		ug/kg	0.523	--	1	A
Heptachlor	ND		ug/kg	0.523	--	1	A
Aldrin	ND		ug/kg	0.523	--	1	A
Heptachlor epoxide	ND		ug/kg	1.04	--	1	B
Oxychlordane	ND		ug/kg	1.04	--	1	B
trans-Chlordane	ND		ug/kg	0.523	--	1	A
Endosulfan I	ND		ug/kg	0.523	--	1	A
cis-Chlordane	ND		ug/kg	0.523	--	1	A
trans-Nonachlor	ND		ug/kg	0.523	--	1	A
4,4'-DDE	ND		ug/kg	0.523	--	1	A
Dieldrin	ND		ug/kg	0.523	--	1	A
Endrin	ND		ug/kg	0.523	--	1	A
Endosulfan II	ND		ug/kg	0.523	--	1	A
4,4'-DDD	ND		ug/kg	0.523	--	1	B
cis-Nonachlor	ND		ug/kg	0.523	--	1	A
4,4'-DDT	ND		ug/kg	0.523	--	1	A
Methoxychlor	ND		ug/kg	5.23	--	1	A
Toxaphene	ND		ug/kg	26.2	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	40		30-150	A
BZ 198	**186**	Q	30-150	A
DBOB	36		30-150	B
BZ 198	52		30-150	B

Project Name: BLUE HILL HARBOR **Lab Number:** L1527873

Project Number: Not Specified **Report Date:** 11/19/15

SAMPLE RESULTS

Lab ID:	L1527873-04	Date Collected:	10/28/15 14:46
Client ID:	COMP BC	Date Received:	10/29/15
Sample Location:	BLUE HILL, ME	Field Prep:	Not Specified
Matrix:	Soil	Extraction Method:	EPA 3570
Analytical Method:	1,8081B	Extraction Date:	11/03/15 18:24
Analytical Date:	11/06/15 19:43	Cleanup Method:	EPA 3630
Analyst:	SA	Cleanup Date:	11/04/15
Percent Solids:	48%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.999	--	1	A
gamma-BHC	ND		ug/kg	0.499	--	1	A
Heptachlor	ND		ug/kg	0.499	--	1	A
Aldrin	ND		ug/kg	0.499	--	1	A
Heptachlor epoxide	ND		ug/kg	0.999	--	1	B
Oxychlordane	ND		ug/kg	0.999	--	1	B
trans-Chlordane	ND		ug/kg	0.499	--	1	A
Endosulfan I	ND		ug/kg	0.499	--	1	A
cis-Chlordane	ND		ug/kg	0.499	--	1	A
trans-Nonachlor	ND		ug/kg	0.499	--	1	A
4,4'-DDE	ND		ug/kg	0.499	--	1	A
Dieldrin	ND		ug/kg	0.499	--	1	A
Endrin	ND		ug/kg	0.499	--	1	A
Endosulfan II	ND		ug/kg	0.499	--	1	A
4,4'-DDD	ND		ug/kg	0.499	--	1	B
cis-Nonachlor	ND		ug/kg	0.499	--	1	A
4,4'-DDT	ND		ug/kg	0.499	--	1	A
Methoxychlor	ND		ug/kg	4.99	--	1	A
Toxaphene	ND		ug/kg	25.1	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	52		30-150	A
BZ 198	126		30-150	A
DBOB	47		30-150	B
BZ 198	68		30-150	B

Project Name: BLUE HILL HARBOR **Lab Number:** L1527873

Project Number: Not Specified **Report Date:** 11/19/15

SAMPLE RESULTS

Lab ID:	L1527873-07	Date Collected:	10/28/15 14:22
Client ID:	COMP DE	Date Received:	10/29/15
Sample Location:	BLUE HILL, ME	Field Prep:	Not Specified
Matrix:	Soil	Extraction Method:	EPA 3570
Analytical Method:	1,8081B	Extraction Date:	11/03/15 18:24
Analytical Date:	11/06/15 20:48	Cleanup Method:	EPA 3630
Analyst:	SA	Cleanup Date:	11/04/15
Percent Solids:	73%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.675	--	1	A
gamma-BHC	ND		ug/kg	0.338	--	1	A
Heptachlor	ND		ug/kg	0.338	--	1	A
Aldrin	ND		ug/kg	0.338	--	1	A
Heptachlor epoxide	ND		ug/kg	0.675	--	1	B
Oxychlordane	ND		ug/kg	0.675	--	1	B
trans-Chlordane	ND		ug/kg	0.338	--	1	A
Endosulfan I	ND		ug/kg	0.338	--	1	A
cis-Chlordane	ND		ug/kg	0.338	--	1	A
trans-Nonachlor	ND		ug/kg	0.338	--	1	A
4,4'-DDE	ND		ug/kg	0.338	--	1	A
Dieldrin	ND		ug/kg	0.338	--	1	A
Endrin	ND		ug/kg	0.338	--	1	A
Endosulfan II	ND		ug/kg	0.338	--	1	B
4,4'-DDD	0.814		ug/kg	0.338	--	1	B
cis-Nonachlor	ND		ug/kg	0.338	--	1	A
4,4'-DDT	0.592	IP	ug/kg	0.338	--	1	A
Methoxychlor	3.64	P	ug/kg	3.38	--	1	A
Toxaphene	ND		ug/kg	17.0	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	55		30-150	A
BZ 198	114		30-150	A
DBOB	47		30-150	B
BZ 198	64		30-150	B

Project Name: BLUE HILL HARBOR
Lab Number: L1527873
Project Number: Not Specified
Report Date: 11/19/15

SAMPLE RESULTS

Lab ID: L1527873-10
Client ID: COMP FG
Sample Location: BLUE HILL, ME
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 11/06/15 22:27
Analyst: SA
Percent Solids: 72%

Date Collected: 10/28/15 14:00
Date Received: 10/29/15
Field Prep: Not Specified
Extraction Method: EPA 3570
Extraction Date: 11/03/15 18:24
Cleanup Method: EPA 3630
Cleanup Date: 11/04/15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/kg	0.658	--	1	A
gamma-BHC	ND		ug/kg	0.329	--	1	A
Heptachlor	ND		ug/kg	0.329	--	1	A
Aldrin	ND		ug/kg	0.329	--	1	A
Heptachlor epoxide	ND		ug/kg	0.658	--	1	B
Oxychlordane	ND		ug/kg	0.658	--	1	B
trans-Chlordane	ND		ug/kg	0.329	--	1	A
Endosulfan I	ND		ug/kg	0.329	--	1	A
cis-Chlordane	ND		ug/kg	0.329	--	1	A
trans-Nonachlor	ND		ug/kg	0.329	--	1	A
4,4'-DDE	ND		ug/kg	0.329	--	1	A
Dieldrin	ND		ug/kg	0.329	--	1	A
Endrin	ND		ug/kg	0.329	--	1	A
Endosulfan II	ND		ug/kg	0.329	--	1	A
4,4'-DDD	ND		ug/kg	0.329	--	1	B
cis-Nonachlor	ND		ug/kg	0.329	--	1	A
4,4'-DDT	ND		ug/kg	0.329	--	1	A
Methoxychlor	ND		ug/kg	3.29	--	1	A
Toxaphene	ND		ug/kg	16.5	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	41		30-150	A
BZ 198	**490**	Q	30-150	A
DBOB	35		30-150	B
BZ 198	75		30-150	B

Project Name: BLUE HILL HARBOR **Lab Number:** L1527873

Project Number: Not Specified **Report Date:** 11/19/15

SAMPLE RESULTS

Lab ID:	L1527873-12	Date Collected:	10/28/15 14:53
Client ID:	BLANK	Date Received:	10/29/15
Sample Location:	BLUE HILL, ME	Field Prep:	Not Specified
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8081B	Extraction Date:	11/02/15 13:00
Analytical Date:	11/06/15 14:45		
Analyst:	SA		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
RIM Organochlorine Pesticides - Mansfield Lab							
Hexachlorobenzene	ND		ug/l	0.0021	--	1	A
gamma-BHC	ND		ug/l	0.0005	--	1	A
Heptachlor	ND		ug/l	0.0005	--	1	A
Aldrin	ND		ug/l	0.0010	--	1	A
Heptachlor epoxide	ND		ug/l	0.0005	--	1	B
Oxychlordane	ND		ug/l	0.0005	--	1	B
trans-Chlordane	ND		ug/l	0.0005	--	1	A
Endosulfan I	ND		ug/l	0.0005	--	1	A
cis-Chlordane	ND		ug/l	0.0005	--	1	A
trans-Nonachlor	ND		ug/l	0.0005	--	1	A
4,4'-DDE	ND		ug/l	0.0005	--	1	A
Dieldrin	ND		ug/l	0.0005	--	1	A
Endrin	ND		ug/l	0.0005	--	1	A
Endosulfan II	ND		ug/l	0.0005	--	1	A
4,4'-DDD	ND		ug/l	0.0005	--	1	A
cis-Nonachlor	ND		ug/l	0.0005	--	1	A
4,4'-DDT	ND		ug/l	0.0005	--	1	A
Methoxychlor	ND		ug/l	0.0053	--	1	A
Toxaphene	ND		ug/l	0.0268	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DBOB	52		30-150	A
BZ 198	67		30-150	A
DBOB	50		30-150	B
BZ 198	56		30-150	B

Project Name: BLUE HILL HARBOR
Lab Number: L1527873
Project Number: Not Specified
Report Date: 11/19/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 11/06/15 12:33
Analyst: SA

Extraction Method: EPA 3510C
Extraction Date: 11/02/15 13:00

Parameter	Result	Qualifier	Units	RL	MDL	Column
RIM Organochlorine Pesticides - Mansfield Lab for sample(s): 12 Batch: WG836523-1						
Hexachlorobenzene	ND		ug/l	0.0020	--	A
gamma-BHC	ND		ug/l	0.0005	--	A
Heptachlor	ND		ug/l	0.0005	--	A
Aldrin	ND		ug/l	0.0010	--	A
trans-Chlordane	ND		ug/l	0.0005	--	A
Endosulfan I	ND		ug/l	0.0005	--	A
cis-Chlordane	ND		ug/l	0.0005	--	A
trans-Nonachlor	ND		ug/l	0.0005	--	A
4,4'-DDE	ND		ug/l	0.0005	--	A
Dieldrin	ND		ug/l	0.0005	--	A
Endrin	ND		ug/l	0.0005	--	A
Endosulfan II	ND		ug/l	0.0005	--	A
4,4'-DDD	ND		ug/l	0.0005	--	A
cis-Nonachlor	ND		ug/l	0.0005	--	A
4,4'-DDT	ND		ug/l	0.0005	--	A
Methoxychlor	ND		ug/l	0.0050	--	A
Toxaphene	ND		ug/l	0.0250	--	A
Heptachlor epoxide	ND		ug/l	0.0005	--	B
Oxychlordane	ND		ug/l	0.0005	--	B

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
DBOB	68		30-150	A
BZ 198	**164**	Q	30-150	A
DBOB	65		30-150	B
BZ 198	73		30-150	B

Project Name: BLUE HILL HARBOR

Project Number: Not Specified

Lab Number: L1527873

Report Date: 11/19/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 11/06/15 16:58
Analyst: SA

Extraction Method: EPA 3570
Extraction Date: 11/03/15 18:24
Cleanup Method: EPA 3630
Cleanup Date: 11/04/15

Parameter	Result	Qualifier	Units	RL	MDL	Column
RIM Organochlorine Pesticides - Mansfield Lab for sample(s): 01,04,07,10 Batch: WG836998-1						
Hexachlorobenzene	ND		ug/kg	0.500	--	A
gamma-BHC	ND		ug/kg	0.250	--	A
Heptachlor	ND		ug/kg	0.250	--	A
Aldrin	ND		ug/kg	0.250	--	A
trans-Chlordane	ND		ug/kg	0.250	--	A
Endosulfan I	ND		ug/kg	0.250	--	A
cis-Chlordane	ND		ug/kg	0.250	--	A
trans-Nonachlor	ND		ug/kg	0.250	--	A
4,4'-DDE	ND		ug/kg	0.250	--	A
Dieldrin	ND		ug/kg	0.250	--	A
Endrin	ND		ug/kg	0.250	--	A
Endosulfan II	ND		ug/kg	0.250	--	A
4,4'-DDD	ND		ug/kg	0.250	--	A
cis-Nonachlor	ND		ug/kg	0.250	--	A
4,4'-DDT	ND		ug/kg	0.250	--	A
Methoxychlor	ND		ug/kg	2.50	--	A
Toxaphene	ND		ug/kg	12.6	--	A
Heptachlor epoxide	ND		ug/kg	0.500	--	B
Oxychlordane	ND		ug/kg	0.500	--	B

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
DBOB	53		30-150	A
BZ 198	70		30-150	A
DBOB	51		30-150	B
BZ 198	58		30-150	B

Lab Control Sample Analysis
Batch Quality Control

Project Name: BLUE HILL HARBOR
Project Number: Not Specified
Lab Number: L1527873
Report Date: 11/19/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 12 Batch: WG836523-2 WG836523-3									
Hexachlorobenzene	70		76		50-120	8		30	A
gamma-BHC	76		80		50-120	6		30	A
Heptachlor	87		92		50-120	6		30	A
Aldrin	82		86		50-120	5		30	A
trans-Chlordane	89		93		50-120	4		30	A
Endosulfan I	85		89		50-120	4		30	A
cis-Chlordane	86		89		50-120	4		30	A
trans-Nonachlor	89		92		50-120	4		30	A
4,4'-DDE	109		113		50-120	4		30	A
Dieldrin	92		96		50-120	4		30	A
Endrin	97		100		50-120	3		30	A
cis-Nonachlor	85		88		50-120	4		30	A
4,4'-DDT	97		101		50-120	5		30	A
Methoxychlor	110		114		50-120	4		30	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DBOB	64		68		30-150	A
BZ 198	93		**166**	Q	30-150	A
DBOB	61		66		30-150	B
BZ 198	75		79		30-150	B

Lab Control Sample Analysis
Batch Quality Control

Project Name: BLUE HILL HARBOR

Project Number: Not Specified

Lab Number: L1527873

Report Date: 11/19/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 12 Batch: WG836523-2 WG836523-3									
Heptachlor epoxide	80		85		50-120	5		30	B
Oxychlordane	78		82		50-120	5		30	B
Endosulfan II	84		88		50-120	5		30	B
4,4'-DDD	96		103		50-120	7		30	B

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Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DBOB	64		68		30-150	A
BZ 198	93		**166**	Q	30-150	A
DBOB	61		66		30-150	B
BZ 198	75		79		30-150	B

Lab Control Sample Analysis
Batch Quality Control

Project Name: BLUE HILL HARBOR
Project Number: Not Specified
Lab Number: L1527873
Report Date: 11/19/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01,04,07,10 Batch: WG836998-2 WG836998-3									
Hexachlorobenzene	59		62		50-120	5		30	A
gamma-BHC	63		67		50-120	6		30	A
Heptachlor	69		73		50-120	6		30	A
Aldrin	67		70		50-120	4		30	A
trans-Chlordane	72		79		50-120	9		30	A
Endosulfan I	67		74		50-120	10		30	A
cis-Chlordane	69		76		50-120	10		30	A
trans-Nonachlor	70		78		50-120	11		30	A
4,4'-DDE	87		95		50-120	9		30	A
Dieldrin	72		78		50-120	8		30	A
Endrin	73		76		50-120	4		30	A
cis-Nonachlor	69		76		50-120	10		30	A
4,4'-DDT	75		86		50-120	14		30	A
Methoxychlor	68		72		50-120	6		30	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DBOB	54		57		30-150	A
BZ 198	84		**199**	Q	30-150	A
DBOB	52		54		30-150	B
BZ 198	65		72		30-150	B

Lab Control Sample Analysis
Batch Quality Control

Project Name: BLUE HILL HARBOR
Project Number: Not Specified
Lab Number: L1527873
Report Date: 11/19/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01,04,07,10 Batch: WG836998-2 WG836998-3									
Heptachlor epoxide	64		70		50-120	9		30	B
Oxychlordane	63		68		50-120	8		30	B
Endosulfan II	63		67		50-120	6		30	B
4,4'-DDD	78		86		50-120	10		30	B

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Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DBOB	54		57		30-150	A
BZ 198	84		**199**	Q	30-150	A
DBOB	52		54		30-150	B
BZ 198	65		72		30-150	B

Matrix Spike Analysis
Batch Quality Control

Project Name: BLUE HILL HARBOR
Project Number: Not Specified

Lab Number: L1527873
Report Date: 11/19/15

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits	Column
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01,04,07,10 QC Batch ID: WG836998-4 WG836998-5 QC Sample: L1527873-07 Client ID: COMP DE													
Hexachlorobenzene	ND	67	40.7	61		37.2	57		50-120	9		30	A
gamma-BHC	ND	67	45.9	69		42.2	65		50-120	8		30	A
Heptachlor	ND	67	48.3	72		45.0	69		50-120	7		30	A
Aldrin	ND	67	47.5	71		44.1	68		50-120	7		30	A
Heptachlor epoxide	ND	67	38.7	58		37.8	58		50-120	2		30	B
Oxychlordane	ND	67	42.4	63		40.0	61		50-120	6		30	B
trans-Chlordane	ND	67	50.7	76		48.6	75		50-120	4		30	A
Endosulfan I	ND	67	48.7	73		46.4	71		50-120	5		30	A
cis-Chlordane	ND	67	48.0	72		45.8	70		50-120	5		30	A
trans-Nonachlor	ND	67	49.0	73		46.4	71		50-120	5		30	A
4,4'-DDE	ND	67	60.7	91		57.8	89		50-120	5		30	A
Dieldrin	ND	67	49.0	73		47.2	72		50-120	4		30	A
Endrin	ND	67	54.7	82		52.6	81		50-120	4		30	A
Endosulfan II	ND	67	42.5IP	63		40.7IP	62		50-120	4		30	B
4,4'-DDD	0.814	67	52.0	76		50.5	76		50-120	3		30	B
cis-Nonachlor	ND	67	47.9I	72		45.8I	70		50-120	4		30	A
4,4'-DDT	0.592	67	55.9IP	83		52.5IP	80		50-120	6		30	A
Methoxychlor	3.64	67	70.2	99		67.0	97		50-120	5		30	A

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Matrix Spike Analysis
Batch Quality Control

Project Name: BLUE HILL HARBOR
Project Number: Not Specified

Lab Number: L1527873
Report Date: 11/19/15

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01,04,07,10 QC Batch ID: WG836998-4 WG836998-5 QC Sample: L1527873-07 Client ID: COMP DE												

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria	Column
BZ 198	**242**	Q	**492**	Q	30-150	A
DBOB	57		52		30-150	A
BZ 198	63		67		30-150	B
DBOB	48		43		30-150	B

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Lab Duplicate Analysis
Batch Quality Control

Project Name: BLUE HILL HARBOR
Project Number: Not Specified
Lab Number: L1527873
Report Date: 11/19/15

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits	
RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01,04,07,10 QC Batch ID: WG836998-6 QC Sample: L1527873-04 Client ID: COMP BC							
Hexachlorobenzene	ND	ND	ug/kg	NC		30	A
gamma-BHC	ND	ND	ug/kg	NC		30	A
Heptachlor	ND	ND	ug/kg	NC		30	A
Aldrin	ND	ND	ug/kg	NC		30	A
Heptachlor epoxide	ND	ND	ug/kg	NC		30	B
Oxychlordane	ND	ND	ug/kg	NC		30	B
trans-Chlordane	ND	ND	ug/kg	NC		30	A
Endosulfan I	ND	ND	ug/kg	NC		30	A
cis-Chlordane	ND	ND	ug/kg	NC		30	A
trans-Nonachlor	ND	ND	ug/kg	NC		30	A
4,4'-DDE	ND	ND	ug/kg	NC		30	A
Dieldrin	ND	ND	ug/kg	NC		30	A
Endrin	ND	ND	ug/kg	NC		30	A
Endosulfan II	ND	ND	ug/kg	NC		30	A
4,4'-DDD	ND	ND	ug/kg	NC		30	B
cis-Nonachlor	ND	ND	ug/kg	NC		30	A
4,4'-DDT	ND	ND	ug/kg	NC		30	A
Methoxychlor	ND	ND	ug/kg	NC		30	A
Toxaphene	ND	ND	ug/kg	NC		30	A

Lab Duplicate Analysis
Batch Quality Control

Project Name: BLUE HILL HARBOR
Project Number: Not Specified
Lab Number: L1527873
Report Date: 11/19/15

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits

RIM Organochlorine Pesticides - Mansfield Lab Associated sample(s): 01,04,07,10 QC Batch ID: WG836998-6 QC Sample: L1527873-04 Client ID: COMP BC

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria	Column
DBOB	52		47		30-150	A
BZ 198	126		108		30-150	A
DBOB	47		43		30-150	B
BZ 198	68		61		30-150	B

Project Name: BLUE HILL HARBOR **Lab Number:** L1527873
Project Number: Not Specified **Report Date:** 11/19/15

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG836998-7

Parameter	% Recovery	Qual	QC Criteria
Hexachlorobenzene	83		40-140
cis-Chlordane	109		40-140
trans-Nonachlor	449	Q	40-140
DBOB (Surrogate)	59		30-150
DBOB (Surrogate)	68		30-150
BZ 198 (Surrogate)	54		30-150
BZ 198 (Surrogate)	240	Q	30-150

METALS

Project Name: BLUE HILL HARBOR | **Lab Number:** L1527873
Project Number: Not Specified | **Report Date:** 11/19/15

SAMPLE RESULTS

Lab ID: L1527873-01 | Date Collected: 10/28/15 14:53
Client ID: A | Date Received: 10/29/15
Sample Location: BLUE HILL, ME | Field Prep: Not Specified
Matrix: Soil
Percent Solids: 45%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	4.51		mg/kg	0.053	--	2	11/12/15 08:42	11/13/15 11:49	EPA 3050B	1,6020A	DB
Cadmium, Total	0.644		mg/kg	0.021	--	2	11/12/15 08:42	11/13/15 11:49	EPA 3050B	1,6020A	DB
Chromium, Total	21.1		mg/kg	0.212	--	2	11/12/15 08:42	11/13/15 11:49	EPA 3050B	1,6020A	DB
Copper, Total	17.6		mg/kg	0.212	--	2	11/12/15 08:42	11/13/15 11:49	EPA 3050B	1,6020A	DB
Lead, Total	21.7		mg/kg	0.064	--	2	11/12/15 08:42	11/13/15 11:49	EPA 3050B	1,6020A	DB
Mercury, Total	0.033		mg/kg	0.029	--	5	11/11/15 18:08	11/13/15 12:32	EPA 7474	1,7474	LC
Nickel, Total	15.6		mg/kg	0.106	--	2	11/12/15 08:42	11/13/15 11:49	EPA 3050B	1,6020A	DB
Zinc, Total	54.2		mg/kg	1.06	--	2	11/12/15 08:42	11/13/15 11:49	EPA 3050B	1,6020A	DB

Project Name:	BLUE HILL HARBOR	**Lab Number:**	L1527873
Project Number:	Not Specified	**Report Date:**	11/19/15

SAMPLE RESULTS

Lab ID:	L1527873-04	Date Collected:	10/28/15 14:46
Client ID:	COMP BC	Date Received:	10/29/15
Sample Location:	BLUE HILL, ME	Field Prep:	Not Specified
Matrix:	Soil		
Percent Solids:	48%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	7.69		mg/kg	0.061	--	2	11/12/15 08:42	11/13/15 11:54	EPA 3050B	1,6020A	DB
Cadmium, Total	0.833		mg/kg	0.024	--	2	11/12/15 08:42	11/13/15 11:54	EPA 3050B	1,6020A	DB
Chromium, Total	30.9		mg/kg	0.242	--	2	11/12/15 08:42	11/13/15 11:54	EPA 3050B	1,6020A	DB
Copper, Total	16.5		mg/kg	0.242	--	2	11/12/15 08:42	11/13/15 11:54	EPA 3050B	1,6020A	DB
Lead, Total	21.8		mg/kg	0.363	--	10	11/12/15 08:42	11/13/15 12:12	EPA 3050B	1,6020A	DB
Mercury, Total	0.029		mg/kg	0.028	--	5	11/11/15 18:08	11/13/15 12:34	EPA 7474	1,7474	LC
Nickel, Total	23.6		mg/kg	0.121	--	2	11/12/15 08:42	11/13/15 11:54	EPA 3050B	1,6020A	DB
Zinc, Total	64.1		mg/kg	1.21	--	2	11/12/15 08:42	11/13/15 11:54	EPA 3050B	1,6020A	DB

Project Name: BLUE HILL HARBOR
Lab Number: L1527873
Project Number: Not Specified
Report Date: 11/19/15

SAMPLE RESULTS

Lab ID: L1527873-07
Date Collected: 10/28/15 14:22
Client ID: COMP DE
Date Received: 10/29/15
Sample Location: BLUE HILL, ME
Field Prep: Not Specified
Matrix: Soil
Percent Solids: 73%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	5.24		mg/kg	0.039	--	2	11/12/15 08:42	11/13/15 11:59	EPA 3050B	1,6020A	DB
Cadmium, Total	0.120		mg/kg	0.016	--	2	11/12/15 08:42	11/13/15 11:59	EPA 3050B	1,6020A	DB
Chromium, Total	12.3		mg/kg	0.155	--	2	11/12/15 08:42	11/13/15 11:59	EPA 3050B	1,6020A	DB
Copper, Total	14.3		mg/kg	0.155	--	2	11/12/15 08:42	11/13/15 11:59	EPA 3050B	1,6020A	DB
Lead, Total	23.0		mg/kg	0.047	--	2	11/12/15 08:42	11/13/15 11:59	EPA 3050B	1,6020A	DB
Mercury, Total	0.017		mg/kg	0.016	--	5	11/11/15 18:08	11/13/15 12:45	EPA 7474	1,7474	LC
Nickel, Total	10.3		mg/kg	0.078	--	2	11/12/15 08:42	11/13/15 11:59	EPA 3050B	1,6020A	DB
Zinc, Total	40.6		mg/kg	0.775	--	2	11/12/15 08:42	11/13/15 11:59	EPA 3050B	1,6020A	DB

Project Name:	BLUE HILL HARBOR	**Lab Number:**	L1527873
Project Number:	Not Specified	**Report Date:**	11/19/15

SAMPLE RESULTS

Lab ID:	L1527873-10	Date Collected:	10/28/15 14:00
Client ID:	COMP FG	Date Received:	10/29/15
Sample Location:	BLUE HILL, ME	Field Prep:	Not Specified
Matrix:	Soil		
Percent Solids:	72%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	6.32		mg/kg	0.039	--	2	11/12/15 08:42	11/13/15 12:00	EPA 3050B	1,6020A	DB
Cadmium, Total	0.161		mg/kg	0.016	--	2	11/12/15 08:42	11/13/15 12:00	EPA 3050B	1,6020A	DB
Chromium, Total	10.8		mg/kg	0.156	--	2	11/12/15 08:42	11/13/15 12:00	EPA 3050B	1,6020A	DB
Copper, Total	6.90		mg/kg	0.156	--	2	11/12/15 08:42	11/13/15 12:00	EPA 3050B	1,6020A	DB
Lead, Total	10.5		mg/kg	0.047	--	2	11/12/15 08:42	11/13/15 12:00	EPA 3050B	1,6020A	DB
Mercury, Total	ND		mg/kg	0.015	--	5	11/11/15 18:08	11/13/15 12:48	EPA 7474	1,7474	LC
Nickel, Total	9.40		mg/kg	0.078	--	2	11/12/15 08:42	11/13/15 12:00	EPA 3050B	1,6020A	DB
Zinc, Total	37.9		mg/kg	0.779	--	2	11/12/15 08:42	11/13/15 12:00	EPA 3050B	1,6020A	DB

Project Name:	BLUE HILL HARBOR	**Lab Number:**	L1527873
Project Number:	Not Specified	**Report Date:**	11/19/15

SAMPLE RESULTS

Lab ID:	L1527873-12	Date Collected:	10/28/15 14:53
Client ID:	BLANK	Date Received:	10/29/15
Sample Location:	BLUE HILL, ME	Field Prep:	Not Specified
Matrix:	Water		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	0.00169		mg/l	0.00050	--	1	11/11/15 12:21	11/13/15 12:30	EPA 3020A	1,6020A	DB
Cadmium, Total	ND		mg/l	0.00050	--	1	11/11/15 12:21	11/13/15 12:30	EPA 3020A	1,6020A	DB
Chromium, Total	ND		mg/l	0.00100	--	1	11/11/15 12:21	11/13/15 12:30	EPA 3020A	1,6020A	DB
Copper, Total	ND		mg/l	0.00100	--	1	11/11/15 12:21	11/13/15 13:36	EPA 3020A	1,6020A	DB
Lead, Total	ND		mg/l	0.00100	--	1	11/11/15 12:21	11/13/15 13:36	EPA 3020A	1,6020A	DB
Mercury, Total	ND		mg/l	0.00010	--	1	11/11/15 14:28	11/13/15 15:09	EPA 7474	1,7474	LC
Nickel, Total	ND		mg/l	0.00050	--	1	11/11/15 12:21	11/13/15 12:30	EPA 3020A	1,6020A	DB
Zinc, Total	ND		mg/l	0.0100	--	1	11/11/15 12:21	11/13/15 12:30	EPA 3020A	1,6020A	DB

Project Name: BLUE HILL HARBOR　　**Lab Number:** L1527873
Project Number: Not Specified　　**Report Date:** 11/19/15

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 12 Batch: WG839582-1										
Arsenic, Total	ND		mg/l	0.00050	--	1	11/11/15 12:21	11/13/15 12:21	1,6020A	DB
Cadmium, Total	ND		mg/l	0.00050	--	1	11/11/15 12:21	11/13/15 12:21	1,6020A	DB
Chromium, Total	ND		mg/l	0.00100	--	1	11/11/15 12:21	11/13/15 12:21	1,6020A	DB
Copper, Total	ND		mg/l	0.00100	--	1	11/11/15 12:21	11/13/15 13:22	1,6020A	DB
Lead, Total	ND		mg/l	0.00100	--	1	11/11/15 12:21	11/13/15 13:22	1,6020A	DB
Nickel, Total	ND		mg/l	0.00050	--	1	11/11/15 12:21	11/13/15 12:21	1,6020A	DB
Zinc, Total	ND		mg/l	0.0100	--	1	11/11/15 12:21	11/13/15 12:21	1,6020A	DB

Prep Information

Digestion Method: EPA 3020A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 12 Batch: WG839590-1										
Mercury, Total	ND		mg/l	0.00010	--	1	11/11/15 14:28	11/13/15 14:54	1,7474	LC

Prep Information

Digestion Method: EPA 7474

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01,04,07,10 Batch: WG839676-1										
Arsenic, Total	ND		mg/kg	0.050	--	2	11/12/15 08:42	11/13/15 11:31	1,6020A	DB
Cadmium, Total	ND		mg/kg	0.020	--	2	11/12/15 08:42	11/13/15 11:31	1,6020A	DB
Chromium, Total	ND		mg/kg	0.200	--	2	11/12/15 08:42	11/13/15 11:31	1,6020A	DB
Copper, Total	ND		mg/kg	0.200	--	2	11/12/15 08:42	11/13/15 11:31	1,6020A	DB
Lead, Total	ND		mg/kg	0.060	--	2	11/12/15 08:42	11/13/15 11:31	1,6020A	DB
Nickel, Total	ND		mg/kg	0.100	--	2	11/12/15 08:42	11/13/15 11:31	1,6020A	DB
Zinc, Total	ND		mg/kg	1.00	--	2	11/12/15 08:42	11/13/15 11:31	1,6020A	DB

Project Name: BLUE HILL HARBOR **Lab Number:** L1527873
Project Number: Not Specified **Report Date:** 11/19/15

Method Blank Analysis
Batch Quality Control

Prep Information

Digestion Method: EPA 3050B

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01,04,07,10 Batch: WG839678-1										
Mercury, Total	ND		mg/kg	0.013	--	5	11/11/15 18:08	11/13/15 11:38	1,7474	LC

Prep Information

Digestion Method: EPA 7474

Lab Control Sample Analysis
Batch Quality Control

Project Name: BLUE HILL HARBOR
Project Number: Not Specified
Lab Number: L1527873
Report Date: 11/19/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 12 Batch: WG839582-2 SRM Lot Number: A2METSPIKE								
Arsenic, Total	99		-		80-120	-		20
Cadmium, Total	102		-		80-120	-		20
Chromium, Total	103		-		80-120	-		20
Copper, Total	102		-		80-120	-		20
Lead, Total	110		-		80-120	-		20
Nickel, Total	99		-		80-120	-		20
Zinc, Total	97		-		80-120	-		20
Total Metals - Mansfield Lab Associated sample(s): 12 Batch: WG839590-2 SRM Lot Number: HPHGAF								
Mercury, Total	100		-		80-120	-		20
Total Metals - Mansfield Lab Associated sample(s): 01,04,07,10 Batch: WG839676-2 SRM Lot Number: ERA-D088								
Arsenic, Total	97		-		79-121	-		20
Cadmium, Total	99		-		83-117	-		20
Chromium, Total	95		-		80-120	-		20
Copper, Total	98		-		81-118	-		20
Lead, Total	93		-		81-117	-		20
Nickel, Total	101		-		83-117	-		20
Zinc, Total	94		-		82-118	-		20

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Lab Control Sample Analysis
Batch Quality Control

Project Name: BLUE HILL HARBOR
Project Number: Not Specified

Lab Number: L1527873
Report Date: 11/19/15

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01,04,07,10 Batch: WG839678-2 SRM Lot Number: ERA-D088					
Mercury, Total	106	-	72-128	-	20

Matrix Spike Analysis
Batch Quality Control

Project Name: BLUE HILL HARBOR
Project Number: Not Specified
Lab Number: L1527873
Report Date: 11/19/15

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 12 QC Batch ID: WG839582-4 WG839582-5 QC Sample: L1527184-09 Client ID: MS Sample												
Arsenic, Total	0.00164	1	0.9932	99		0.9857	98		75-125	1		20
Cadmium, Total	ND	0.5	0.5095	102		0.5200	104		75-125	2		20
Chromium, Total	0.00148	1	1.02	102		1.04	104		75-125	2		20
Copper, Total	0.00271	1	1.06	106		1.10	110		75-125	4		20
Lead, Total	ND	1	1.08	108		1.10	110		75-125	2		20
Nickel, Total	0.00106	1	0.9913	99		0.9986	100		75-125	1		20
Zinc, Total	0.0132	1	0.985	97		0.998	98		75-125	1		20
Total Metals - Mansfield Lab Associated sample(s): 12 QC Batch ID: WG839590-4 WG839590-5 QC Sample: L1527873-12 Client ID: BLANK												
Mercury, Total	ND	0.005	0.00481	96		0.00476	95		80-120	1		20
Total Metals - Mansfield Lab Associated sample(s): 01,04,07,10 QC Batch ID: WG839676-4 WG839676-5 QC Sample: L1527184-08 Client ID: MS Sample												
Arsenic, Total	11.5	215	227	100		226	100		75-125	0		20
Cadmium, Total	29.9	107	135	98		136	99		75-125	1		20
Chromium, Total	307	215	516	97		515	97		75-125	0		20
Copper, Total	593	215	795	96		837	115		75-125	5		20
Lead, Total	246	215	455	115		502	**137**	Q	75-125	10		20
Nickel, Total	65.8	215	272	96		280	100		75-125	3		20
Zinc, Total	760	215	915	75		961	96		75-125	5		20

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Matrix Spike Analysis
Batch Quality Control

Project Name: BLUE HILL HARBOR
Project Number: Not Specified
Lab Number: L1527873
Report Date: 11/19/15

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01,04,07,10 QC Batch ID: WG839676-7 WG839676-8 QC Sample: L1527873-04 Client ID: COMP BC									
Arsenic, Total	7.69	257	270	102	267	101	75-125	1	20
Cadmium, Total	0.833	129	129	100	129	100	75-125	0	20
Chromium, Total	30.9	257	277	96	286	99	75-125	3	20
Copper, Total	16.5	257	252	91	259	94	75-125	3	20
Lead, Total	21.8	257	263	95	264	96	75-125	14	20
Nickel, Total	23.6	257	269	95	272	96	75-125	1	20
Zinc, Total	64.1	257	290	87	297	90	75-125	2	20
Total Metals - Mansfield Lab Associated sample(s): 01,04,07,10 QC Batch ID: WG839678-4 WG839678-5 QC Sample: L1527184-08 Client ID: MS Sample									
Mercury, Total	0.607	1.12	1.68	95	1.63	89	80-120	3	20
Total Metals - Mansfield Lab Associated sample(s): 01,04,07,10 QC Batch ID: WG839678-7 WG839678-8 QC Sample: L1527873-04 Client ID: COMP BC									
Mercury, Total	0.029	1.3	1.17	88	1.27	106	80-120	8	20

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Lab Duplicate Analysis
Batch Quality Control

Project Name: BLUE HILL HARBOR
Project Number: Not Specified
Lab Number: L1527873
Report Date: 11/19/15

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 12 QC Batch ID: WG839582-3 QC Sample: L1527184-09 Client ID: DUP Sample						
Arsenic, Total	0.00164	ND	mg/l	NC		20
Cadmium, Total	ND	ND	mg/l	NC		20
Chromium, Total	0.00148	0.00226	mg/l	**42**	Q	20
Nickel, Total	0.00106	0.00099	mg/l	7		20
Zinc, Total	0.0132	0.0156	mg/l	17		20
Total Metals - Mansfield Lab Associated sample(s): 12 QC Batch ID: WG839582-3 QC Sample: L1527184-09 Client ID: DUP Sample						
Copper, Total	0.00271	0.00428	mg/l	**46**	Q	20
Lead, Total	ND	ND	mg/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 12 QC Batch ID: WG839590-3 QC Sample: L1527873-12 Client ID: BLANK						
Mercury, Total	ND	ND	mg/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01,04,07,10 QC Batch ID: WG839676-3 QC Sample: L1527184-08 Client ID: DUP Sample						
Arsenic, Total	11.5	11.3	mg/kg	2		20
Cadmium, Total	29.9	29.7	mg/kg	1		20
Chromium, Total	307	308	mg/kg	0		20
Nickel, Total	65.8	65.6	mg/kg	0		20

Lab Duplicate Analysis
Batch Quality Control

Project Name: BLUE HILL HARBOR
Project Number: Not Specified

Lab Number: L1527873
Report Date: 11/19/15

Parameter	Native Sample	Duplicate Sample	Units	RPD		RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01,04,07,10 QC Batch ID: WG839676-3 QC Sample: L1527184-08 Client ID: DUP Sample						
Copper, Total	593	582	mg/kg	1		20
Lead, Total	246	240	mg/kg	14		20
Zinc, Total	760	720	mg/kg	5		20
Total Metals - Mansfield Lab Associated sample(s): 01,04,07,10 QC Batch ID: WG839676-6 QC Sample: L1527873-04 Client ID: COMP BC						
Arsenic, Total	7.69	7.88	mg/kg	0		20
Cadmium, Total	0.833	0.809	mg/kg	7		20
Chromium, Total	30.9	31.3	mg/kg	1		20
Copper, Total	16.5	15.2	mg/kg	13		20
Nickel, Total	23.6	23.8	mg/kg	1		20
Zinc, Total	64.1	64.7	mg/kg	2		20
Total Metals - Mansfield Lab Associated sample(s): 01,04,07,10 QC Batch ID: WG839676-6 QC Sample: L1527873-04 Client ID: COMP BC						
Lead, Total	21.8	21.7	mg/kg	0		20
Total Metals - Mansfield Lab Associated sample(s): 01,04,07,10 QC Batch ID: WG839678-3 QC Sample: L1527184-08 Client ID: DUP Sample						
Mercury, Total	0.607	0.593	mg/kg	2		20
Total Metals - Mansfield Lab Associated sample(s): 01,04,07,10 QC Batch ID: WG839678-6 QC Sample: L1527873-04 Client ID: COMP BC						
Mercury, Total	0.029	0.078	mg/kg	**91**	Q	20

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INORGANICS
&
MISCELLANEOUS

Project Name: BLUE HILL HARBOR
Lab Number: L1527873
Project Number: Not Specified
Report Date: 11/19/15

SAMPLE RESULTS

Lab ID: L1527873-01
Client ID: A
Sample Location: BLUE HILL, ME
Matrix: Soil

Date Collected: 10/28/15 14:53
Date Received: 10/29/15
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	8.58		%	0.010	--	1	-	11/18/15 12:51	1,9060A	CM
Total Organic Carbon (Rep2)	8.06		%	0.010	--	1	-	11/18/15 12:51	1,9060A	CM
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	0.100		%	0.100	NA	1	-	11/19/15 00:00	12,D422	JN
% Coarse Sand	2.20		%	0.100	NA	1	-	11/19/15 00:00	12,D422	JN
% Medium Sand	6.60		%	0.100	NA	1	-	11/19/15 00:00	12,D422	JN
% Fine Sand	21.6		%	0.100	NA	1	-	11/19/15 00:00	12,D422	JN
% Total Fines	69.5		%	0.100	NA	1	-	11/19/15 00:00	12,D422	JN
General Chemistry - Mansfield Lab										
Solids, Total	44.7		%	0.100	--	1	-	11/18/15 19:37	30,2540G	JN
Moisture	55.3		%	0.100	--	1	-	11/18/15 19:37	30,2540G	JN

Project Name: BLUE HILL HARBOR
Lab Number: L1527873
Project Number: Not Specified
Report Date: 11/19/15

SAMPLE RESULTS

Lab ID: L1527873-02
Client ID: B
Sample Location: BLUE HILL, ME
Matrix: Soil
Date Collected: 10/28/15 14:46
Date Received: 10/29/15
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	ND		%	0.100	NA	1	-	11/19/15 00:00	12,D422	JN
% Coarse Sand	1.70		%	0.100	NA	1	-	11/19/15 00:00	12,D422	JN
% Medium Sand	3.50		%	0.100	NA	1	-	11/19/15 00:00	12,D422	JN
% Fine Sand	7.40		%	0.100	NA	1	-	11/19/15 00:00	12,D422	JN
% Total Fines	87.4		%	0.100	NA	1	-	11/19/15 00:00	12,D422	JN
General Chemistry - Mansfield Lab										
Solids, Total	48.8		%	0.100	--	1	-	11/18/15 19:37	30,2540G	JN
Moisture	51.2		%	0.100	--	1	-	11/18/15 19:37	30,2540G	JN

Project Name: BLUE HILL HARBOR | **Lab Number:** L1527873
Project Number: Not Specified | **Report Date:** 11/19/15

SAMPLE RESULTS

Lab ID: L1527873-03
Client ID: C
Sample Location: BLUE HILL, ME
Matrix: Soil

Date Collected: 10/28/15 14:33
Date Received: 10/29/15
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	1.10		%	0.100	NA	1	-	11/19/15 00:00	12,D422	JN
% Coarse Sand	1.90		%	0.100	NA	1	-	11/19/15 00:00	12,D422	JN
% Medium Sand	4.90		%	0.100	NA	1	-	11/19/15 00:00	12,D422	JN
% Fine Sand	12.1		%	0.100	NA	1	-	11/19/15 00:00	12,D422	JN
% Total Fines	80.0		%	0.100	NA	1	-	11/19/15 00:00	12,D422	JN
General Chemistry - Mansfield Lab										
Solids, Total	45.5		%	0.100	--	1	-	11/18/15 19:37	30,2540G	JN
Moisture	54.5		%	0.100	--	1	-	11/18/15 19:37	30,2540G	JN

Project Name: BLUE HILL HARBOR | **Lab Number:** L1527873
Project Number: Not Specified | **Report Date:** 11/19/15

SAMPLE RESULTS

Lab ID: L1527873-04
Client ID: COMP BC
Sample Location: BLUE HILL, ME
Matrix: Soil

Date Collected: 10/28/15 14:46
Date Received: 10/29/15
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	3.52		%	0.010	--	1	-	11/18/15 12:51	1,9060A	CM
Total Organic Carbon (Rep2)	3.95		%	0.010	--	1	-	11/18/15 12:51	1,9060A	CM
General Chemistry - Mansfield Lab										
Solids, Total	48.0		%	0.100	--	1	-	11/18/15 19:37	30,2540G	JN
Moisture	52.0		%	0.100	--	1	-	11/18/15 19:37	30,2540G	JN

Project Name: BLUE HILL HARBOR
Project Number: Not Specified

Lab Number: L1527873
Report Date: 11/19/15

SAMPLE RESULTS

Lab ID: L1527873-05
Client ID: D
Sample Location: BLUE HILL, ME
Matrix: Soil

Date Collected: 10/28/15 14:22
Date Received: 10/29/15
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	4.40		%	0.100	NA	1	-	11/19/15 00:00	12,D422	JN
% Coarse Sand	13.2		%	0.100	NA	1	-	11/19/15 00:00	12,D422	JN
% Medium Sand	34.8		%	0.100	NA	1	-	11/19/15 00:00	12,D422	JN
% Fine Sand	35.0		%	0.100	NA	1	-	11/19/15 00:00	12,D422	JN
% Total Fines	12.6		%	0.100	NA	1	-	11/19/15 00:00	12,D422	JN
General Chemistry - Mansfield Lab										
Solids, Total	80.4		%	0.100	--	1	-	11/18/15 19:37	30,2540G	JN
Moisture	19.6		%	0.100	--	1	-	11/18/15 19:37	30,2540G	JN

Project Name: BLUE HILL HARBOR
Project Number: Not Specified
Lab Number: L1527873
Report Date: 11/19/15

SAMPLE RESULTS

Lab ID: L1527873-06
Client ID: E
Sample Location: BLUE HILL, ME
Matrix: Soil
Date Collected: 10/28/15 14:13
Date Received: 10/29/15
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	1.80		%	0.100	NA	1	-	11/19/15 00:00	12,D422	JN
% Coarse Sand	8.80		%	0.100	NA	1	-	11/19/15 00:00	12,D422	JN
% Medium Sand	26.7		%	0.100	NA	1	-	11/19/15 00:00	12,D422	JN
% Fine Sand	37.9		%	0.100	NA	1	-	11/19/15 00:00	12,D422	JN
% Total Fines	24.8		%	0.100	NA	1	-	11/19/15 00:00	12,D422	JN
General Chemistry - Mansfield Lab										
Solids, Total	66.8		%	0.100	--	1	-	11/18/15 19:37	30,2540G	JN
Moisture	33.2		%	0.100	--	1	-	11/18/15 19:37	30,2540G	JN

Project Name: BLUE HILL HARBOR
Project Number: Not Specified

Lab Number: L1527873
Report Date: 11/19/15

SAMPLE RESULTS

Lab ID: L1527873-07
Client ID: COMP DE
Sample Location: BLUE HILL, ME
Matrix: Soil

Date Collected: 10/28/15 14:22
Date Received: 10/29/15
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	1.99		%	0.010	--	1	-	11/18/15 12:51	1,9060A	CM
Total Organic Carbon (Rep2)	1.53		%	0.010	--	1	-	11/18/15 12:51	1,9060A	CM
General Chemistry - Mansfield Lab										
Solids, Total	73.3		%	0.100	--	1	-	11/18/15 19:37	30,2540G	JN
Moisture	26.7		%	0.100	--	1	-	11/18/15 19:37	30,2540G	JN

Project Name: BLUE HILL HARBOR
Project Number: Not Specified
Lab Number: L1527873
Report Date: 11/19/15

SAMPLE RESULTS

Lab ID: L1527873-08
Client ID: F
Sample Location: BLUE HILL, ME
Matrix: Soil
Date Collected: 10/28/15 14:00
Date Received: 10/29/15
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	5.00		%	0.100	NA	1	-	11/19/15 00:00	12,D422	JN
% Coarse Sand	14.0		%	0.100	NA	1	-	11/19/15 00:00	12,D422	JN
% Medium Sand	30.6		%	0.100	NA	1	-	11/19/15 00:00	12,D422	JN
% Fine Sand	29.8		%	0.100	NA	1	-	11/19/15 00:00	12,D422	JN
% Total Fines	20.6		%	0.100	NA	1	-	11/19/15 00:00	12,D422	JN
General Chemistry - Mansfield Lab										
Solids, Total	73.2		%	0.100	--	1	-	11/18/15 19:37	30,2540G	JN
Moisture	26.8		%	0.100	--	1	-	11/18/15 19:37	30,2540G	JN

Project Name: BLUE HILL HARBOR
Project Number: Not Specified

Lab Number: L1527873
Report Date: 11/19/15

SAMPLE RESULTS

Lab ID: L1527873-09
Client ID: G
Sample Location: BLUE HILL, ME
Matrix: Soil

Date Collected: 10/28/15 13:43
Date Received: 10/29/15
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
RIM Grain Size Analysis - Mansfield Lab										
% Total Gravel	45.9		%	0.100	NA	1	-	11/19/15 00:00	12,D422	JN
% Coarse Sand	12.4		%	0.100	NA	1	-	11/19/15 00:00	12,D422	JN
% Medium Sand	16.7		%	0.100	NA	1	-	11/19/15 00:00	12,D422	JN
% Fine Sand	16.2		%	0.100	NA	1	-	11/19/15 00:00	12,D422	JN
% Total Fines	8.80		%	0.100	NA	1	-	11/19/15 00:00	12,D422	JN
General Chemistry - Mansfield Lab										
Solids, Total	78.6		%	0.100	--	1	-	11/18/15 19:37	30,2540G	JN
Moisture	21.4		%	0.100	--	1	-	11/18/15 19:37	30,2540G	JN

Project Name: BLUE HILL HARBOR | **Lab Number:** L1527873
Project Number: Not Specified | **Report Date:** 11/19/15

SAMPLE RESULTS

Lab ID: L1527873-10
Client ID: COMP FG
Sample Location: BLUE HILL, ME
Matrix: Soil

Date Collected: 10/28/15 14:00
Date Received: 10/29/15
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	0.921		%	0.010	--	1	-	11/18/15 12:51	1,9060A	CM
Total Organic Carbon (Rep2)	0.845		%	0.010	--	1	-	11/18/15 12:51	1,9060A	CM
General Chemistry - Mansfield Lab										
Solids, Total	71.7		%	0.100	--	1	-	11/18/15 19:37	30,2540G	JN
Moisture	28.3		%	0.100	--	1	-	11/18/15 19:37	30,2540G	JN

Project Name: BLUE HILL HARBOR **Lab Number:** L1527873
Project Number: Not Specified **Report Date:** 11/19/15

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab for sample(s): 01,04,07,10 Batch: WG842407-1										
Total Organic Carbon (Rep1)	ND		%	0.010	--	1	-	11/18/15 12:51	1,9060A	CM
Total Organic Carbon (Rep2)	ND		%	0.010	--	1	-	11/18/15 12:51	1,9060A	CM

Lab Duplicate Analysis
Batch Quality Control

Project Name: BLUE HILL HARBOR
Project Number: Not Specified

Lab Number: L1527873
Report Date: 11/19/15

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 01-10 QC Batch ID: WG841411-1 QC Sample: L1527873-03 Client ID: C						
Solids, Total	45.5	45.7	%	0		10
Moisture	54.5	54.3	%	0		10
General Chemistry - Mansfield Lab Associated sample(s): 01-10 QC Batch ID: WG841411-2 QC Sample: L1527873-04 Client ID: COMP BC						
Solids, Total	48.0	47.7	%	1		10
Moisture	52	52.3	%	1		10
Total Organic Carbon - Mansfield Lab Associated sample(s): 01,04,07,10 QC Batch ID: WG842407-3 QC Sample: L1527873-04 Client ID: COMP BC						
Total Organic Carbon (Rep1)	3.52	3.46	%	2		25
Total Organic Carbon (Rep2)	3.95	3.52	%	12		25
RIM Grain Size Analysis - Mansfield Lab Associated sample(s): 01-03,05-06,08-09 QC Batch ID: WG842455-1 QC Sample: L1527873-03 Client ID: C						
% Total Gravel	1.10	ND	%	NC		25
% Coarse Sand	1.90	1.30	%	**38**	Q	25
% Medium Sand	4.90	4.80	%	2		25
% Fine Sand	12.1	11.4	%	6		25
% Total Fines	80.0	82.5	%	3		25

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Project Name: BLUE HILL HARBOR **Lab Number:** L1527873
Project Number: Not Specified **Report Date:** 11/19/15

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG842407-2

Parameter	% Recovery	Qual	QC Criteria
Total Organic Carbon (Rep1)	106		75-125
Total Organic Carbon (Rep2)	124		75-125

Project Name: BLUE HILL HARBOR
Project Number: Not Specified

Lab Number: L1527873
Report Date: 11/19/15

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1527873-01A	Plastic 8oz unpreserved for Grai	A	N/A	5.4	Y	Absent	A2-RIMHYDRO-CSAND(),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-TS(7),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1527873-01B	Glass 250ml/8oz unpreserved	A	N/A	5.4	Y	Absent	A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1527873-02A	Plastic 8oz unpreserved for Grai	A	N/A	5.4	Y	Absent	A2-RIMHYDRO-CSAND(),A2-MOISTURE-2540(7),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-TS(7),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1527873-03A	Plastic 8oz unpreserved for Grai	A	N/A	5.4	Y	Absent	A2-RIMHYDRO-CSAND(),A2-MOISTURE-2540(7),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-TS(7),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1527873-03B	Glass 60mL/2oz unpreserved	A	N/A	5.4	Y	Absent	A2-RIMHYDRO-CSAND(),A2-MOISTURE-2540(7),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-TS(7),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()

*Values in parentheses indicate holding time in days

Project Name: BLUE HILL HARBOR **Lab Number:** L1527873
Project Number: Not Specified **Report Date:** 11/19/15

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1527873-04A	Glass 250ml/8oz unpreserved	A	N/A	5.4	Y	Absent	A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1527873-05A	Plastic 8oz unpreserved for Grai	A	N/A	5.4	Y	Absent	A2-RIMHYDRO-CSAND(),A2-MOISTURE-2540(7),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-TS(7),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1527873-06A	Plastic 8oz unpreserved for Grai	A	N/A	5.4	Y	Absent	A2-RIMHYDRO-CSAND(),A2-MOISTURE-2540(7),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-TS(7),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1527873-07A	Glass 250ml/8oz unpreserved	A	N/A	5.4	Y	Absent	A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1527873-08A	Plastic 8oz unpreserved for Grai	A	N/A	5.4	Y	Absent	A2-RIMHYDRO-CSAND(),A2-MOISTURE-2540(7),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-TS(7),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()
L1527873-09A	Plastic 8oz unpreserved for Grai	A	N/A	5.4	Y	Absent	A2-RIMHYDRO-CSAND(),A2-MOISTURE-2540(7),A2-RIMHYDRO-MSAND(),A2-RIMHYDRO-TFINE(),A2-TS(7),A2-RIMHYDRO-TGRAVEL(),A2-RIMHYDRO-FSAND()

*Values in parentheses indicate holding time in days

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1527873-10A	Glass 250ml/8oz unpreserved	A	N/A	5.4	Y	Absent	A2-PB-6020T(180),A2-RIM-PAH/PCBCONG(14),A2-MOISTURE-2540(7),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-TS(7),A2-AS-6020T(180),A2-CD-6020T(180),A2-HGPREP-AF(28),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-CU-6020T(180),A2-RIM-PEST-8081(14)
L1527873-11A	Plastic 8oz unpreserved for Grai	A	N/A	5.4	Y	Absent	-
L1527873-12A	Plastic 500ml HNO3 preserved	A	<2	5.4	Y	Absent	A2-PB-6020T(180),A2-NI-6020T(180),A2-ZN-6020T(180),A2-HG-7474T(28),A2-CR-6020T(180),A2-AS-6020T(180),A2-CD-6020T(180),A2-CU-6020T(180)
L1527873-12B	Amber 1000ml unpreserved	A	7	5.4	Y	Absent	A2-RIM-PAH/PCBCONG(7)
L1527873-12C	Amber 1000ml unpreserved	A	7	5.4	Y	Absent	A2-RIM-PAH/PCBCONG(7)
L1527873-12D	Amber 1000ml unpreserved	A	7	5.4	Y	Absent	A2-RIM-PEST-8081(7)
L1527873-12E	Amber 1000ml unpreserved	A	7	5.4	Y	Absent	A2-RIM-PEST-8081(7)

*Values in parentheses indicate holding time in days

GLOSSARY

Acronyms

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

A - Spectra identified as "Aldol Condensation Product".

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

Report Format: Data Usability Report

Project Name: BLUE HILL HARBOR **Lab Number:** L1527873
Project Number: Not Specified **Report Date:** 11/19/15

Data Qualifiers

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

12 Annual Book of ASTM Standards. (American Society for Testing and Materials) ASTM International.

30 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.

105 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IIIA, 1997 in conjunction with NOAA Technical Memorandum NMFS-NWFSC-59: Extraction, Cleanup and GC/MS Analysis of Sediments and Tissues for Organic Contaminants, March 2004 and the Determination of Pesticides and PCBs in Water and Oil/Sediment by GC/MS: Method 680, EPA 01A0005295, November 1985.

LIMITATION OF LIABILITIES

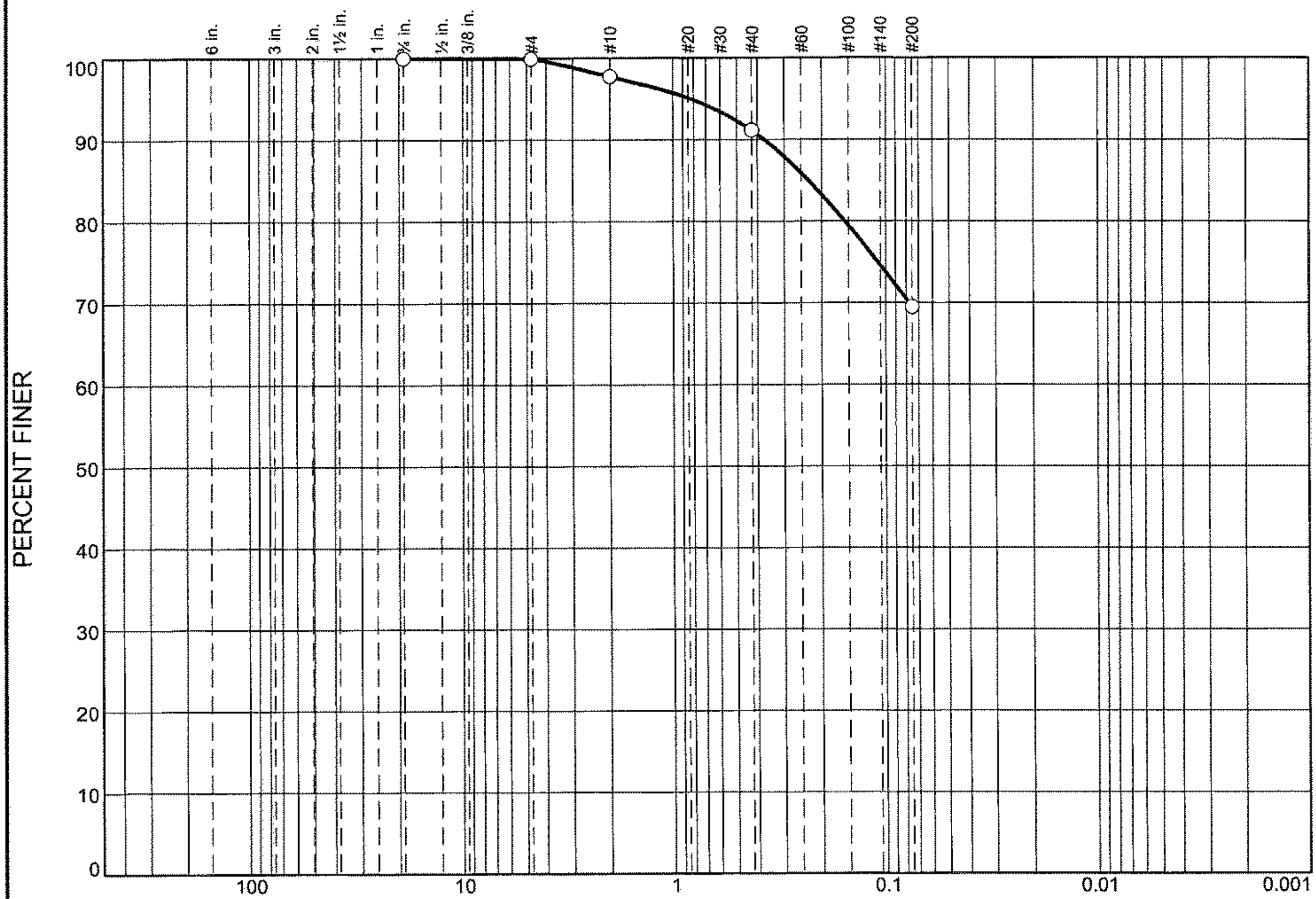
Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

ASTM D422-63

GRAIN SIZE ANALYSIS

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.1	2.2	6.6	21.6	69.5	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			0.2313							

	Material Description	USCS	AASHTO
○			

Project No. **Client:**

Project:

○ **Source of Sample:** A **Sample Number:** L1527873-01

Remarks:

Alpha Analytical

F-124

Mansfield, MA

Figure

GRAIN SIZE DISTRIBUTION TEST DATA

11/19/2015

Location: A

Sample Number: L1527873-01

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
39.77	0.00	0.75	0.00	0.00	100.0
		#4	0.03	0.00	99.9
		#10	0.87	0.00	97.7
		#40	2.63	0.00	91.1
		#200	8.59	0.00	69.5

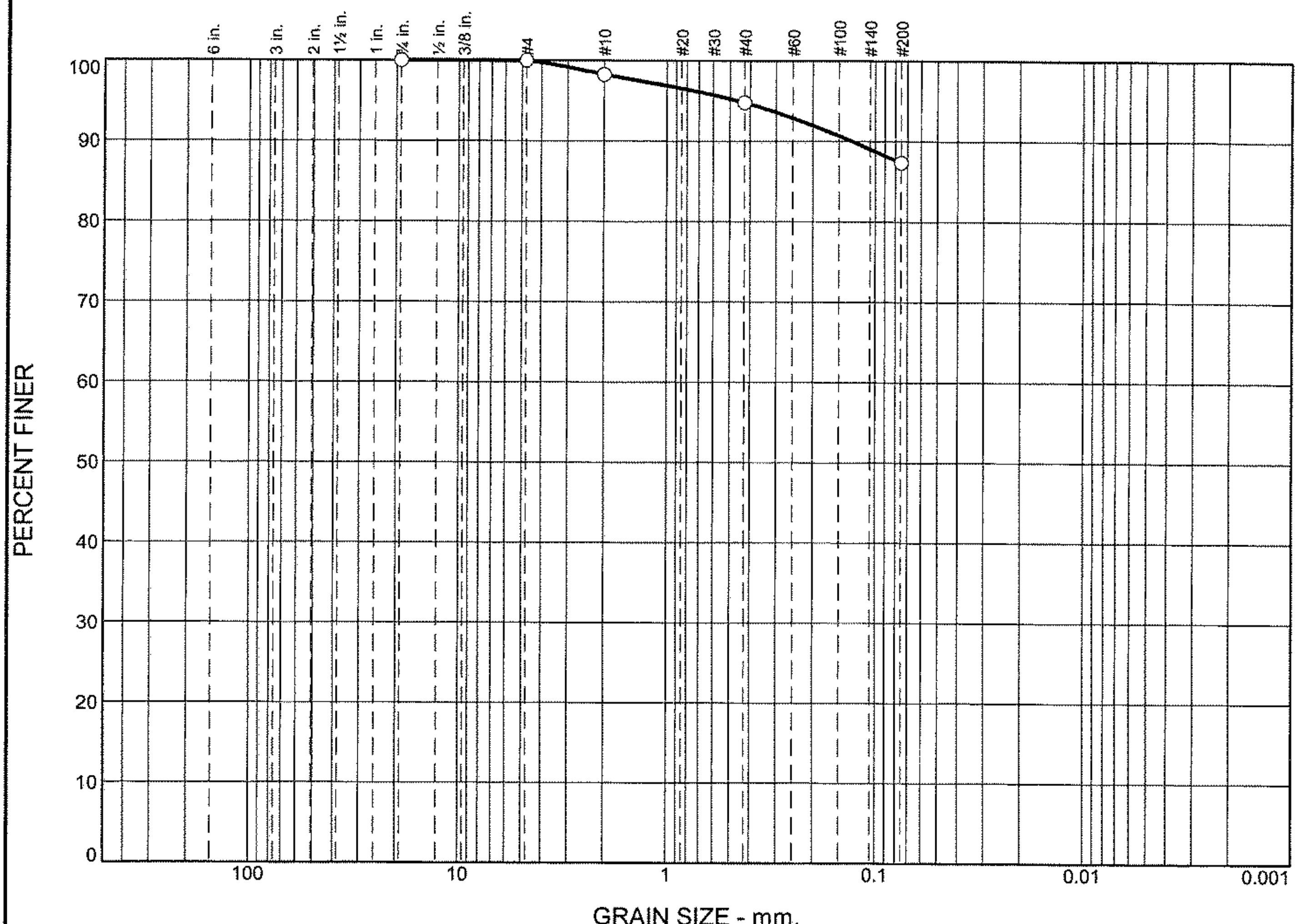
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.1	0.1	2.2	6.6	21.6	30.4			69.5

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
						0.1562	0.2313	0.3724	0.8229

Fineness Modulus
0.45

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	1.7	3.5	7.4	87.4	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○										

	Material Description	USCS	AASHTO
○			

Project No. **Client:**

Project:

○ **Source of Sample:** B **Sample Number:** L1527873-02

Remarks:

Alpha Analytical

F-126

Mansfield, MA

Figure

GRAIN SIZE DISTRIBUTION TEST DATA

11/19/2015

Location: B

Sample Number: L1527873-02

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
48.98	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.85	0.00	98.3
		#40	1.70	0.00	94.8
		#200	3.64	0.00	87.4

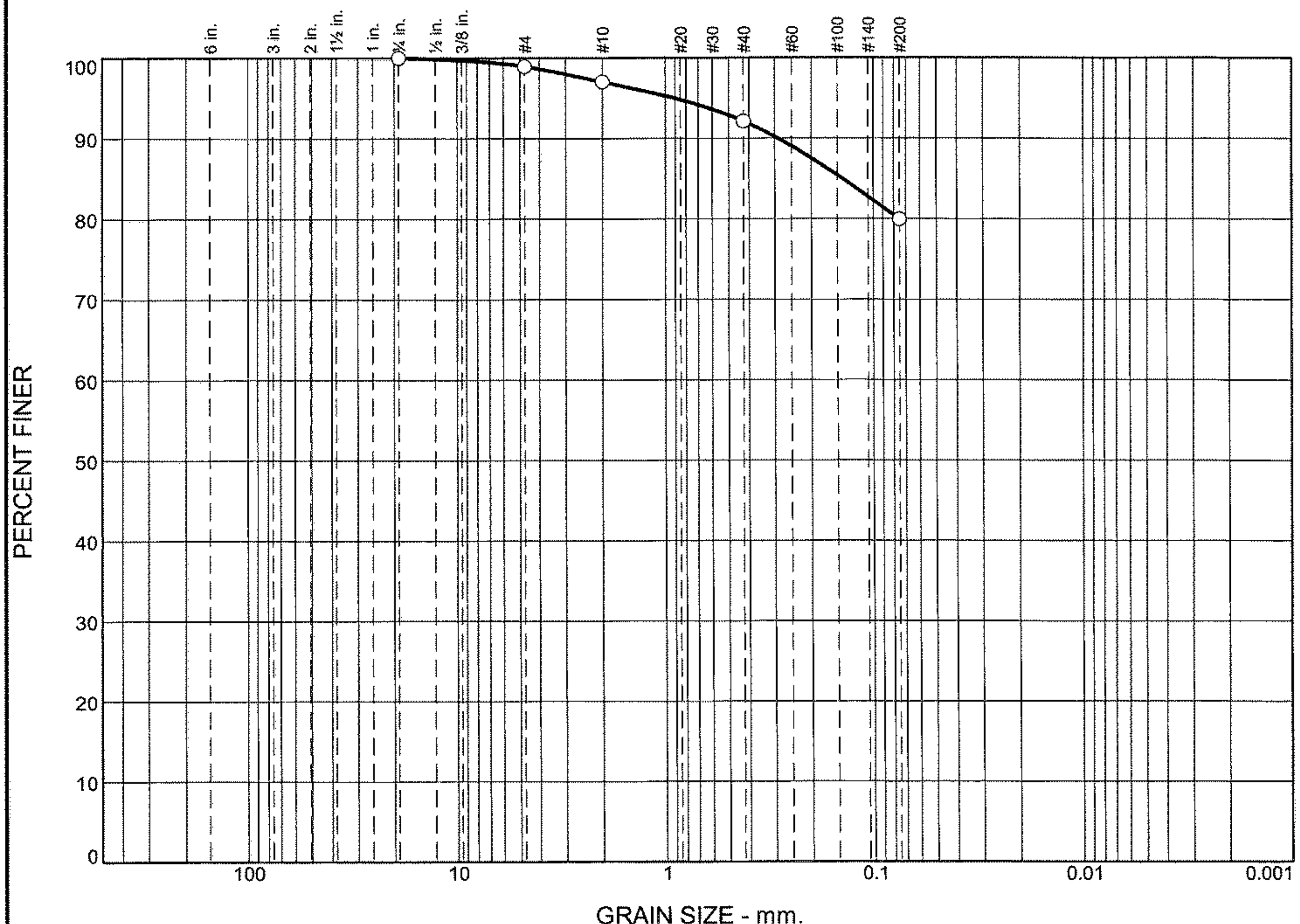
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	1.7	3.5	7.4	12.6			87.4

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
								0.1296	0.4551

Fineness Modulus
0.24

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	1.1	1.9	4.9	12.1	80.0	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			0.1418							

	Material Description	USCS	AASHTO
○			

Project No. **Client:**

Project:

○ **Source of Sample:** C **Sample Number:** L1527873-03

Remarks:

Alpha Analytical

F-128

Mansfield, MA

Figure

GRAIN SIZE DISTRIBUTION TEST DATA

11/19/2015

Location: C

Sample Number: L1527873-03

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
49.62	0.00	0.75	0.00	0.00	100.0
		#4	0.53	0.00	98.9
		#10	0.95	0.00	97.0
		#40	2.43	0.00	92.1
		#200	6.03	0.00	80.0

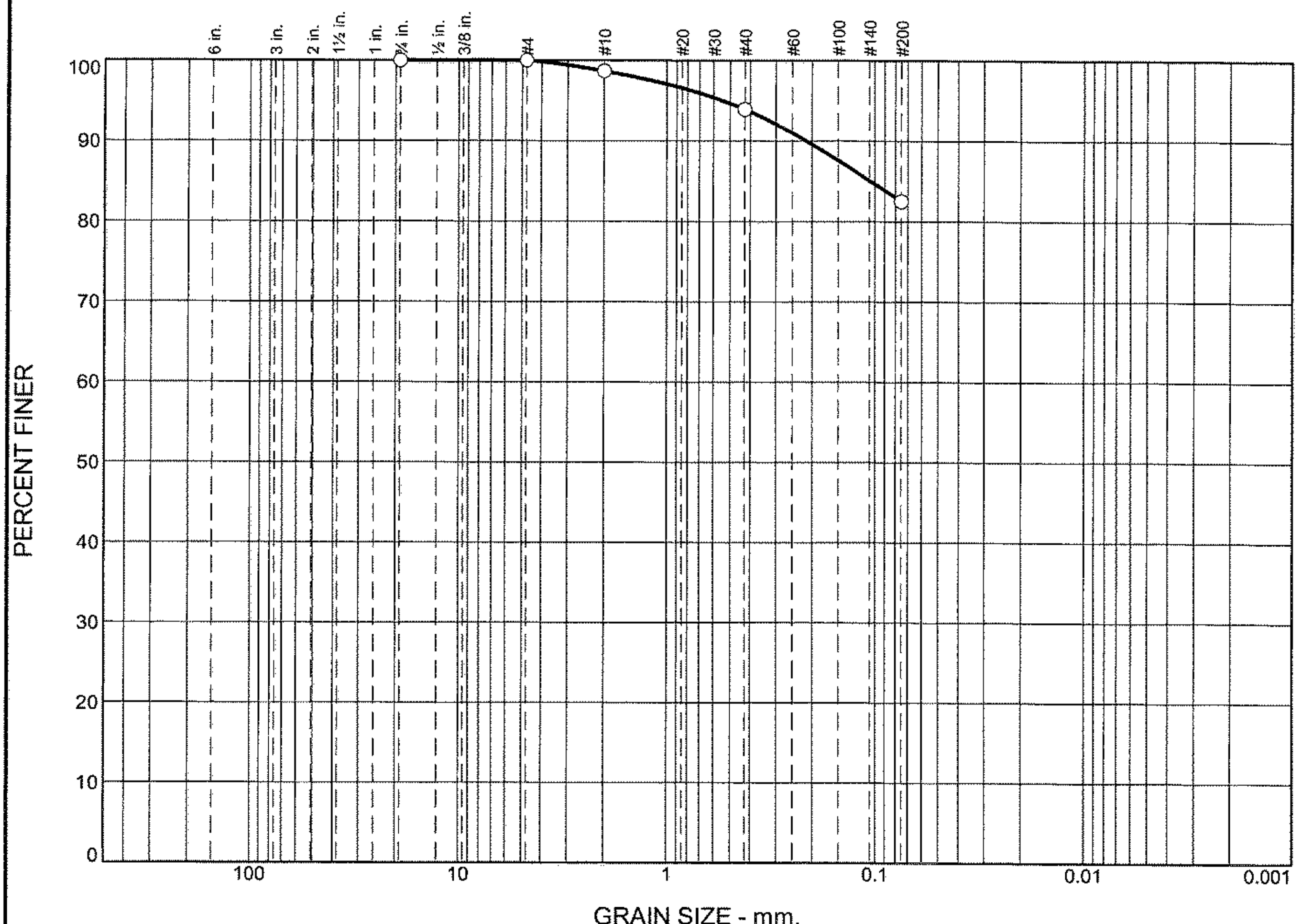
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	1.1	1.1	1.9	4.9	12.1	18.9			80.0

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
						0.0753	0.1418	0.2903	0.9040

Fineness Modulus
0.39

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	1.3	4.8	11.4	82.5	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			0.1046							

	Material Description	USCS	AASHTO
○			

Project No. **Client:**
Project:

○ **Source of Sample:** C **Sample Number:** WG842455-1

Remarks:

Alpha Analytical
F-130
Mansfield, MA

Figure

GRAIN SIZE DISTRIBUTION TEST DATA

11/19/2015

Location: C

Sample Number: WG842455-1

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
48.94	0.00	0.75	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.65	0.00	98.7
		#40	2.32	0.00	93.9
		#200	5.58	0.00	82.5

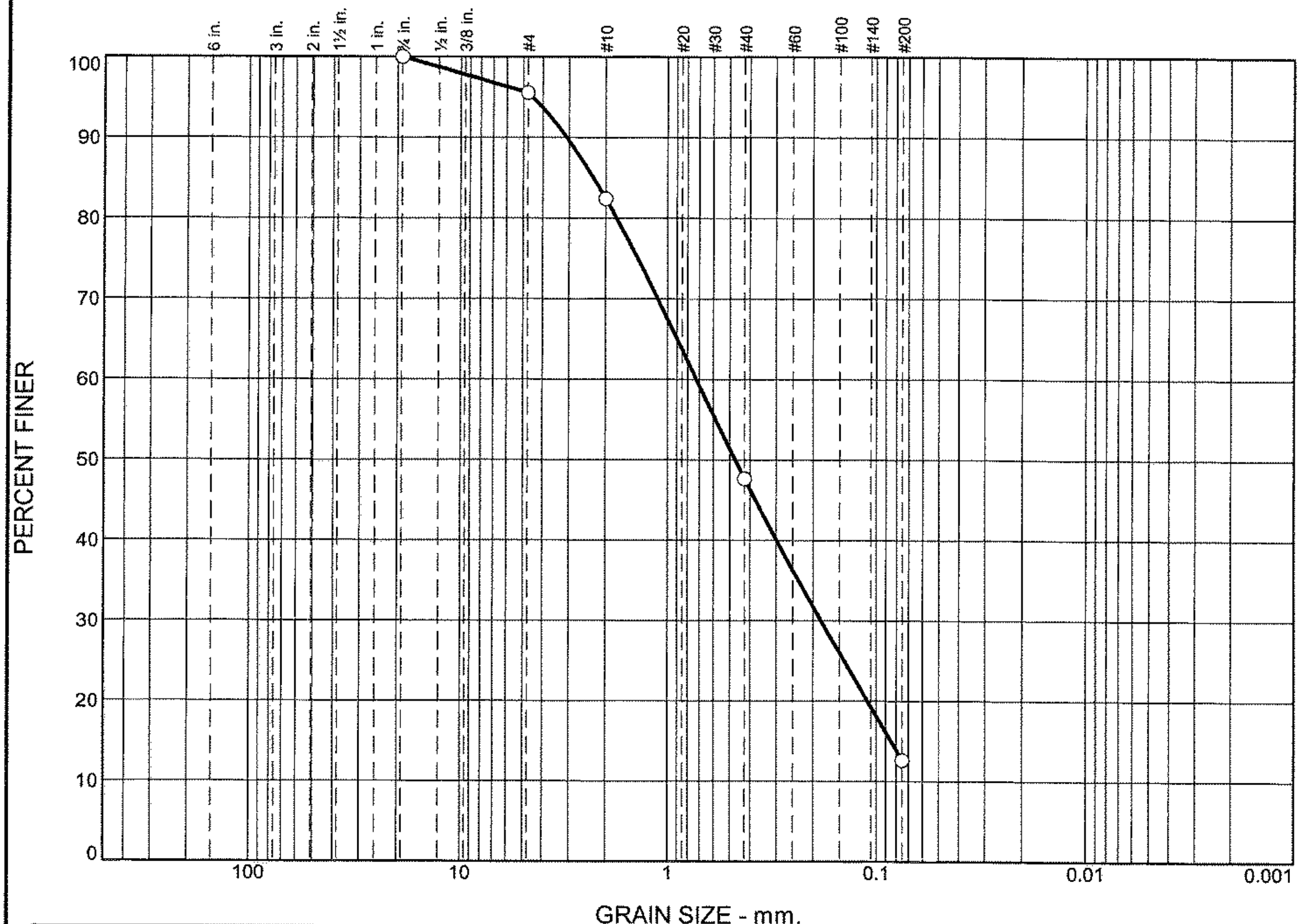
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	1.3	4.8	11.4	17.5			82.5

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
							0.1046	0.2136	0.5407

Fineness Modulus
0.28

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	4.4	13.2	34.8	35.0	12.6	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			2.2939	0.7257	0.4718	0.1839	0.0849			

	Material Description	USCS	AASHTO
○			

Project No. **Client:**

Project:

○ **Source of Sample:** D **Sample Number:** L1527873-05

Remarks:

Alpha Analytical

F-132

Mansfield, MA

Figure

GRAIN SIZE DISTRIBUTION TEST DATA

11/19/2015

Location: D

Sample Number: L1527873-05

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
84.78	0.00	0.75	0.00	0.00	100.0
		#4	3.77	0.00	95.6
		#10	11.15	0.00	82.4
		#40	29.47	0.00	47.6
		#200	29.67	0.00	12.6

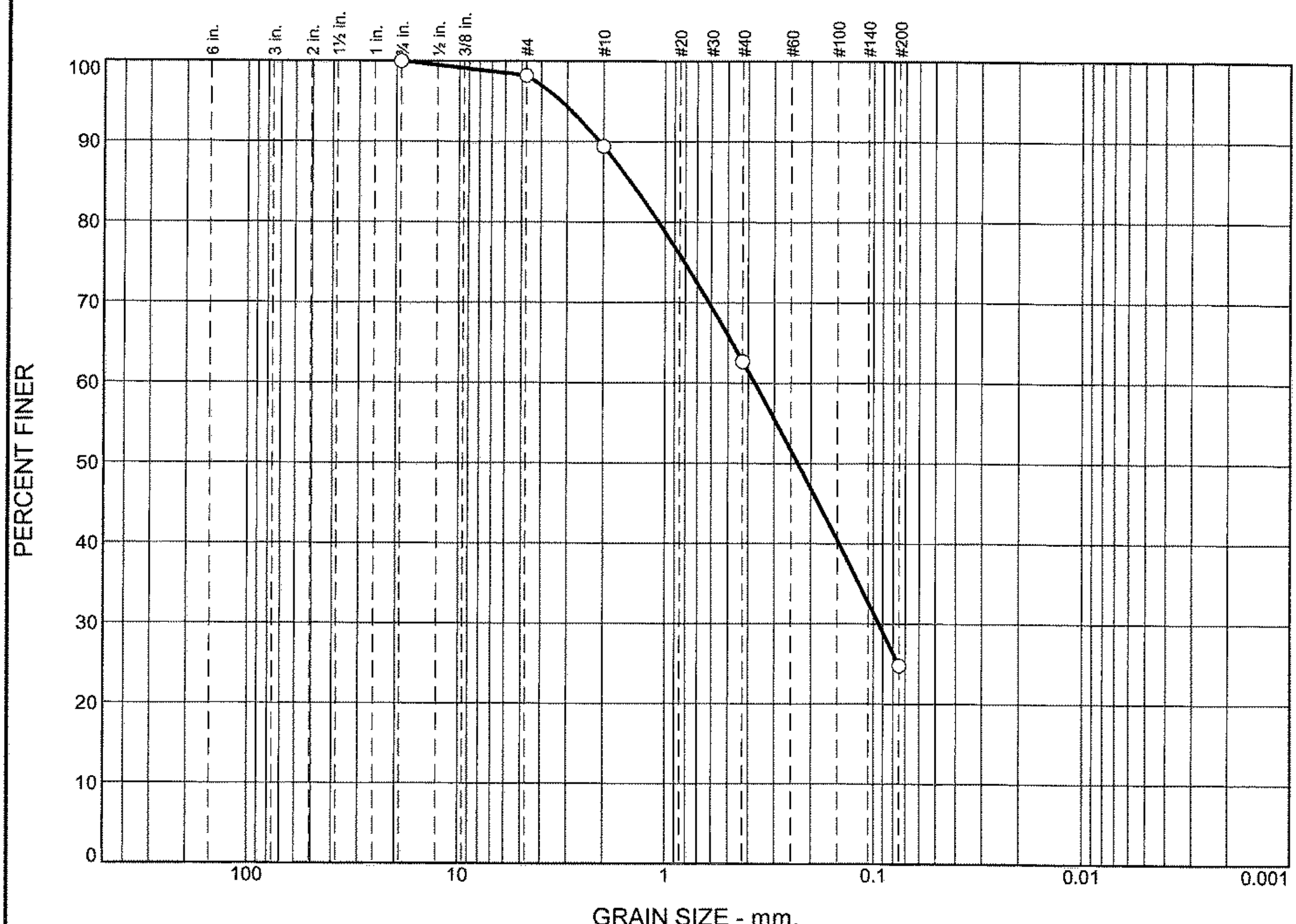
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	4.4	4.4	13.2	34.8	35.0	83.0			12.6

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
	0.0849	0.1102	0.1839	0.4718	0.7257	1.7731	2.2939	3.0796	4.5017

Fineness Modulus
2.28

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	1.8	8.8	26.7	37.9	24.8	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			1.4714	0.3727	0.2322	0.0943				

Material Description	USCS	AASHTO
○		

Project No. **Client:**
Project:

○ **Source of Sample:** E **Sample Number:** L1527873-06

Remarks:

Alpha Analytical
F-134
Mansfield, MA

Figure

GRAIN SIZE DISTRIBUTION TEST DATA

11/19/2015

Location: E

Sample Number: L1527873-06

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
71.86	0.00	0.75	0.00	0.00	100.0
		#4	1.30	0.00	98.2
		#10	6.32	0.00	89.4
		#40	19.20	0.00	62.7
		#200	27.21	0.00	24.8

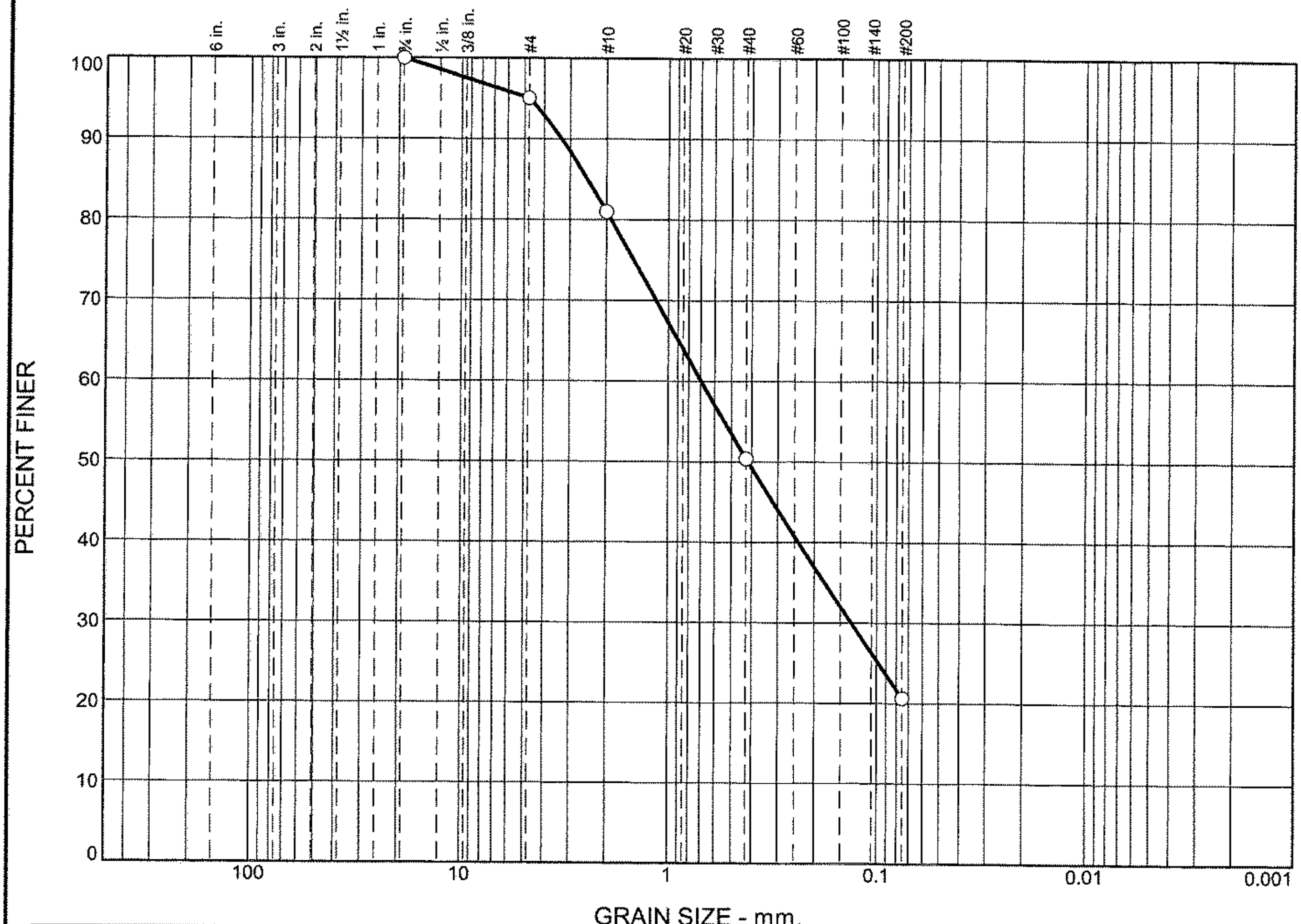
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	1.8	1.8	8.8	26.7	37.9	73.4			24.8

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
			0.0943	0.2322	0.3727	1.0762	1.4714	2.0929	3.2147

Fineness Modulus
1.64

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	5.0	14.0	30.6	29.8	20.6	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			2.4729	0.6978	0.4170	0.1329				

	Material Description	USCS	AASHTO
○			

Project No. **Client:**

Project:

○ **Source of Sample:** F **Sample Number:** L1527873-08

Remarks:

Alpha Analytical

F-136

Mansfield, MA

Figure

GRAIN SIZE DISTRIBUTION TEST DATA

11/19/2015

Location: F

Sample Number: L1527873-08

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
75.56	0.00	0.75	0.00	0.00	100.0
		#4	3.75	0.00	95.0
		#10	10.62	0.00	81.0
		#40	23.14	0.00	50.4
		#200	22.45	0.00	20.6

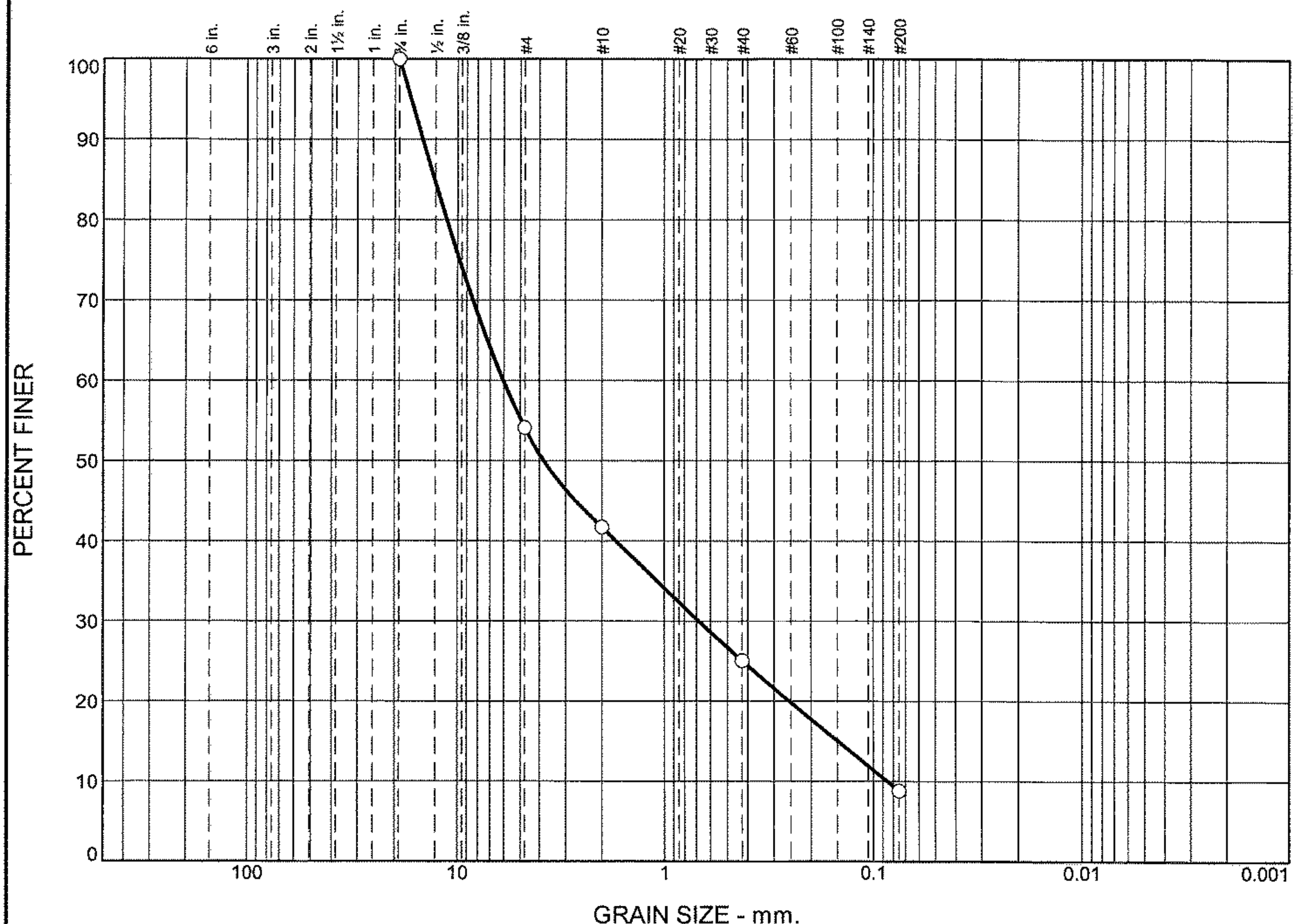
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	5.0	5.0	14.0	30.6	29.8	74.4			20.6

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
			0.1329	0.4170	0.6978	1.9011	2.4729	3.2979	4.7343

Fineness Modulus
2.20

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	45.9	12.4	16.7	16.2	8.8	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			12.8851	6.0509	3.8250	0.6833	0.1490	0.0856	0.90	70.68

	Material Description	USCS	AASHTO
○			

Project No. **Client:**
Project:

○ **Source of Sample:** G **Sample Number:** L1527873-09

Remarks:

Alpha Analytical
Mansfield, MA

F-138

Figure

GRAIN SIZE DISTRIBUTION TEST DATA

11/19/2015

Location: G

Sample Number: L1527873-09

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
84.84	0.00	0.75	0.00	0.00	100.0
		#4	38.93	0.00	54.1
		#10	10.52	0.00	41.7
		#40	14.15	0.00	25.0
		#200	13.76	0.00	8.8

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	45.9	45.9	12.4	16.7	16.2	45.3			8.8

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.0856	0.1490	0.2548	0.6833	3.8250	6.0509	11.2529	12.8851	14.7043	16.7451

Fineness Modulus	C_u	C_c
4.27	70.68	0.90

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 8260C: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene; Iodomethane (methyl iodide) (soil); Methyl methacrylate (soil); Azobenzene.
EPA 8270D: Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 625: 4-Chloroaniline, 4-Methylphenol.
SM4500: Soil: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
EPA 8270D: Biphenyl.
EPA 2540D: TSS
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

The following analytes are included in our Massachusetts DEP Scope of Accreditation, Westborough Facility:

Drinking Water
EPA 200.8: Sb,As,Ba,Be,Cd,Cr,Cu,Pb,Ni,Se,Tl; **EPA 200.7**: Ba,Be,Ca,Cd,Cr,Cu,Na; **EPA 245.1:** Mercury;
EPA 300.0: Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, Enterolert-QT.**

Non-Potable Water
EPA 200.8: Al,Sb,As,Be,Cd,Cr,Cu,Pb,Mn,Ni,Se,Ag,Tl,Zn;
EPA 200.7: Al,Sb,As,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Sr,Ti,Tl,V,Zn;
EPA 245.1, SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2340B, SM2320B, SM4500CL-E, SM4500F-BC, SM426C, SM4500NH3-BH, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500NH3-BC-NES, EPA 351.1, SM4500P-E, SM4500P-B, E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, SM14 510AC, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9222D-MF.**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 2

Date Rec'd in Lab: 10/29/15

ALPHA Job #: L1527873

ALPHA ANALYTICAL
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Client Information

Client: US ARMY CORPS OF ENG.
Address: 696 VIRGINIA RD, CONCORD MA 01742
Phone: 978 318 8048
Email: RICHARD.B.LOYD

Project Information

Project Name: BLUE HILL HARBOR
Project Location: BLUE HILL, ME
Project #:
Project Manager: RICHARD LOYD
ALPHA Quote #:

Turn-Around Time

☑ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due:

Report Information - Data Deliverables

☑ ADEx ☑ EMAIL

Billing Information

☑ Same as Client info PO #:

Regulatory Requirements & Project Information Requirements

☐ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☐ No CT RCP Analytical Methods
☐ Yes ☐ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☐ No NPDES RGP
☑ Other State /Fed Program REM Criteria REM

Additional Project Information:

CORPS EDD REQUIRED.
NOT ENOUGH JARS FOR SEPERATE DUP/MS/MSD SAMPLES. PLEASE TAKE FROM RANDOM COMP. SAMPLE

ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	~~VOC: ☐ 8260 ☐ 624 ☐ 524.2~~	SVOC: ~~☐ ABN~~	METALS: ~~☐ MCP 13 ☐ MCP 14 ☐ RCP 15~~ ☐ PAH	~~METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13~~	~~EPH: ☐ Ranges & Targets ☐ Ranges Only~~	~~VPH: ☐ Ranges & Targets ☐ Ranges Only~~	☐ PCB ☐ PEST	TPH: ☐ Quant Only ☐ Fingerprint	GRAIN SIZE	TOTAL SOLIDS/% M	TOC	Sample Comments	TOTAL # BOTTLES
27873.01	A	10/28	1453	SE	RBL		/	/				/		/	/	/		2
.02	B		1446											/	/			1
03	C		1433											/	/			1
04	COMP BC		1446				/	/				/				/		1
05	D		1422											/	/			1
06	E		1413											/	/			1
07	COMP DE		1422				/	/				/				/		1
08	F		1400											/	/			1
09	G		1343											/	/			1
.10	COMP FG		1400				/	/				/				/		1
					Container Type		A	A				A		P	P	A		
					Preservative		A	A				A		A	A	A		

SAMPLE INFO
Filtration
☐ Field
☐ Lab to do
Preservation
☐ Lab to do

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
[signature] UPS	10/28/15 1652	UPS [signature]	10/29/15 13:04

FORM NO: 01-01 (rev. 12-Mar-2012)

Serial_No:11191518:30

CHAIN OF CUSTODY

PAGE 2 OF 2

ALPHA ANALYTICAL
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Date Rec'd in Lab: 10/29/15

ALPHA Job #: L1527873

Client Information

Client: US ARMY CORPS OF ENG.
Address: 696 VIRGINIA RD
CONCORD MA 01742
Phone: 978 318 8048
Email: RICHARD.B.LOYD@USACE.ARMY.MIL

Additional Project Information:
CORPS EDD REQUIRED

Project Information

Project Name: BLUE HILL HARBOR
Project Location: BLUE HILL, ME
Project #:
Project Manager: RICHARD LOYD
ALPHA Quote #:

Turn-Around Time

☑ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due:

Report Information - Data Deliverables

☑ ADEx ☑ EMAIL

Billing Information

☑ Same as Client info PO #:

Regulatory Requirements & Project Information Requirements

☐ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☐ No CT RCP Analytical Methods
☐ Yes ☐ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☐ No NPDES RGP
☑ Other State /Fed Program RFM Criteria RFM

ANALYSIS

VOC: ~~☐ 8260 ☐ 624 ☐ 524.2~~
SVOC: ~~☐ ABN~~ ☐ PAH
METALS: ~~☐ MCP 13 ☐ MCP 14 ☐ RCP 15~~
METALS: ☐ RCRA5 ~~☐ RCRA8 ☐ PP13~~
EPH: ~~☐ Ranges & Targets ☐ Ranges Only~~
VPH: ☐ Ranges & Targets ☐ Ranges Only
TPH: ☐ Quant Only ~~☐ Fingerprint~~
☐ PCB ☐ PEST
GRAIN SIZE
TOTAL SOLIDS/RFM

SAMPLE INFO
Filtration
☐ Field
☐ Lab to do
Preservation
☐ Lab to do

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	VOC	SVOC	METALS	METALS	EPH	VPH	TPH	PCB/PEST	GRAIN SIZE	TOTAL SOLIDS						Sample Comments	TOTAL # BOTTLES
27873. ~~11~~ .03	DUP (C)	10/28	1433	SE	RBL								/	/	/							1
.12	BLANK	↓	1453	DI H_2O	↓		/	/				/										5

Container Type		A	P				A		P	P	
Preservative		A	C				A		A	A	

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
Richard B. Loyd	10/28/15 1652	UPS	
UPS		Kim O'Barley	10/29/15 13:00

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.
FORM NO: 01-01 (rev. 12-Mar-2012)

BLUE HILL HARBOR

MAINE

NAVIGATION IMPROVEMENT PROJECT

APPENDIX G

ESSENTIAL FISHERIES HABITAT ASSESSMENT

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APPENDIX G
ESSENTIAL FISH HABITAT ASSESSMENT
FOR THE
BLUE HILL HARBOR NAVIGATION IMPROVEMENT PROJECT

December 2019
REVISED July 2021

U.S. Army Corps of Engineers - New England District
696 Virginia Road, Concord, Massachusetts 01742-2751

1.0 Introduction

The 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act require that an Essential Fish Habitat (EFH) consultation be conducted for activities that may adversely affect important habitats of federally managed marine and anadromous fish species. EFH includes "those waters and substrate necessary for fish spawning, breeding, feeding, or growth to maturity." Blue Hill Harbor and the proposed placement site, the Eastern Passage Disposal Site (EPDS) located in Blue Hill Bay, fall into this category and may provide habitat for fish species in the area. The following is an assessment of the impacts to EFH from Blue Hill Harbor Federal Navigation Improvement Project.

2.0 Proposed Action

The proposed Blue Hill Harbor project will dredge a 6-foot deep mean lower low water (MLLW), 80-foot wide channel from the outer harbor, extending 5,400 feet northwest to the town wharf (Figure 1). Only the upper 2,600 feet of the project will require dredging, with channel limits in the lower reaches declared for jurisdictional purposes. This channel will be widened at its upper end to form a turning basin, 160 feet by 80 feet (0.6 acres), adjacent to the town wharf. Approximately 71,500 cubic yards (CY) of mixed gravel, sand, and silt will be removed from the proposed project area using a mechanical dredge. The 52,100 CY of dredged material deemed suitable for open water disposal will be loaded onto scows and towed about 14 miles to the Eastern Passage Disposal Site (EPDS), a previously used disposal site near Dodge Island, for placement (Figure 2). Approximately 10,600 CY of material from the upper two feet of the inner harbor, which was deemed unsuitable for open water placement due to the presence of polycyclic aromatic hydrocarbons (PAHs) and metals, will be placed in a confined aquatic disposal (CAD) cell within Blue Hill Harbor (Figure 3). The CAD cell will be constructed by removing approximately 19,500 CY of suitable of mixed gravel, sand, and silt material from an area adjacent to the designated channel. Material generated from the CAD cell creation will be placed at the EPDS. About 8,800 CY of material dredged from the lower channel reaches would be used to cap the CAD cell. The improvement project would deepen portions (approximately 25.5 acres) of the natural subtidal channel in Blue Hill Harbor and replace approximately 3.7 acres of intertidal area in the upstream portion of the harbor with subtidal area. All dredging will be by mechanical dredge and scow that will be able to operate in shallow draft areas in the channel. Construction will occur between November 8th and April 8th and is expected to take about four months to complete.

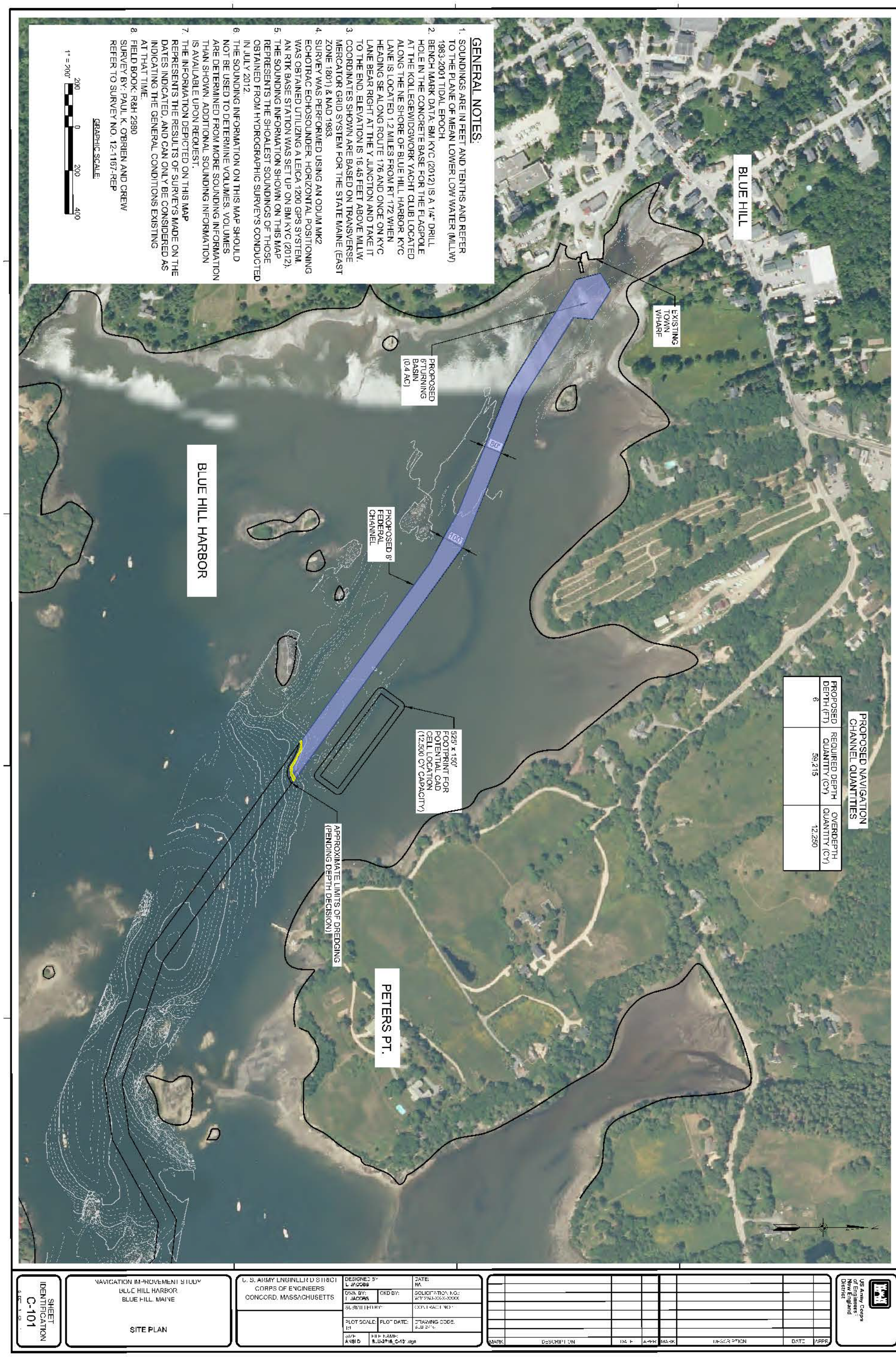


Figure 1. Location of the proposed Blue Hill Harbor Navigation Improvement Project outlined in black. Blue shading represents the required material and yellow shading represents overdepth only dredging.

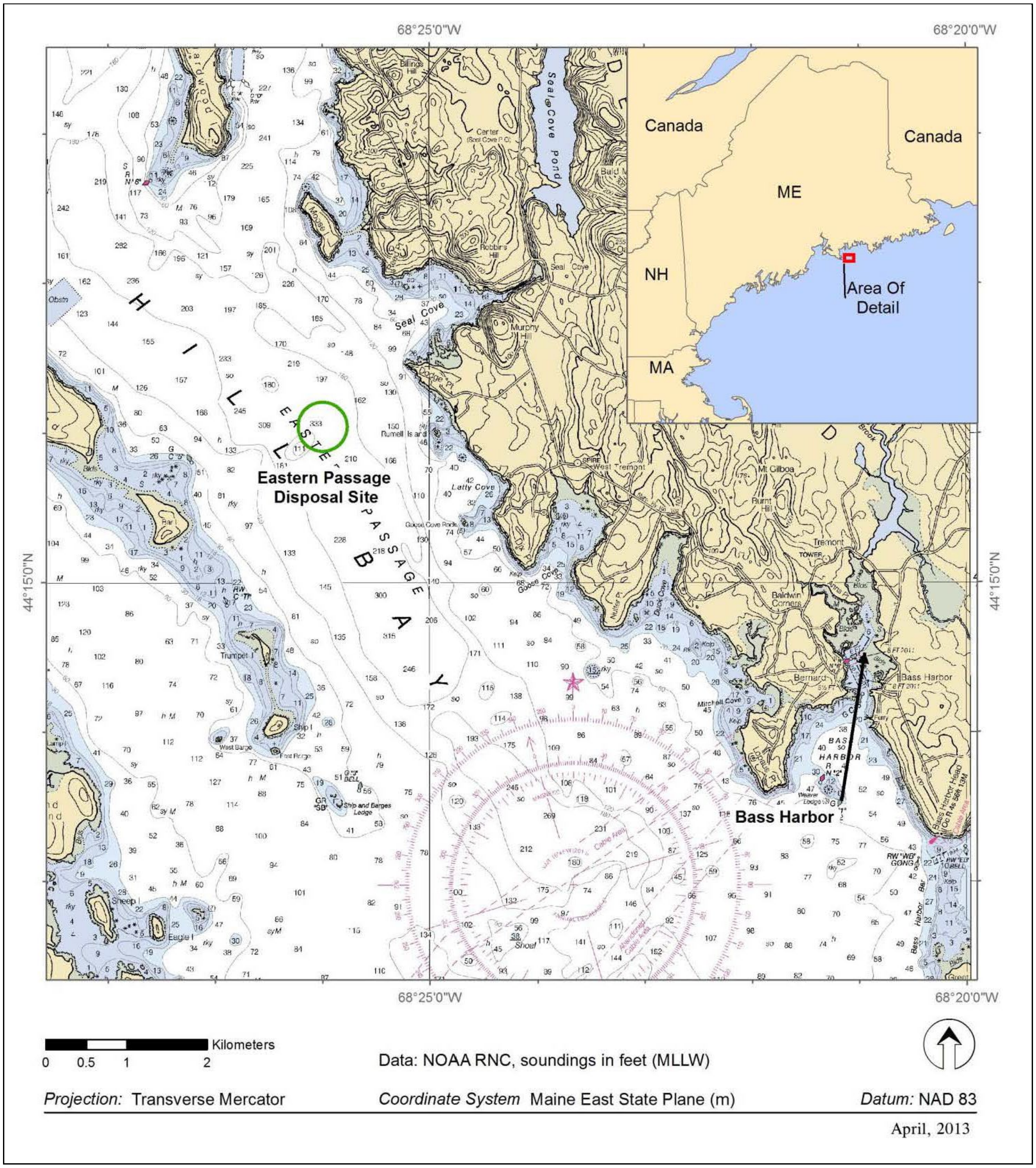
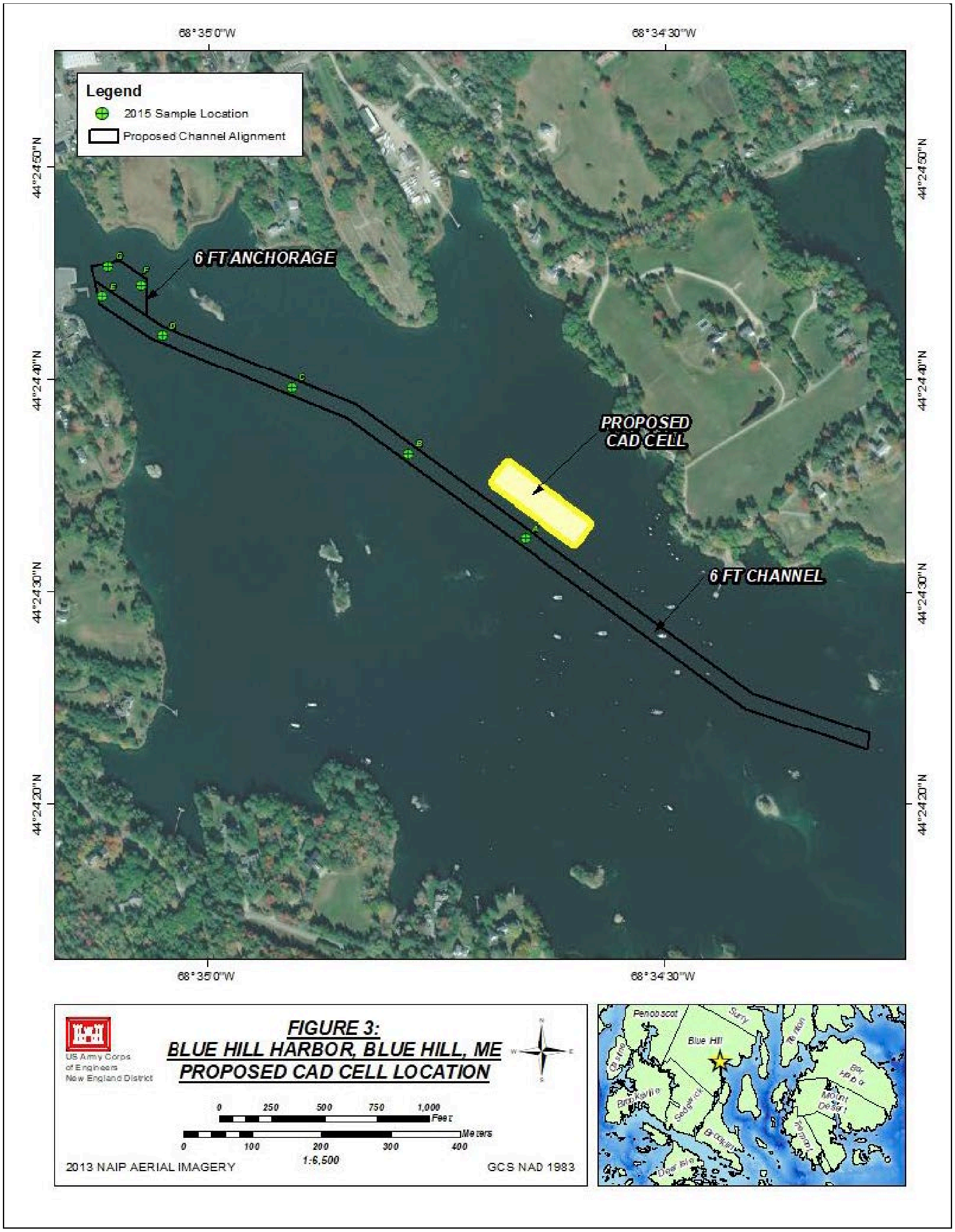


Figure 2. Eastern Passage Disposal Site.



68°35'0"W
68°34'30"W
Legend
2015 Sample Location
Proposed Channel Alignment
6 FT ANCHORAGE
PROPOSED CAD CELL
6 FT CHANNEL
44°24'50"N
44°24'40"N
44°24'30"N
44°24'20"N
US Army Corps of Engineers New England District
FIGURE 3:
BLUE HILL HARBOR, BLUE HILL, ME
PROPOSED CAD CELL LOCATION
0 250 500 750 1,000 Feet
0 100 200 300 400 Meters
1:6,500
2013 NAIP AERIAL IMAGERY
GCS NAD 1983
Penobscot
Surry
Blue Hill
Castine
Brooksville
Sedgwick
Brooklin
Deer Isle
Bar Harbor
Mount Desert

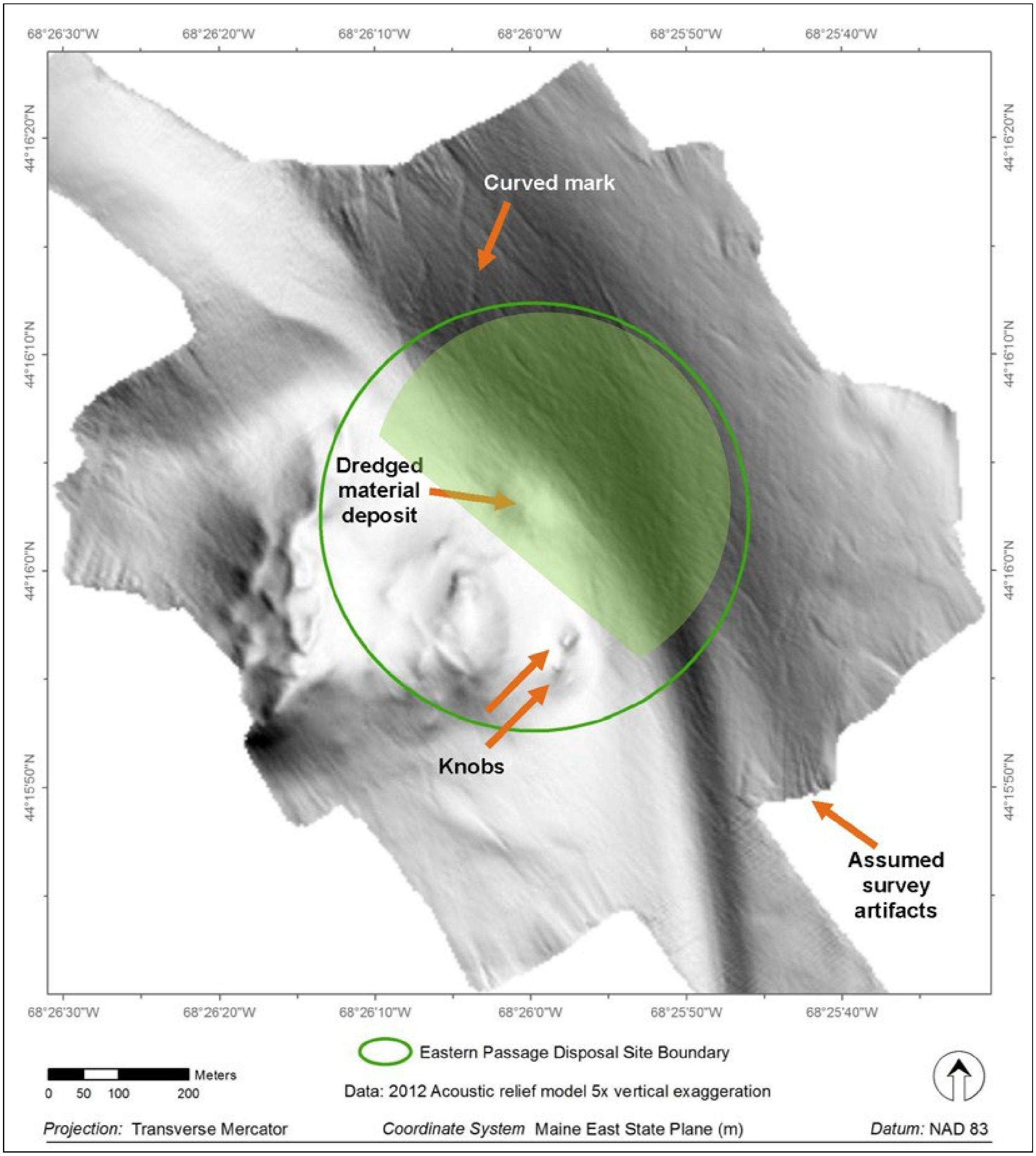


Figure 4. Bathymetry and bottom features of the Eastern Passage Disposal Site.

3.0 Analysis of Impacts

The impacts from the proposed Blue Hill Harbor improvement project include short-term impacts to water quality from increased suspended sediments and the temporary loss of the benthic forage base within the project footprint at the dredging and placement sites. The project will also result in the permanent conversion of intertidal areas to subtidal areas and changes in elevation at the dredging and placement sites. As the intertidal areas are contaminated with PAHs, the proposed project will dredge and sequester the unsuitable sediments in a CAD cell. The resultant habitat will be subtidal but will allow for the establishment of healthy benthic communities that are currently lacking. Thus offsetting the loss of compromised intertidal habitat As such, no mitigation for the intertidal habitat conversion is being proposed.

3.1 Physical environment

Water Quality

Any impacts from the dredging of the channel of Blue Hill Harbor are expected to be temporary, short term, and limited to the project area. Water quality impacts would be primarily a result of minor increases in suspended sediment (TSS) loads within the water column as a result of the dredging operations. The areas to be dredged are both intertidal and subtidal and subject to strong tidal flushing. Intertidal areas become mudflat at low tide. Consequently, any suspended sediments concentrations (which are anticipated to be minor) should quickly settle or be flushed out of the harbor by tidal activity. Unsuitable sediments would be removed and disposed of in a CAD cell within the harbor and should not result in any significant negative impacts to water quality. Any increases in the turbidity of near shore waters during disposal at the EPDS would be temporary and short term.

Dissolved oxygen levels are sometimes a concern with dredging and placement activities, however, the proposed project area is well flushed by tidal activity. No appreciable changes in the salinity regime, tidal flows, or tide height are expected as a result of the proposed dredging and placement activity.

Abiotic Habitats

Proposed Channel and Turning Basin

The proposed Blue Hill Harbor project will dredge a 6-foot deep mean lower low water (MLLW), 80-foot wide channel from the outer harbor, extending 5,400 feet northwest to the town wharf (Figure 1). Only the upper 2,600 feet of the project will require dredging, with channel limits in the lower reaches declared for jurisdictional purposes. This channel will be widened at its upper end to form a turning basin, 160 feet by 80 feet (0.6 acres), adjacent to the town wharf. The areal extent of the channel dredging is approximately 25.5 acres. The improvement project would deepen the natural subtidal channel in Blue Hill Harbor. The surficial sediments in the channel are currently dominated by a mix of silt, sand and gravel. Following the improvement dredging, the surficial sediments are expected to remain silt, sand and gravel.

The inner channel and turning basin would convert 3.7 acres of intertidal area into subtidal area. The intertidal zone is an important point of nutrient exchange and productivity in estuarine ecosystems. Numerous organisms, from benthic invertebrates to birds, utilize this environment through all or part of their lifecycles. However, due to the presence of polycyclic aromatic hydrocarbons (PAHs) and other metals in Blue Hill Harbor noted in the suitability determination, the intertidal areas in the harbor have been found to have depressed functions and values (e.g., depauperate benthic communities and poor sediment quality). The removal of the 10,500 CY of material from the upper two feet of the inner harbor would reduce the risk of ecological receptors being exposed to toxicity. Therefore, dredging this intertidal area will be beneficial for aquatic resources because potential contaminants will be removed from the site and not be bioavailable, enhancing breeding and higher quality feeding opportunities for organisms utilizing the intertidal zone. The conversion of intertidal habitat is not being mitigated for as the intertidal areas are contaminated with PAHs and the proposed project will dredge and sequester the unsuitable sediments in a CAD cell. The surficial sediments in the proposed turning basin are composed of a mix of gravels, sands, and silt. The sediments are anticipated to be similar following dredging.

Eastern Passage Disposal Site

The dredged material will be disposed of at the existing EPDS and will raise the existing elevations of the EPDS slightly. Material will be placed in the portions of the site that contain soft bottom (i.e., silty sediments) habitat. The area that will be targeted for placement is shown in Figure 4.

3.2 Biological Environment

3.2.1 Prey Species

The abundance and/or distribution of prey species for fish which EFH has been designated will be impacted from dredging and placement activities. Many of these fish feed on organisms that live in or on the sediment and have the potential to be buried by the direct material placement and/or by removal during the dredging process. Following project completion, the majority of the substrate type at the dredging locations and placement locations will be similar to current conditions. As such, recolonization by organisms from adjacent areas and a return of benthic prey assemblages to a pre-dredge conditions is expected to occur.

4.0 Life History of EFH Species

4.1 Selection of EFH Species

The National Marine Fisheries Service (NFMS) Essential Fish Habitat Mapper (NOAA-NMFS, 2021) was used to generate a list of species at the dredge and CAD cell site and at the placement site. Table 1 shows the species with EFH and Table 2 shows the species with Habitat Area of Particular Concern (HAPC) in the project areas. The inner harbor turning basin is located at approximately 44° 24' 44.18" N, 68° 35' 6.63" W, and the project area extends 2,500 feet to the southeast toward Blue Hill Bay. A short summary of the EFH for each life stage of each particular species and the impact of the project is described in section 4.2.

Table 1. List of species with designated EFH in Blue Hill Harbor (BHB) and Eastern Passage Disposal Site (EPDS). *present at both the dredging site and placement site. **present at the placement site.

Species	Eggs	Larvae	Juveniles	Adults
American plaice* (*Hippogloissoides platessoides*)	X	X	X	X
Atlantic Cod* (*Gadus morhua*)	X	X	X	X
Atlantic wolfish* (*Anarhichus lupus*)	X	X	X	X
Ocean pout* (*Macrozoarces americanus*)	X		X	X
Pollock* (*Pollachius virens*)			X	
White Hake* (*Urophycis tenuis*)			X	X
Windowpane flounder* (*Scophtalmus aquosus*)	X	X	X	X
Winter flounder*(*Pseudopleuronectes americanus*)	X	X	X	X
Silver Hake* (*Merluccius bilinearis)*				X
Red Hake* (*Urophycis chuss*)	X	X	X	X
Smooth skate* (*Malacoraja senta)*		X		
Thorny Skate* (*Amblyraja radiata)*		X		
Little Skate* (*Leucoraja erinacea*)			X	X
Winter Skate* (*Leucoraja ocellata*)			X	
Atlantic sea scallop* (*Placopecten magellanicus*)	X	X	X	X
Atlantic Herring* (*Clupea harengus)*		X	X	X
Atlantic mackerel* (*Scomber scombrus*)			X	X
Atlantic Butterfish* *(Peprilus triacanthus)*			X	X
Haddock** (*Melanogrammus aeglefinus*)			X	
Monkfish** (*Lophius americanus*)			X	

Table 2. Species with Habitat Area of Particular Concern in the proposed project area.

Species	Eggs	Larvae	Juveniles	Adults
Atlantic Cod (*Gadus morhua*)			X	

4.2 EFH Species

American plaice (*Hippogloissoides platessoides*) - Adults, juveniles, larvae, and eggs all inhabit subtidal benthic or pelagic habitats in the Gulf of Maine of at least 40 meters. The high and mixed salinity zones for Blue Hill Harbor and the EPDS are both considered EFH for this species.

Occurrence in Project Area and Impacts: The effects of the proposed dredging are not anticipated to affect American plaice EFH as dredge area depths are outside of plaice EFH. Placement of material at the EPDS may temporarily displace or bury any plaice that may be present at the site and will temporarily disturb any benthic resources in the footprint of the material placement, thus impacting plaice EFH. Monitoring of benthic communities in other disposal sites in Maine waters has shown that recovery of benthic resources that serve as a forage based for plaice occurs following material placement (USACE 2017) and as such, no long-term significant impacts to plaice EFH is expected.

Atlantic Cod (*Gadus morhua*) – EFH for juvenile cod includes intertidal habitats and sub-tidal habitats out to a maximum depth of 120 meters. Juvenile habitat types include eelgrass, mixed sand and gravel, and rocky habitats with and without attached macroalgae and emergent epifauna. In inshore waters, young-of-the-year juveniles prefer gravel and cobble habitats and eelgrass beds after settlement. EFH for adult cod is sub-tidal benthic habitats between 30 and 160 m.

Occurrence in Project Area and Impacts: Juvenile cod EFH as defined above is found in the project area as portions of the proposed project contain a mix of sand-gravel substrate, which is also considered a habitat of particular concern (HAPC) for inshore juvenile cod. These areas are within the proposed turning basin feature that is planned to be created. However, the sediments located within the areas meeting the definition of cod EFH are contaminated with elevated levels of PAHs (see Environmental Assessment Section 5). These contaminated areas will be removed to allow for the colonization of benthic organisms that serve as a forage base for cod. The sediment type following the creation of the tuning basin feature will remain the same however the area will be converted from intertidal to subtidal.

The proposed dredge areas are shallow and not considered adult cod EFH. The placement site, the EPDS, is adult cod EFH. Placement of material at EPDS will temporarily disturb benthic resources at EPDS, however monitoring has shown that benthic recovery can be expected (USACE 2017). Placement of material at EPDS will also raise the elevations of the seafloor bottom. Material placement at EPDS will be contained to areas of soft bottom and will avoid hard bottom or gravel areas. The impacts of material placement at EPDS is not anticipated to significantly affect adult cod EFH.

Atlantic wolfish (*Anarhichus lupus*) – EFH is designated for this species in the project area. Egg EFH occurs in less than 300 feet depths under rocks and boulders. Larvae habitat is in subtidal and pelagic habitats, while juvenile EFH is designated as the subtidal benthic habitats at depths between 230-600 feet deep. Adult EFH is designated as subtidal benthic habitats in less than 173 meters of water.

Occurrence in Project Area and Impacts: As the proposed dredging would occur in intertidal and shallow subtidal zones, no impacts to Atlantic wolfish EFH are expected in the dredge footprint as wolffish EFH is in deeper subtidal waters. The dredge areas do not contain the EFH noted for this species, and therefore no adverse impacts to wolfish EFH are expected.

The placement site, the EPDS, is wolffish EFH. Placement of material at EPDS will temporarily disturb benthic resources at EPDS, however monitoring at placement areas has shown that benthic recovery can be expected (USACE 2017). Placement of material at EPDS will also raise the elevations of the seafloor bottom. The impacts of material placement at EPDS are not anticipated to significantly affect wolffish EFH.

Ocean pout (*Macrozoarces americanus*) – Ocean pout egg EFH is hard bottom habitat, juvenile EFH is designated as sub and intertidal benthic areas, and adult EFH is designated as being in waters which are 65.6 – 459.3 feet and in high salinity zones in estuaries north of Cape Cod.

Occurrence in Project Area and Impacts: EFH is designated for ocean pout eggs and juveniles in the proposed area of the Blue Hill Harbor project. The disturbance of ocean pout EFH for eggs and juveniles is possible as a result of this project. The project areas are anticipated to remain silty-sand and silty-gravel bottoms following construction. Therefore, no significant impacts to egg and juvenile pout EFH will occur.

The proposed dredge areas are shallow and not considered adult ocean pout EFH. The placement site, the EPDS, contains adult ocean pout EFH. Placement of material at EPDS will temporarily disturb benthic resources at PDS, however monitoring has shown that benthic recovery at disposal sites can be expected (USACE 2017). Placement of material at EPDS will also raise the elevations of the seafloor bottom. The impacts of material placement at EPDS are not anticipated to significantly affect adult ocean pout EFH.

Pollock (*Pollachius virens*) – EFH for pollock eggs and larvae is pelagic inshore and offshore habitats in the Gulf of Maine, on Georges Bank, and in southern New England. EFH for juveniles includes inshore and offshore pelagic and benthic habitats from the intertidal zone to 180 meters in the Gulf of Maine. Juveniles require rocky bottom habitat with attached micro algae or eelgrass beds, and spawning occurs over hard, stony, or rocky habitat. EFH for adults includes offshore pelagic and benthic habitats in the Gulf of Maine between 80 and 300 meters.

Occurrence in Project Area and Impacts: EFH for eggs, larvae, and juvenile pollock occur in the project area. The benthic habitat in the proposed project area is comprised of silts, and silty-sandy-gravel intertidal area. The project will impact pollock EFH. The project areas are anticipated to remain silty-sand and silty-gravel bottoms following construction. Therefore, no significant impacts to egg, larval, and juvenile pollock EFH will occur.

The proposed dredge areas are shallow and not considered adult pollock EFH. The placement site, the EPDS, is pollock EFH. Placement of material at PDS will temporarily disturb benthic resources at PDS, however monitoring has shown that benthic recovery at disposal sites can be expected (USACE 2017). Placement of material at EPDS will also raise the elevations of the seafloor bottom. The impacts of material placement at EPDS are not anticipated to significantly affect adult pollock EFH.

White Hake (*Urophycis tenuis*) – EFH for white hake eggs and larvae include the pelagic habitats in the Gulf of Maine. EFH for juvenile white hake occurs in intertidal and sub-tidal estuarine and marine habitats in the Gulf of Maine to a maximum depth of 300 meters. Pelagic phase juveniles remain in the water column for about two months. In nearshore waters, essential fish habitat for benthic phase juveniles occurs on fine-grained, sandy substrates in eelgrass, macroalgae, and un-vegetated habitats. Adult EFH occurs in sub-tidal benthic habitats in the Gulf of Maine in depths greater than 25 meters in fine-grained, muddy substrates and in mixed soft and rocky habitats.

Occurrence in Project Area and Impacts: EFH for juvenile white hake occurs in the project area. The benthic habitat in the proposed project area is comprised of silt, and silty-sandy-gravel intertidal area. The project will impact juvenile white hake EFH. The project areas are anticipated to remain silty-sand and silty-gravel bottoms following construction. Therefore, no significant impacts to juvenile white hake EFH will occur.

The proposed dredge areas are shallow and not considered EFH for white hake eggs, larvae, or adults. The placement site, the EPDS, is EFH for these life stages of white hake. Placement of material at EPDS will temporarily disturb benthic resources at EPDS, however monitoring has shown that benthic recovery at disposal sites can be expected (USACE 2017). Placement of material at EPDS will also raise the elevations of the seafloor bottom. The impacts of material placement at EPDS are not anticipated to significantly affect adult white hake EFH.

Windowpane flounder (*Scophtalmus aquosus*) – EFH for all windowpane flounder life stages is designated in intertidal and sub-tidal benthic habitats in estuarine, coastal marine, and continental shelf waters in the Gulf of Maine. Eggs and larvae are pelagic while juveniles and adults prefer mud and sand substrates in the intertidal and subtidal benthic zones.

Occurrence in Project Area and Impacts: EFH for all life stages of windowpane flounder are expected to be impacted by the proposed project. The areas of the proposed project that are subtidal (i.e., the proposed channel and the EPDS) and considered EFH are expected to experience temporary impacts associated with sediment removal and sediment placement (elevated suspended sediments and loss of benthic fauna) as well as the permanent impacts of changes in elevation. The areas of intertidal habitat EFH will be permanently altered to subtidal areas, but will still be windowpane EFH. Therefore, only temporary impacts to windowpane EFH are expected.

Winter Flounder (*Pseudopleuronectes americanus*) – EFH for all life stages of winter flounder is designated in Blue Hill Bay and in the Gulf of Maine. Egg EFH is designated as subtidal estuarine and coastal benthic habitat from mean low water to five meters, while larval EFH is designated to a maximum depth of 70 meters. Essential habitats for winter flounder eggs include mud, muddy sand, sand, gravel, macroalgae, and submerged aquatic vegetation. Bottom habitats are unsuitable if exposed to excessive sedimentation which can reduce hatching success. Larval flounder EFH is considered estuarine, coastal, and continental shelf water column habitats from the shoreline to a maximum depth of 70 meters. Juvenile EFH extends from the intertidal zone to 60 meters and includes a variety of bottom types, such as mud, sand, rocky substrates with attached macroalgae, tidal wetlands, and eelgrass. Young-of-the-year juveniles are found inshore on muddy and sandy sediments in and adjacent to eelgrass and macroalgae, in bottom debris, and in marsh creeks. They tend to settle to the bottom in soft-sediment depositional areas where currents concentrate late-stage larvae and disperse into coarser-grained substrates as they get older. Adult EFH is designated as estuarine, coastal, and continental shelf benthic habitats extending from the intertidal zone to a maximum depth of 70 meters. EFH for adult winter flounder occurs on muddy and sandy substrates and on hard bottom on offshore banks.

Occurrence in Project Area and Impacts: EFH for all life stages of winter flounder are expected to be impacted by the proposed project. The areas of the proposed project that are shallow subtidal and intertidal habitat (i.e., the proposed channel, turning basin, and CAD cell) and EFH for all life stages are expected to experience temporary impacts associated with sediment removal (elevated suspended sediments and loss of benthic fauna) as well as the permanent impacts which are expected (changes in elevation). The areas of intertidal habitat EFH will be permanently altered to subtidal areas but will still be winter flounder EFH.

Placement of material at EPDS will temporarily disturb the pelagic water column habitat as well as the benthic habitats at the site during placement events. The effect on the water column EFH for larval flounder will be short term and highly localized. Placement will temporarily disturb benthic resources at EPDS, however monitoring has shown that benthic recovery at placement sites can be expected (USACE 2017). Placement of material at EPDS will also raise the elevations of the seafloor bottom. The impacts of material placement at EPDS are not anticipated to significantly affect winter flounder EFH of any life stage.

Silver Hake (*Merluccius bilinearis)* –EFH is designated for eggs, larvae, juveniles, and adults in pelagic habitats in the Gulf of Maine. Adult EFH is also designated for areas with sandy substrates in pelagic and benthic habitats greater than 35 meters and juvenile EFH is designated over similar sediments in areas greater than 40 meters.

Occurrence in Project Area and Impacts: The proposed dredge areas are shallow and not considered EFH for silver hake eggs, larvae, juvenile or adults. The placement site, the EPDS, is EFH for these life stages of silver hake. Placement of material at EPDS will temporarily disturb benthic resources at EPDS, however monitoring has shown that benthic recovery at disposal sites can be expected (USACE 2017). Placement of material at EPDS will also raise the elevations of the seafloor bottom. The impacts of material placement at EPDS are not anticipated to significantly affect adult and juvenile silver hake EFH.

Red Hake (*Urophycis chuss*) – No EFH for red hake eggs or larvae is designated in Blue Hill Bay although there is designated EFH in the pelagic waters of the Gulf of Maine. EFH for juvenile red hake is designated in intertidal and subtidal waters throughout Blue Hill Bay and the Gulf of Maine notably in habitats with habitat complexity, while adult EFH is designated in subtidal waters of Casco Bay and the Gulf of Maine

Occurrence in Project Area and Impacts: EFH for all life stages of red hake are expected to be impacted by the proposed project. The areas of the proposed project that are shallow subtidal and intertidal (i.e., the proposed channel, CAD cell, and turning basin) and considered EFH are expected to experience temporary impacts associated with sediment removal and sediment placement (elevated suspended sediments and loss of benthic fauna) as well as the permanent impact of change in elevation. The areas of intertidal habitat EFH will be permanently altered to subtidal areas,but will still be red hake EFH. Placement of material at EPDS will temporarily disturb the pelagic water column during placement events, however the effect on the water column as EFH for eggs and larval red hake will be short term and highly localized.

Skates – EFH for juvenile smooth, thorny, little, and winter skate is designated in Blue Hill Bay and the Gulf of Maine. EFH for adult little skate is designated in Blue Hill Bay. EFH for adult smooth, thorny, little, and winter skate is designated in the Gulf of Maine.

Occurrence in Project Area and Impacts: The proposed dredge areas are shallow and not considered EFH for smooth, thorny, or winter skate. Little skate EFH is present in the dredge area. The conversion of intertidal habitats to subtidal habitats should not significantly reduce little skate EFH as their preferred habitats are subtidal sand and mud habitats. The placement site, the EPDS, is EFH for all skate species and life stages. Placement of material at EPDS will temporarily disturb benthic resources at PDS, however monitoring has shown that benthic recovery at disposal sites can be expected (USACE 2017). Placement of material at EPDS will also raise the elevations of the seafloor bottom. The impacts of material placement at EPDS are not anticipated to significantly affect adult and juvenile skate EFH.

Atlantic sea scallop (*Placopecten magellanicus*) – EFH is designated for all Atlantic sea scallop life stages in Blue Hill Bay and in the Gulf of Maine.

Occurrence in Project Area and Impacts: The proposed dredge areas are shallow and not considered EFH for any Atlantic sea scallop life stage. The placement site, the EPDS, is EFH for all life stages of sea scallop. Placement of material at EPDS will temporarily disturb benthic resources at EPDS, however monitoring has shown that benthic recovery at placement sites can be expected (USACE 2017). Placement of material at EPDS will also raise the elevations of the seafloor bottom. The impacts of material placement at EPDS are not anticipated to significantly affect sea scallop EFH.

Atlantic Herring (*Clupea harengus*) – EFH is designated for Atlantic Herring larvae, juveniles, and adults in Blue Hill Bay and in the Gulf of Maine. Larvae are transported long distances inshore into bays and estuaries while juvenile EFH occurs in intertidal and subtidal pelagic habitats to 984.3 feet. Similarly, adult EFH occurs in subtidal pelagic habitat to a maximum depth of 984.3 feet. Unless spawning, they usually remain near the surface.

Occurrence in Project Area and Impacts: The proposed dredge areas are shallow and not considered EFH for Atlantic herring eggs, larvae, and adults. Juvenile herring EFH is present in the dredge areas. As the dredge areas will remain silty-sand and silty-gravel subtidal habitat following construction, the persistence of juvenile herring EFH is not anticipated to be affected. The placement site, the EPDS, is EFH for all life stages of Atlantic herring. Placement of material at EPDS will temporarily disturb the water column and will also raise the elevations of the seafloor bottom. The impacts of material placement at EPDS are not anticipated to significantly affect Atlantic herring EFH.

Atlantic Mackerel (*Scomber scombrus*) – The Atlantic mackerel is distributed in the northwest Atlantic between Labrador and North Carolina. The mackerel is a fast swimming pelagic fish found in very large schools. Atlantic mackerel are generally found offshore and are not dependent on the coastline or bottom substrate for any period of their lives. Smaller fish, however, may move inshore into estuaries and harbors in search of food. EFH for all life stages includes pelagic habitats in inshore estuaries and embayments throughout the Gulf of Maine. Spawning occurs in spring and early summer (typically June) at any location, resulting in pelagic egg and larval stages that are dispersed by currents.

Occurrence in Project Area and Impacts: Impacts to all EFH for all life stages of Atlantic mackerel at the proposed project areas and placement site are expected to be minimal. Impacts to the water column habitat from dredged material disposal are expected to be short term and localized, therefore no significant effects to Atlantic mackerel EFH are expected.

Atlantic butterfish (*Peprilus triacanthus*) - The Atlantic butterfish *Peprilus triacanthus* is distributed in the northwestern Atlantic from Newfoundland to Florida but is most common between the Gulf of Maine and Cape Hatteras North Carolina. This species tends to loosely school near the surface in waters overlying sand bottoms several hundred feet from shore. Butterfish are common in coastal waters during the summer months, moving north and inshore to feed. During winter, butterfish move south and offshore to deeper warmer water to overwinter. Spawning occurs in the coastal waters offshore during the summer months (June through August). Eggs and larvae are pelagic and drift in the plankton. EFH for all life stages includes pelagic habitats in inshore estuaries and embayments throughout the Gulf of Maine.

Occurrence in Project Area and Impacts: Impacts to all EFH for all life stages of Atlantic butterfish at the proposed project areas and placement site are expected to be minimal. Impacts to the water column habitat from dredged material disposal are expected to be short term and localized, therefore no significant effects to Atlantic butterfish EFH are expected.

Haddock (*Melanogramus aeglefinus*) – EFH for haddock eggs and larvae occurs in pelagic waters in the Gulf of Maine. EFH for juveniles occurs in subtidal waters deeper than 40 meters, while adult haddock EFH is considered subtidal habitats below 50 meters.

Occurrence in Project Area and Impacts: Impacts to haddock egg and larvae EFH at the placement site are expected to be minimal as water column impacts are expected to be short-term and localized. Placement of material at EPDS will temporarily disturb the water column and benthic resources at EPDS, however monitoring has shown that benthic recovery at placement sites can be expected. Placement of material at EPDS will also raise the elevations of the seafloor bottom. The impacts of material placement at EPDS are not anticipated to significantly affect juvenile or adult haddock EFH.

Monkfish (*Lophius americanus*) – Monkfish, or goosefish, are distributed in the northwest Atlantic from the Gulf of St. Lawrence to Cape Hatteras North Carolina. EFH for eggs and larvae are pelagic habitats in inshore areas in southern Maine and in the Gulf of Maine. EFH for juvenile monkfish include sub-tidal benthic habitats in depths between 20 and 400 meters in the Gulf of Maine. A variety of habitats are essential for juvenile monkfish, including hard sand, pebbles, gravel, broken shells, and soft mud; they also seek shelter among rocks with attached algae. EFH for adult monkfish includes sub-tidal benthic habitats in depths between 20 and 400 meters in the Gulf of Maine. EFH habitat characteristics include areas of hard sand, pebbles, gravel, broken shells, and soft mud.

Occurrence in Project Area and Impacts: The proposed dredge areas are shallow and not considered EFH for any life stage of monkfish. The placement site, the EPDS, is EFH for all monkfish life stages. Placement of material at EPDS will temporarily disturb the water column and benthic habitats at EPDS, however monitoring has shown that benthic recovery at placement sites can be expected (USACE 2017). Placement of material at EPDS will also raise the elevations of the seafloor bottom. The impacts of material placement at EPDS are not anticipated to significantly affect monkfish EFH.

4.3 Habitat Areas of Particular Concern

Atlantic Cod (*Gadus morhua*) – - The inshore areas of the Gulf of Maine and Southern New England between 0-20 meters are designated as HAPC for juvenile cod. The coastal areas of the Gulf of Maine and Southern New England contain structurally complex rocky-bottom habitat that supports a wide variety of emergent epifauna and benthic invertebrates. Although this habitat type is not rare in the coastal Gulf of Maine, it provides two key ecological functions for juvenile cod: protection from predation, and readily available prey.

Occurrence in Project Area and Impacts: Portions of the proposed project contain a mix of sand-gravel substrate, which is considered a habitat of particular concern (HAPC) for inshore juvenile cod. These areas are within the proposed turning basin feature that is planned to be created. However, the sediments located within the HAPC areas are contaminated with elevated levels of PAHs (see Environmental Assessment Section X). These contaminated areas will be removed to allow for the colonization of benthic organisms that serve as a forage for cod and improve the HAPC. The sediment type following the creation of the tuning basin feature will remain the same however the area will be converted from intertidal to subtidal.

5.0 Cumulative Effects

Cumulative impacts are those resulting from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions. Past and current activities in Blue Hill Harbor include boat traffic from the large commercial fleet spread across four landings (Blue Hill Town Wharf, Steamboat Wharf, South Blue Hill, and East Blue Hill). The harbor is also population with recreational boaters, recreational fishing, and other water-based recreation. The effects of these previous and existing actions are generally limited to infrequent disturbances of benthic communities, for example in the grounding of a vessel due to the falling tide or urban discharges. Land use around the harbor is primarily low density residential with several businesses and the Blue Hill Memorial Hospital. The Blue Hill Fire Department and wastewater treatment plant are located adjacent to the town wharf. There are two automotive garages on Main Street that were former gas stations. The Maine Department of Environmental Protection documented the removal of multiple gasoline and diesel underground storage tanks (UST), and there was one reported gasoline discharge from these properties. There are no other known spills other than the UST history noted here. The creation of a federal navigation channel will service existing traffic from the commercial and recreational fleet in an already heavily utilized harbor and are not expected to add to impacts from other actions in the area. Although the project will transform approximately 3.7 acres of intertidal habitat to subtidal habitat, the removal and sequestering of contaminated sediments will be beneficial to the local ecological communities. Therefore, no adverse cumulative impacts to EFH species are anticipated as a result of this project.

6.0 Future Conditions

Impacts to the proposed project area are detailed in Section 6 of the Environmental Assessment. Impacts to essential fish habitat in the project area could be affected by sea level rise and climate change in the future. Sea level rise could further deepen the habitats that exist within the proposed project footprint. While most managed species EFH would not be affected by additional depth, some managed species such as winter flounder have the potential to lose EFH with significantly increasing depths. Increased water temperatures brought about by climate change could shift species ranges . Future maintenance dredging efforts in the proposed channel and turning basin areas will produce impacts to essential fish habitat that are similar to those described in this EFH assessment.

The frequency of USACE navigation project maintenance of the channel and turning basin is expected to be minimal due to the strong tidal flushing in Blue Hill Bay and comparison with similar projects along the Maine coast. The town landing at Blue Hill is located on the island's protected lee shore and erosion on the adjacent shoreline is minimal. Other non-riverine harbors on the Maine coast such as Bass Harbor and Bucks Harbor did not require maintenance for more than 40 to 50 years after their initial construction. Maintenance of the proposed channel and turning basin would be required when shoaling has compromised the underkeel clearance needed for all-tide operation, for a shoal volume of about 40% of the initial improvement volume. Regardless of depth, maintenance would likely be on at least a 20-year frequency, or about twice during the 50-year project life.

7.0 Summary of Effects

The dredging activities proposed for the federal navigation improvement of Blue Hill Harbor will have permanent impacts to EFH for some managed species. Additionally, several short-term and highly localized impacts to EFH for managed species found in the vicinity of the dredge and placement areas would be realized as a result of the project. Permanent impacts include the conversion of 3.7 acres of intertidal area to subtidal area and changes to subtidal elevations in the dredging and placement areas. The removal and sequestration of contaminated sediments located in the inner harbor will also allow healthy benthic communities to develop which will be beneficial to EFH for several managed species. Temporary impacts include the temporary loss of benthic forage base in the project footprint and short-term and localized impacts of suspended sediments in the water columns at the dredge and disposal locations.

Managed species (and their associated habitat) that are anticipated to be affected by the conversion of intertidal habitat to subtidal habitat include those species that inhabit nearshore bottoms habitats such as cod, winter flounder, red hake, and white hake. These species are likely to benefit from the removal of the unsuitable material in the inner harbor by reducing the risk of those potentially toxic substances being exposed to the managed species. Additionally, the establishment of healthy benthic communities in the inner harbor will be beneficial for those species that forage in the area. The managed species with the greatest potential to be affected by the increase in suspended sediments from this project are those with planktonic eggs and larvae suspended in the water column, such as red hake and windowpane flounder. These eggs and larvae may be physically damaged or killed from exposure to elevated concentrations of suspended solids, but the significant tidal flushing in the area will function to rapidly disperse and settle out any fines remaining in the water column after dredging.

7.1 Conclusions

The proposed project activities will impact EFH for several managed species in both the dredging and placement areas. Many impacts are expected to be short-term and limited to the immediate dredging or disposal area. However, permanent impacts (conversion of intertidal habitat) will also occur. The removal of the unsuitable material in the inner harbor will reduce the risk exposure to toxic substances and will allow functional benthic communities to establish and become a forage source for EFH managed species. Hydrological conditions such as tides and currents will not change as a result of the proposed project. Any changes to water quality (temperature, turbidity, dissolved oxygen levels) will be temporary and water quality will return to pre-project conditions following project completion. Prey species destroyed or otherwise impacted during the dredging and placement processes are expected to return following project completion.

8.0 References

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BLUE HILL HARBOR
MAINE
NAVIGATION IMPROVEMENT PROJECT

APPENDIX H

SUITABILITY DETERMINATION
FOR DREDGED MATERIAL DISPOSAL

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CENAE–PDE October 29, 2018

Memorandum For: William Bartlett, Project Manager, CENAE-PDP

Subject: Suitability Determination for the Blue Hill Harbor Navigation Improvement Project, Blue Hill, Maine.

1. **Summary:**

This memorandum addresses the suitability of material to be dredged from the proposed Blue Hill Harbor Navigation Improvement Project for openwater disposal. The New England District (NAE) of the U.S. Army Corps of Engineers (USACE) finds that sufficient data has been provided to satisfy the evaluation and testing requirements of Section 404 of the Clean Water Act (CWA). Based on an evaluation of the project site and the material proposed to be dredged, portions of these sediments are suitable for placement at the proposed location with the constraints outlined below.

2. **Project Description:**

NAE is evaluating the feasibility of establishing a Federal navigation channel and turning basin in Blue Hill, Maine. The proposed plan includes the construction of an 80 foot wide channel and a one acre turning basin to allow for full time vessel access to the town wharf as shown on Figure 1. The channel would extent 2,500 feet southeast to naturally deep water in the outer harbor and be dredged to -6 feet mean lower low water (MLLW) plus 1 foot of allowable overdepth. This is expected to produce a volume of 73,000 cubic yards of mixed gravel, sand, silt, and clay. The material will be mechanically dredged and suitable material will be placed at the Eastern Passage Disposal Site (EPDS) in Blue Hill Bay. Any material found unsuitable for openwater placement will be placed in a newly constructed confined aquatic disposal (CAD) cell in the inner harbor.

3. **Conceptual Site Model:**

NAE reviewed data from previous environmental investigations, analyzed current and historical land-use around the harbor, and interviewed local officials to develop a conceptual site model (CSM) for the improvement project which is depicted in Figure 2. NAE used the CSM to characterize the system and identify potential sources of contamination and any site-specific contaminants of concern (COCs) to inform the sampling, testing, and analysis of the project site.

Blue Hill Harbor is located in the northwest end of Blue Hill Bay and is separated from the bay by a 300 foot wide passage between Parker Point and Sculpin Point in Blue Hill. The inner harbor contains the town wharf, docks, and loading facilities but is inaccessible to vessel traffic for several hours around low tide every day.

The waters of Blue Hill Harbor and Blue Hill Bay are classified as Class SB by the State of Maine (MEDEP 2012). Designated uses for Class SB waters include contact recreation, fishing, aquaculture, harvesting shellfish, and habitat for fish and marine life. Mill Stream, the major freshwater tributary to the harbor, and all minor tributaries to the harbor are considered Class B (MEDEP 2012). Class B freshwater resources are managed to attain good physical, chemical, and biological water quality.

Land use around the harbor is primarily low density residential houses along with several retail shops, restaurants, and the Blue Hill Memorial Hospital. The Blue Hill Fire Department and municipal waste water treatment plant are located adjacent to the town wharf. There are two automotive garages on Main Street near the head of the harbor that were former gas stations. The Maine Department of Environmental Protection (MEDEP) Environmental and Geographic Analysis Database (EGAD) documented the removal of multiple gasoline and diesel underground storage tanks (USTs) and one reported gasoline discharge from these properties.

NAE proposes to place suitable dredged material from the improvement project at EPDS. EPDS is located in outer Blue Hill Bay approximately 14 miles from Blue Hill Harbor and is monitored by NAE's Disposal Area Monitoring System (DAMOS) Program. The last DAMOS monitoring survey of EPDS was in 2012 after placement of material from the maintenance and improvement dredging of Bass Harbor in 2010-2011 (Carey et al 2013).

NAE proposes to place any unsuitable dredged material from the improvement project into a newly constructed CAD cell in the inner harbor of Blue Hill (Figure 3). CAD cells have been used as a disposal alternative for unsuitable dredged material since the 1980's and are currently in use in multiple harbors in New England and across the country. The technique involves excavating a depression below the seafloor, placing the unsuitable material into the depression, and covering the unsuitable material with a cap layer to contain and sequester the unsuitable material from the environment (Figure 4). Multiple maintenance dredging and navigation improvement projects have utilized CAD cells to successfully manage unsuitable dredged material while limiting environmental risk, material handling, and transportation costs. NAE's DAMOS program has regularly monitored and evaluated CAD cells throughout New England and has documented their stability and performance (USACE 2012a, USACE 2012b, ENSR 2007).

Based on a review of available data, and communication with local officials, NAE determined that there are no known recent spills in the vicinity of the project area other than the UST and gasoline spill history noted above.

Following this Tier 1 review of the site characteristics and the available historical data, NAE assigned the project a low-moderate risk ranking according to the following matrix (adapted from USACE 2014):

Rank	**Guidelines**
Low	Few or no sources of contamination. Data available to verify no significant potential for adverse biological effects.
Low-Moderate	Few or no sources of contamination but existing data is insufficient to confirm ranking.
Moderate	Contamination sources with the potential to produce chemical concentrations that may cause adverse biological effects exist within the vicinity of the project.
High	Known sources of contamination within the project area and historical data exist that previously failed biological testing.

4. **Sampling, Testing, and Analysis:**

NAE prepared a sampling and analysis plan (SAP) for the project on 23 October 2015 based on the low-moderate ranking for the Blue Hill Harbor Navigation Improvement Project. NAE coordinated this plan with the U.S. Environmental Protection Agency Region 1 (USEPA), the National Marine Fisheries Service, the U.S. Fish and Wildlife Service, and MEDEP.

On 28 October 2015 NAE collected sediment vibracores from seven locations throughout the proposed dredging area identified as Stations A through G on Figure 1. NAE personnel described each sediment core in the field and composited the length of each individual core for analysis of grain size, total solids, and water content. NAE then composited the core samples according to the plan outlined in the SAP for chemical analysis of the contaminants of concern (COC) specified in the Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters (RIM, USACE/EPA 2004).

The sediments in the outer portion of the proposed channel (Stations A, B, and C) were predominantly poorly graded fine to coarse sands with overlying marine clay deposits. There was fine woody organic debris in all three cores from this area. Core penetration at the inner harbor stations (D, E, F, and G) was limited due to gravel and coarse sand deposits near the sediment surface and was 2.0 feet or less at Stations D, F, and G. Grain size results are presented in Table 1.

Table 1. Physical Testing Results from Blue Hill Harbor Sediment Cores (October 2015)

Sample ID	% Cobble	% Gravel	% Coarse Sand	% Medium Sand	% Fine Sand	% Total Fines	% Moisture
A	0.1 (U)	0.1	2.2	6.6	21.6	69.5	55.3
B	0.1 (U)	0.1 (U)	1.7	3.5	7.4	87.4	51.2
C	0.1 (U)	1.1	1.9	4.9	12.1	80	54.5
D	0.1 (U)	4.4	13.2	34.8	35	12.6	19.6
E	0.1 (U)	1.8	8.8	26.7	37.9	24.8	33.2
F	0.1 (U)	5	14	30.6	29.8	20.6	26.8
G	0.1 (U)	45.9	12.4	16.7	16.2	8.8	21.4

U = Non-detected analytes are reported as the RL and qualified with a “U”.

No polychlorinated biphenyls (PCBs) or pesticide analytes were detected above the method detection limit in the harbor samples with the exception of individual compounds in Composite DE. There were detectable concentrations of polycyclic aromatic hydrocarbons (PAHs) and metals in all four composite samples. To examine the harbor concentrations in an ecologically meaningful context, NAE screened the values with Sediment Quality Guidelines (SQGs). Applicable SQG screening values for marine and estuarine sediments are the National Oceanic and Atmospheric Administration (NOAA) effects-range low (ERL) and effects-range median (ERM). ERL/ERM values are empirically derived guidelines that identify contaminant levels that indicate when toxic effects are unlikely (ERL) and when an increased probability of toxic effects is evident (ERM).

No COCs in Composite A or BC exceeded the ERL value as shown on Table 2. All COCs in Composite DE and FG were also below the ERL value with the exception PAHs which were above the ERL in Composite DE and above the ERM in Composite FG (Table 2). This suggests that a toxic response from exposure to sediments from Composite A or BC would be highly unlikely but there is increased potential for a toxic response from exposure to sediments from Composites DE and FG due to elevated PAHs.

Table 2. Chemical Testing Results from Blue Hill Harbor Sediment Cores and Sediment Quality Guidelines (October 2015)

Chemical or Class	ERL	ERM	Unit	COMP A	COMP BC	COMP DE	COMP FG
Arsenic	8.2	70	mg/kg	4.5	7.7	5.2	6.3
Cadmium	1.2	9.6	mg/kg	0.6	0.8	0.1	0.2
Chromium	81	370	mg/kg	21.1	30.9	12.3	10.8
Copper	34	270	mg/kg	17.6	16.5	14.3	6.9
Lead	46.7	218	mg/kg	21.7	21.8	23.0	10.5
Mercury	0.15	0.71	mg/kg	0.03	0.03	0.02	0.02
Zinc	150	410	mg/kg	54.2	64.1	40.6	37.9
HMW PAH*	1,700	9,600	μg/kg	879	629	3,703	20,089
HMW PAH*	552	3,160	μg/kg	165	123	646	7,388
Total PCBs*	22.7	180	μg/kg	9.36	5.99	8.03	6.17
Total DDT*	1.58	46.1	μg/kg	0.8	0.7	0.9	0.5

*For total values non-detects calculated as half the reporting limit

NAE reviewed results from the initial round of testing and performed a second sampling effort on 10 May 2016 to better define the vertical and spatial extent of the elevated PAH concentrations around Composites DE and FG. NAE collected push cores at low tide from ten stations in the inner harbor and one location at the mouth of the each of the three tributaries as shown on Figure 5. Similar to the vibracore effort core penetration with this sampling method was limited to approximately 2 feet for this area of the harbor. NAE personnel described the push cores in the field and then collected discrete subsamples for PAH analysis from the top six inches and from six inches to the end of each core. Results from this analysis showed no discernable pattern for the spatial distribution of PAHs in the harbor (Appendix A).

Due to the inability to penetrate inner harbor sediments to the design depth and determine the vertical extent of the elevated PAH concentrations the Town of Blue Hill dug four test pits in October 2016 (Figure 6). The Town's contractor placed timber mats across the harbor at low tide and used an excavator to dig 4-9 foot deep test pits at predetermined locations. NAE personnel were on-site to describe the lithology of the pit walls and subsample the sediment in two foot horizons for PAH analysis. Results from this analysis are presented in Appendix A and showed that the extent of PAH contamination is limited to the upper two feet of the inner harbor sediments.

5. **Evaluation of Dredged Material:**

The placement of sediments at the Eastern Passage Disposal Site is regulated under Section 404 of the Clean Water Act (CWA). Subpart G of the Section 404(b)(1), Guidelines for Specification of Disposal Sites for Dredged or

Fill Material describes the procedures for conducting this evaluation, including any relevant testing that may be required.

The material from the Blue Hill Harbor Navigation Improvement Project was evaluated for placement at EPDS according to §230.61 (Chemical, Biological, and Physical Evaluation and Testing) of the CWA and the Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. – Testing Manual (EPA/USACE 1998). The conceptual site model identified the uptake of contaminants from the water column during placement, and the uptake of placed dredged material by benthic organisms, as the primary exposure pathways for the harbor sediments.

NAE evaluated potential water quality effects by modeling the release of contaminants from dredged sediments during the disposal process at EPDS. To determine if the discharge of dredged material would attain compliance with Water Quality Standards, NAE performed a Tier II evaluation following the procedure outlined in the RIM. This evaluation utilizes the Short-Term Fate (STFATE) numerical model to analyze the physical behavior of a disposal cloud as it descends through the water column after release from a barge. Results of the STFATE evaluation predicted that the water column would attain State of Maine Water Quality Standards within four hours of disposal and therefore meet the criteria in the testing protocol.

NAE evaluated potential effects on the benthic environment through an assessment of the physical and chemical conditions of the proposed dredged material. No PCB or pesticide analytes were detected above the method reporting limit in the harbor sediments with the exception of individual compounds in Composite DE. PAHs and metals were detected in the sediment samples from the harbor but metal concentrations in all composites, and PAH concentrations in Composites A and BC, were below the ERL. These results suggest that a toxic response from exposure to these sediments would be highly unlikely and the material can be considered environmentally acceptable with no further testing.

PAH concentrations were above the ERL in Composite DE and above the ERM in Composite FG which suggests an elevated risk for toxicity from exposure to these sediments. Further sampling of the harbor revealed that the PAH signature is limited to the upper two feet of sediment with non-detect or near non-detect values below that horizon. This equates to approximately 10,500 cubic yards of material from the inner harbor with an increased potential to cause toxicity.

Based on an evaluation of the physical and chemical properties of the proposed dredged material NAE determined that additional testing of the Blue Hill Harbor sediments was not required to confirm the suitability of the material for openwater placement with the exception of the material from the upper two feet of the inner harbor.

6. **Suitability Determination:**

NAE evaluated the sediment from the Blue Hill Harbor Navigation Improvement Project through §230.61 of the CWA and found the material suitable for openwater placement at EPDS with the exception of 10,500 cubic yards of material from the upper two feet of the inner harbor. The sediment from this portion of the harbor is not suitable for openwater placement due to elevated PAH concentrations. NAE proposes to contain the unsuitable material in a newly constructed CAD cell. The material excavated to create the CAD cell is outside of the elevated PAH footprint, adjacent to Composites A and BC, and is suitable for openwater placement at ELDS.

Approximately 10,500 cubic yards of unsuitable dredged material will be disposed in the proposed CAD cell and approximately 8,750 cubic yards of suitable dredged material will be used as the CAD cell cap layer. The remaining 53,750 cubic yards of project material, plus approximately 15,500 cubic yards of material excavated to create the proposed CAD cell, will be placed at EPDS. Bringing the total volume to be placed at EPDS to 69,250 cubic yards.

Copies of this determination were sent to USEPA and Maine DEP who concurred with the findings.

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7. **References:**

Carey, D.A.; Hickey, K.; Germano, J.D.; Read, L.B.; Esten, M.E. 2013. Monitoring Survey at the Eastern Passage Disposal Site, October 2012. DAMOS Contribution 194. U.S. Army Corps of Engineers, New England District, Concord, MA.

ENSR 2007. Monitoring Surveys at the Boston Harbor CAD Cells, August 2004. DAMOS Contribution 168. U.S. Army Corps of Engineers, New England District, Concord, MA.

EPA/USACE 2004. Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters. U.S. EPA Region 1, Boston, MA/U.S. Army Corps of Engineers, New England District, Concord, MA.

EPA/USACE 1998. Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. – Testing Manual. U.S. Environmental Protection Agency, Office of Water, Office of Science and Technology, Washington, D.C./Department of the Army, U.S. Army Corps of Engineers, Operations, Construction and Readiness Division, Washington, D.C.

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USACE 2014. Dredged Material Evaluation and Disposal Procedures, User Manual. Dredged Material Management Program, U.S. Army Corps of Engineers, Seattle District.

USACE 2012a. Monitoring Surveys of New England CAD Cells, October 2009. DAMOS Contribution 185. U.S. Army Corps of Engineers, New England District, Concord, MA.

USACE 2012b. Monitoring Survey of the Boston Harbor CAD Cells, November 2009. DAMOS Contribution 186. U.S. Army Corps of Engineers, New England District, Concord, MA.

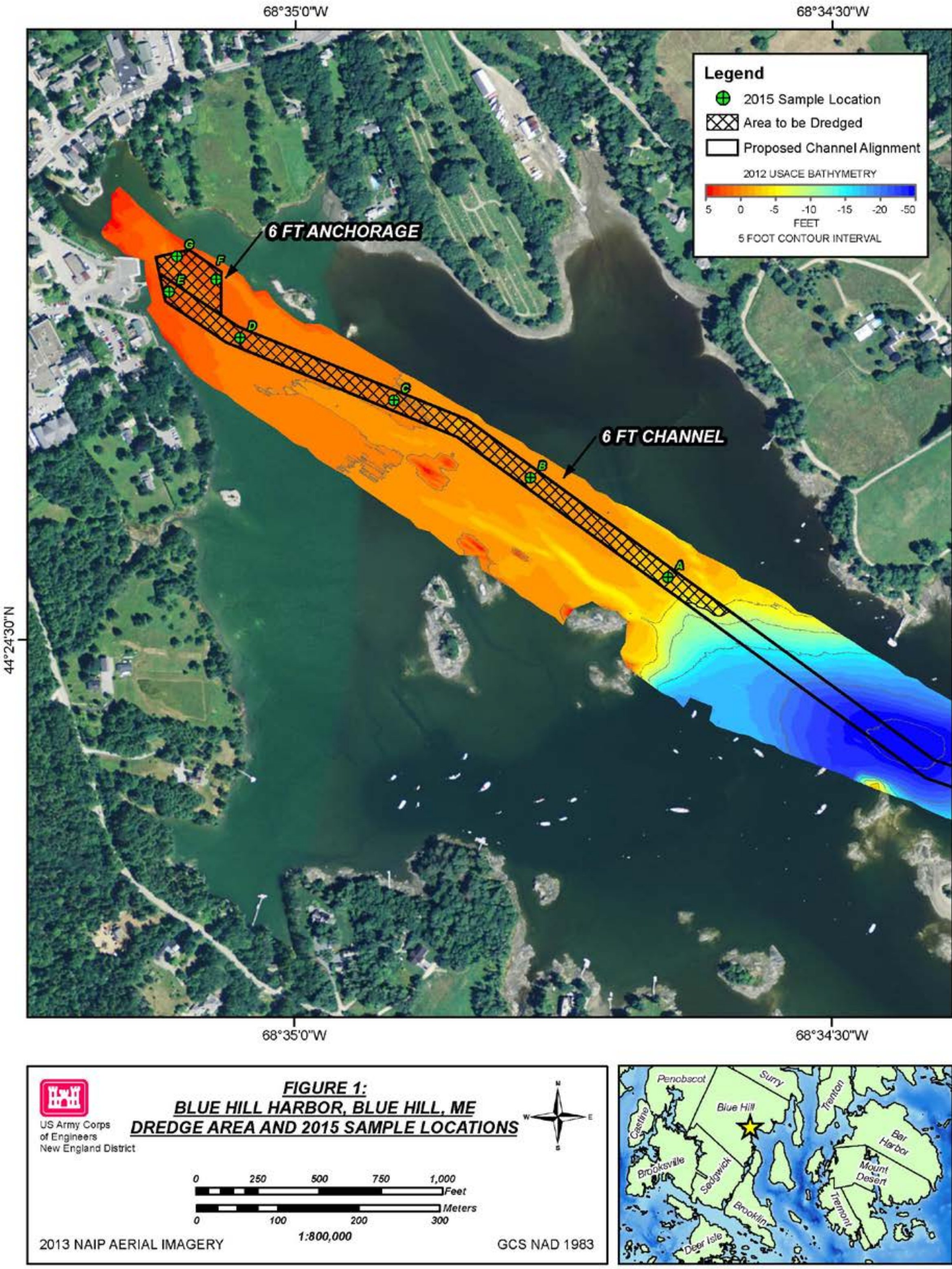


FIGURE 1:
BLUE HILL HARBOR, BLUE HILL, ME
DREDGE AREA AND 2015 SAMPLE LOCATIONS

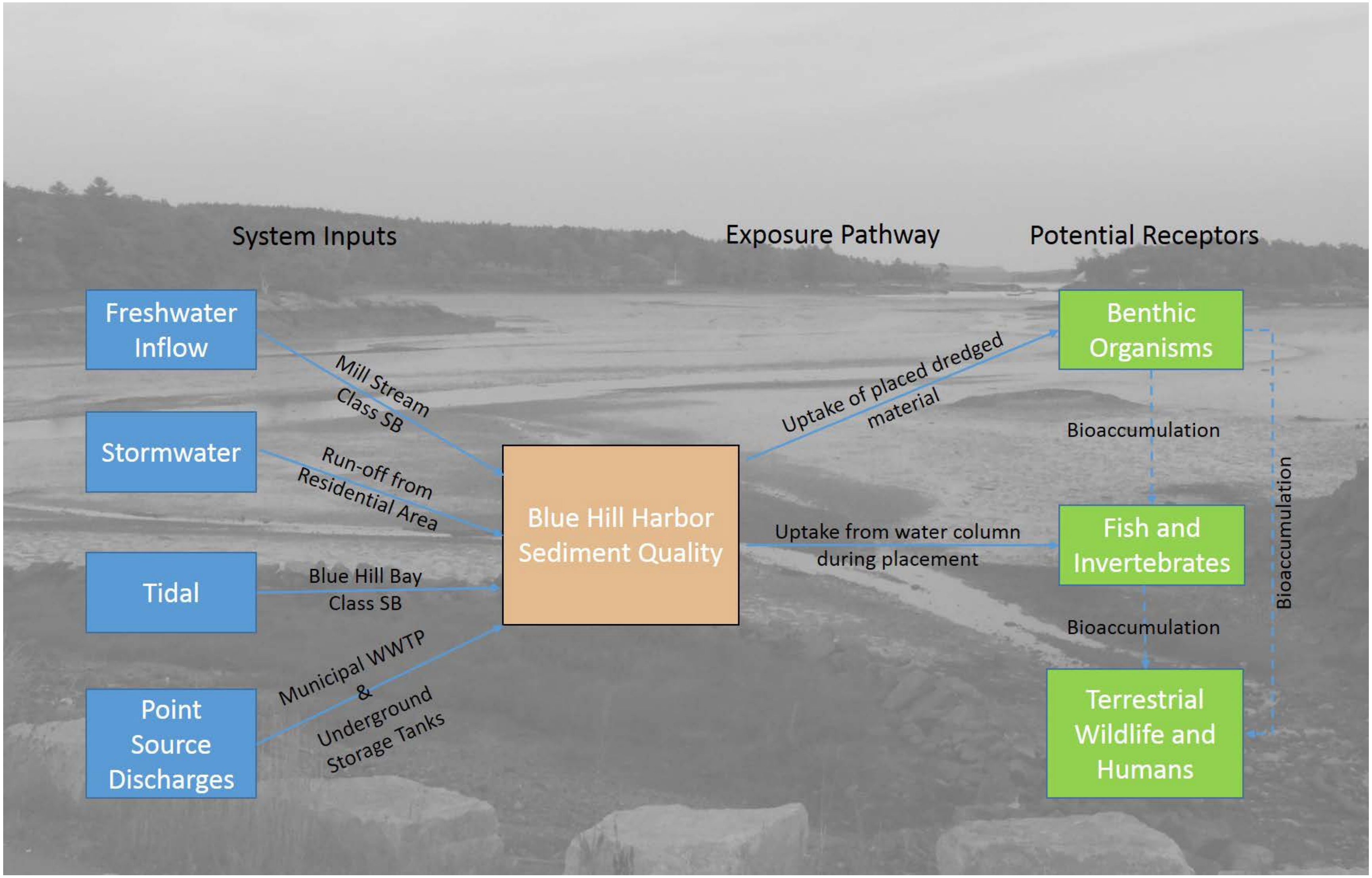


Figure 2. Blue Hill Harbor Conceptual Site Model

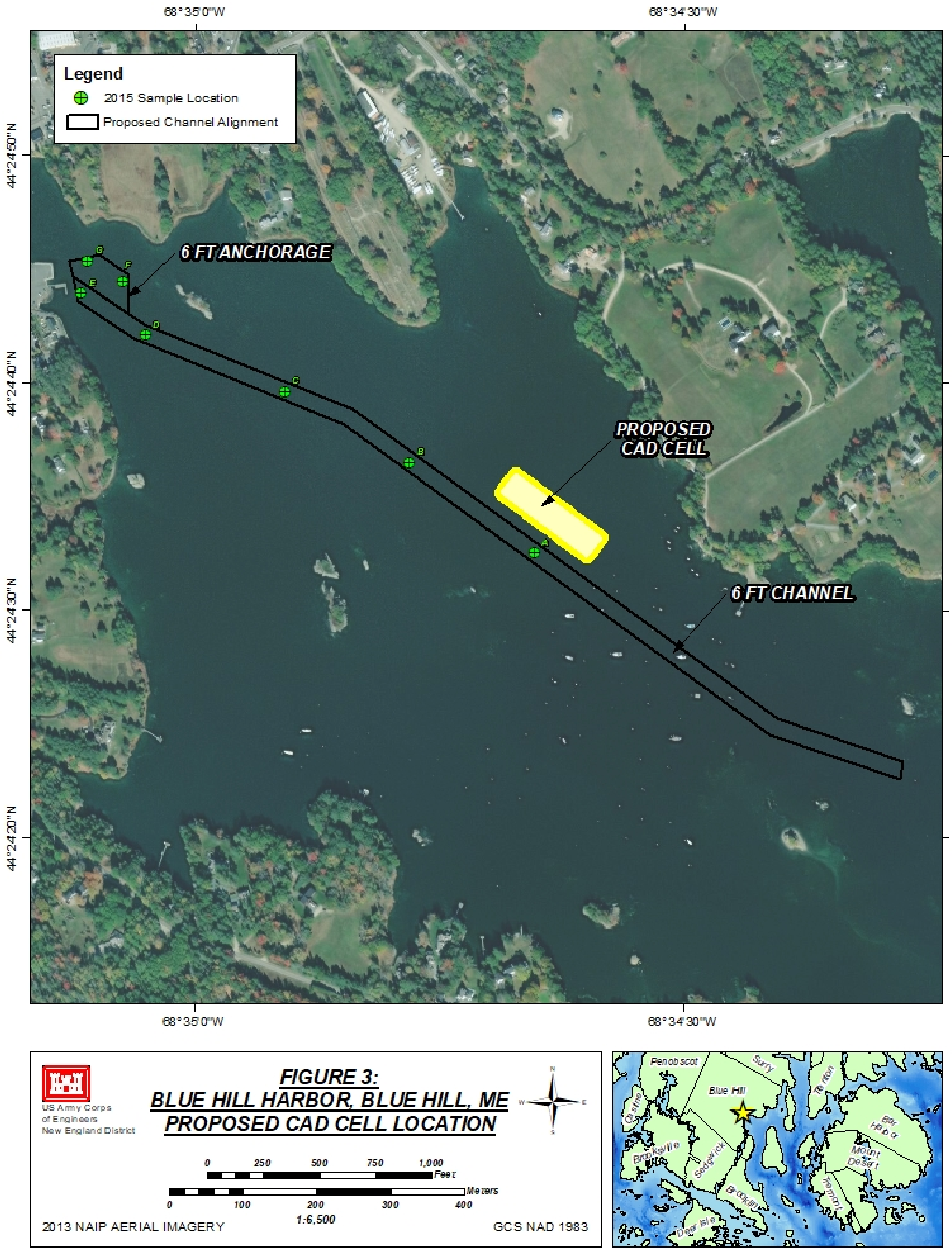
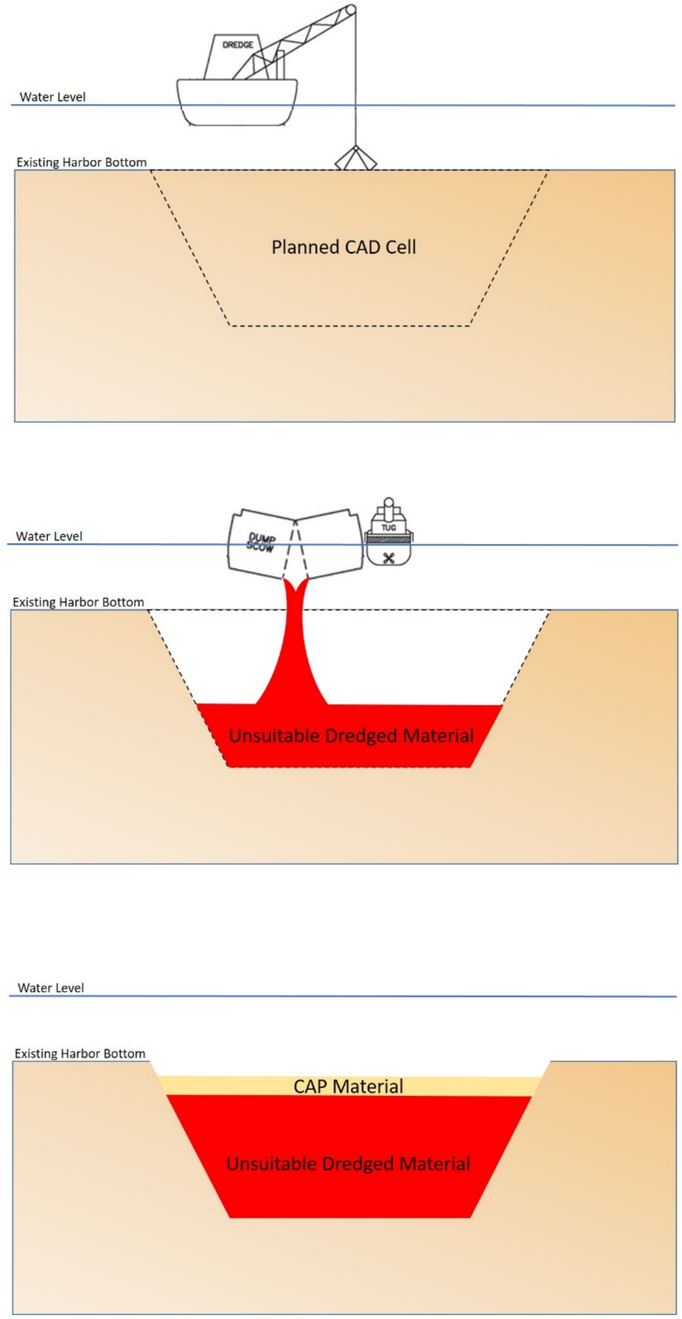


FIGURE 3:
BLUE HILL HARBOR, BLUE HILL, ME
PROPOSED CAD CELL LOCATION



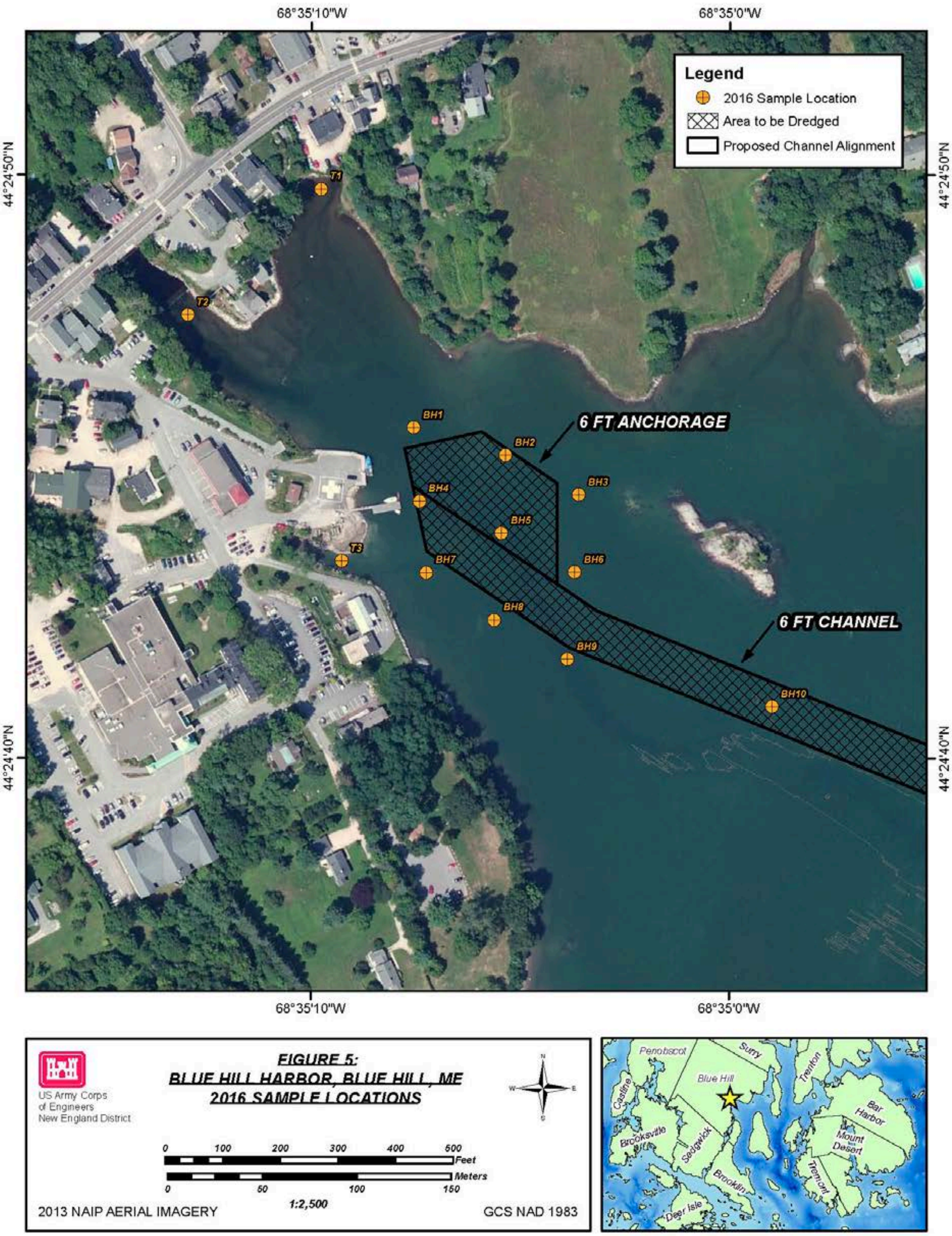
Excavation of planned CAD cell (material will be transported to EPDS)

Placement of unsuitable dredged material into the CAD cell using a split-hulled scow

Completed CAD cell (cap will be suitable dredged material from the Blue Hill Harbor Navigation Improvement Project)

*Not to scale

Figure 4. Typical Confined Aquatic Disposal (CAD) Cell Schematic


68°35'10"W
68°35'0"W
44°24'50"N
44°24'40"N
Legend
2016 Sample Location
Area to be Dredged
Proposed Channel Alignment
T1
T2
T3
BH1
BH2
BH3
BH4
BH5
BH6
BH7
BH8
BH9
BH10
6 FT ANCHORAGE
6 FT CHANNEL
US Army Corps of Engineers New England District
FIGURE 5:
BLUE HILL HARBOR, BLUE HILL, ME
2016 SAMPLE LOCATIONS
0 100 200 300 400 500 Feet
0 50 100 150 Meters
1:2,500
2013 NAIP AERIAL IMAGERY
GCS NAD 1983
Penobscot
Surry
Blue Hill
Trenton
Castine
Bar Harbor
Brooksville
Sedgwick
Mount Desert
Brooklin
Tremont
Deer Isle

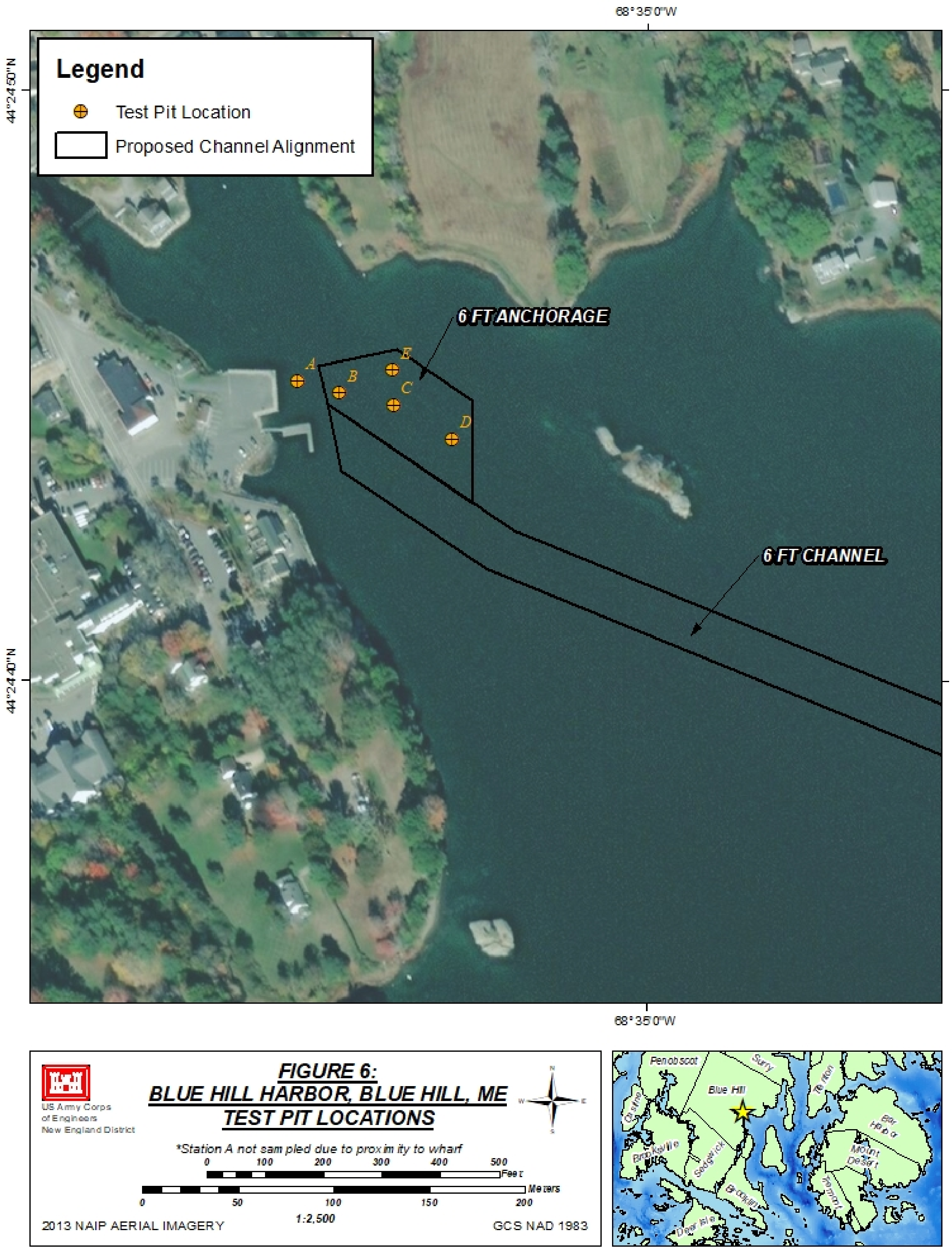


FIGURE 6:
BLUE HILL HARBOR, BLUE HILL, ME
TEST PIT LOCATIONS

Appendix A

PAH Results

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PAH Results from Sediment Push Cores (May 2016)

PAH	BH-1, 0-6	BH-1, 6-12	BH-2, 0-6	BH-2, 6-14	BH-3, 0-6	BH-3, 6-16	BH-4, 0-6	BH-4, 6-17	BH-5, 0-6	BH-5, 6-18	BH-6, 0-6	BH-6, 6-22	BH-7, 0-6	BH-7, 6-12	BH-8, 0-6	BH-8, 6-28	BH-9, 0-6	BH-9, 6-17	BH-10, 0-6	BH-10, 6-18
Acenaphthene	9.9(U)	11.4(U)	9.73(U)	7.08(U)	8.5(U)	8.72(U)	23.9	12(U)	6.98(U)	13.4(U)	11.4(U)	12.7(U)	11.9(U)	18.8	15.2	12.7	41.3	10.6(U)	11.6(U)	14.6
Acenaphthylene	47.8	54	55.1	56.5	30.7	8.72(U)	292	25.2	23.5	13.4(U)	92.1	101	29.2	208	147	12.8	131	10.6(U)	62.2	90.8
Anthracene	77.8	64.5	37.4	38.8	24.6	8.72(U)	254	27.2	45.5	13.4(U)	126	70.4	41.7	163	144	39.6	247	10.6(U)	51.9	118
Benz(a)anthracene	520	472	372	345	240	8.72(U)	2460	123	174	14.8	821	650	233	1490	932	122	1070	10.6(U)	603	776
Benzo(a)pyrene	403	382	367	349	248	8.72(U)	1950	120	143	25.6	667	637	224	1320	886	100	895	10.6(U)	618	690
Benzo(b)fluoranthene	390	440	407	372	275	8.72(U)	1890	119	137	19.2	657	596	196	1320	792	86.1	943	10.6(U)	629	718
Benzo(g,h,i)perylene	255	253	277	249	181	8.72(U)	1230	81.4	97	14.2	423	458	148	842	618	57.4	508	10.6(U)	384	434
Benzo(k)fluoranthene	432	323	325	304	219	8.72(U)	1400	98.4	110	20.5	600	540	219	1140	831	85.2	760	10.6(U)	587	573
Chrysene	463	435	390	366	258	8.72(U)	2120	127	154	15	722	669	228	1380	962	110	1030	10.6(U)	706	720
Dibenz(a,h)anthracene	65.6	61.3	63.3	59	44.5	8.72(U)	281	23.6	21.5	13.4(U)	103	101	39.5	191	139	19	141	10.6(U)	98.7	106
Fluoranthene	1020	978	749	690	471	8.72(U)	3940	230	360	18.6	1350	1130	463	2740	1910	209	2440	10.6(U)	767	1420
Fluorene	29.5	29.1	18.4	23.8	12.2	8.72(U)	104	13.7	15.6	13.4(U)	47.9	39.8	12	85.8	59.5	21.7	200	10.6(U)	14.5	49.5
Indeno(1,2,3-cd)pyrene	304	296	313	287	213	8.72(U)	1300	97.8	106	23.6	486	496	175	944	687	71.2	612	10.6(U)	460	500
Naphthalene	9.9(U)	11.4(U)	9.73(U)	11.4	8.5(U)	8.72(U)	30.6	12(U)	6.98(U)	13.4(U)	11.4(U)	12.7(U)	11.9(U)	37.8	32.1	16.5	16.4	10.6(U)	11.6(U)	16.3
Phenanthrene	397	384	274	319	186	8.72(U)	1180	142	161	13.4(U)	536	616	172	1280	951	126	1830	10.6(U)	304	572
Pyrene	777	766	702	690	410	8.72(U)	4040	269	317	21.7	1240	1220	404	2750	1840	198	1840	10.6(U)	788	1230

All units in µg/kg

Non-detected analytes are reported as the RL and qualified with a “U”

PAH Results from Sediment Test Pits (October 2016)

PAH	B-1 (0-2')	B-2 (2-4')	C-1 (0-2')	C-2 (2-4')	C-3 (4-7')	D-1 (0-2')	D-2 (2-4')	D-3 (4-6')	D-4 (6-9')	E-1 (0-2')	E-2 (2-4')	E-3 (4-6')	E-4 (6-8')
2-Methylnaphthalene	10.3 U	5.76 U	5.52 U	8.29 U	8.8 U	9.17 U	5.78 U	6.39 U	6.37 U	9.22 U	8.09 U	7.58 U	8.12 U
Acenaphthene	10.3 U	5.76 U	5.52 U	8.29 U	8.8 U	9.17 U	5.78 U	6.39 U	6.37 U	9.22 U	8.09 U	7.58 U	8.12 U
Acenaphthylene	10.3 U	5.76 U	5.52 U	8.29 U	8.8 U	45.2	5.78 U	6.39 U	6.37 U	9.22 U	8.09 U	7.58 U	8.12 U
Anthracene	10.3 U	5.76 U	16.8	8.29 U	8.8 U	27.6	5.78 U	6.39 U	6.37 U	9.22 U	8.09 U	7.58 U	8.12 U
Benz(a)anthracene	50.6	13.4	76.6	8.29 U	8.8 U	321	11.1	6.39 U	6.37 U	21	8.09 U	7.58 U	8.12 U
Benzo(a)pyrene	46.2	14.3	82.8	8.29 U	8.8 U	408	12.3	6.39 U	6.37 U	24.5	8.09 U	7.58 U	8.12 U
Benzo(b)fluoranthene	39.3	11.8	73.2	8.29 U	8.8 U	395	10.6	6.39 U	6.37 U	21	8.09 U	7.58 U	8.12 U
Benzo(g,h,i)perylene	24.8	8.38	43.7	8.29 U	8.8 U	246	7.42	6.39 U	6.37 U	14.6	8.09 U	7.58 U	8.12 U
Benzo(k)fluoranthene	39.6	12.9	74.3	8.29 U	8.8 U	283	11.4	6.39 U	6.37 U	21.9	8.09 U	7.58 U	8.12 U
Chrysene	50.4	20	82	8.29 U	8.8 U	415	13.7	6.39 U	6.37 U	25.5	8.09 U	7.58 U	8.12 U
Dibenz(a,h)anthracene	10.3 U	5.76 U	12	8.29 U	8.8 U	56.7	5.78 U	6.39 U	6.37 U	9.22 U	8.09 U	7.58 U	8.12 U
Fluoranthene	80.9	22.3	154	8.29 U	8.8 U	659	23.2	6.39 U	6.37 U	41.8	8.09 U	7.58 U	8.12 U
Fluorene	10.3 U	5.76 U	5.52 U	8.29 U	8.8 U	12.4	5.78 U	6.39 U	6.37 U	9.22 U	8.09 U	7.58 U	8.12 U
Indeno(1,2,3-cd)pyrene	26	9.23	52.9	8.29 U	8.8 U	265	8.06	6.39 U	6.37 U	16	8.09 U	7.58 U	8.12 U
Naphthalene	10.3 U	5.76 U	5.52 U	8.29 U	8.8 U	9.17 U	5.78 U	6.39 U	6.37 U	9.22 U	8.09 U	7.58 U	8.12 U
Phenanthrene	36.4	13.8	61.6	8.29 U	8.8 U	224	12.9	6.39 U	6.37 U	13.5	8.09 U	7.58 U	8.12 U
Pyrene	83.9	24	135	8.29 U	8.8 U	638	22.2	6.39 U	6.37 U	47.7	8.09 U	7.58 U	8.12 U

All units in µg/kg

Non-detected analytes are reported as the RL and qualified with a “U”