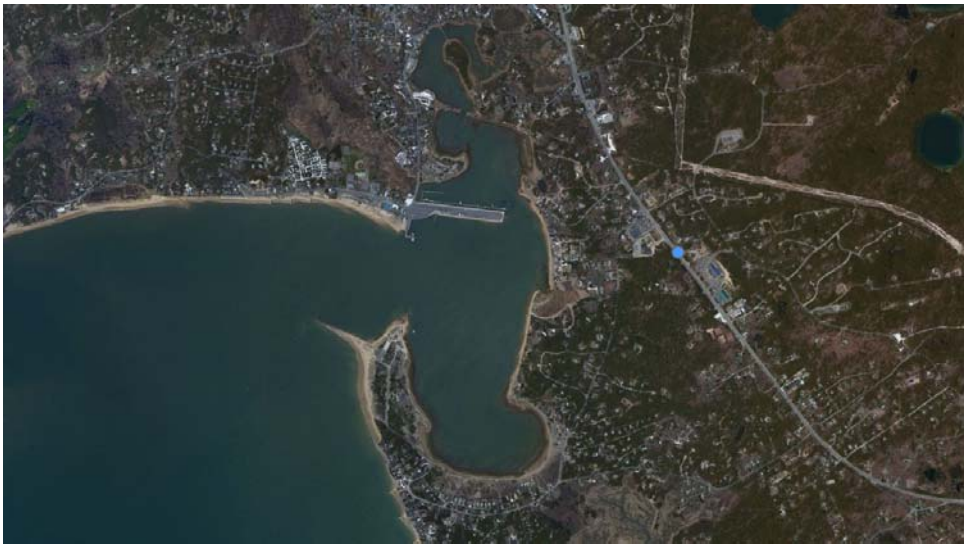
Wellfleet Harbor
Dredge Feasibility Study
Wellfleet, MA

DRAFT

August 2012



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BCE
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Wellfleet Harbor, Wellfleet, MA
Dredge Feasibility Study

1. INTRODUCTION

The Town of Wellfleet is seeking to perform maintenance and improvement dredging of the channels and anchorages in an effort to restore safe and reliable navigation and increase the number of town moorings within Wellfleet Harbor. The purpose of this study is to review existing information, confirm the need for maintenance dredging and develop options to restore adequate navigation within and around Wellfleet Harbor to meet existing needs. The town has retained Bourne Consulting Engineering (***BCE***) to perform site investigation, develop preliminary dredge designs and identify advantages and disadvantages associated with proposed dredging projects. The study will also provide a preliminary evaluation of the dredge material, disposal options and construction costs as well as identify potential regulatory and environmental impacts associated with the proposed dredging projects.

2. SITE DESCRIPTION

Wellfleet Harbor is a natural harbor and has played an important role in the history of Wellfleet, having provided dockage and anchorage for fishing and recreational vessels since 1644. The harbor is currently used by commercial fishing vessels, charter boats and recreational boats. Exhibit 1 shows the existing harbor layout with previously authorized channels and mooring basins. The existing channels and anchorages gradually accumulate sediments as part of the natural processes on this shoreline and periodic maintenance dredging is required in order to maintain navigation.

A Federal Navigation Project maintains access into the inner harbor and provides for a 10 foot deep channel, 125 feet wide with a 10 foot deep anchorage basin 800 feet by 500 feet at the head of the channel.

The Town of Wellfleet maintains and operates a marina at the Town Pier and two anchorages, one to the north and one to the south of the Federal project. The Town currently operates approximately 250 moorings and 150 boat slips within the Harbor used by vessels with drafts up to 6 feet. The marina is extremely popular and demand for slips is high with over 300 people on the current waiting list. The Town Marina provides a major economic benefit for the Town by directly raising revenue from user fees, providing berthing for commercial fishing and charter boats and attracting many private boaters to the Harbor. The Town raises additional revenue from the marine fuelling station which services the many boats in the Harbor.

The Town Marina is located on the north side of the Town Pier and access is maintained from the Federal project via the South Access Channel and North Access Channel. These channels have been previously authorized for dredging to a depth of 6 feet with widths of 100 feet for the South Channel and 150 feet for the North Channel. Both Access Channels were last dredged in 2001 and have a combined area of approximately 10 acres.

The North Anchorage is approximately 4 acres in size with a previously authorized depth of 6 feet. It is used to provide seasonal moorings to approximately 35 boats with drafts up to 6 feet. The North Anchorage was last dredged in 2001.

The South Anchorage is approximately 22 acres in size with a previously authorized depth of 6 feet. It is contiguous with the Federal Anchorage and both anchorages combined provide approximately 200 seasonal moorings for boats with lengths up to 39 feet and drafts up to 6 feet. The last known dredging project for the South Anchorage was in 1957.

For the purposes of this report, Wellfleet Harbor has been split up into two areas as shown in Exhibit-1:

- Area I includes the North and South Access Channels, North Anchorage and the Access Channel adjacent to the L-Pier.
- Area II is the South Anchorage.

3. REVIEW OF HISTORICAL INFORMATION

BCE has reviewed and summarized historical dredging projects in Wellfleet Harbor as set out below. A detailed history of construction and dredging projects in Wellfleet Harbor is attached in Appendix A and a list of historical permits is attached in Appendix B.

3.1. PREVIOUS CONSTRUCTION AND DREDGING PROJECTS

3.1.1. Area I - North and South Access Channels, North Anchorage and L Pier Access Channel

Area I has had numerous dredging projects since 1952 to keep the access channels safe for navigation:

1952 – Contract # 1271 – the south side of the L Pier (as it existed at that time) and part of the approach channel were dredged to a depth of -6 feet MLW. The channel approached the L-Pier from the SSW direction, turning right to parallel the pier face for approximately 400 feet with a 70 foot width increasing to 160 feet in front of the pier. Dredge material was placed on Mayo Beach between groins.

1955 – Contract # 1478 – the channel dredged under Contract #1271 was extended to cut a channel through Shirt Tail Point now the Town Pier and create the basin at the end of the North Access Channel. The channel was dredged to an elevation of -6 feet MLW and varied in width from 100 feet at the entrance to 175 feet behind the town parking area. The material from this dredge was placed behind the rip rap containment creating the town wharf, now Town Pier.

1958 - Contract # 1879 – the area south of the Timber L-Pier was dredged to a depth of -10 feet MLW to an extent of 50 feet out shore of the pier, to match into the federal channel at a dredge elevation of -10 feet MLW.

1958 – Contract # 1958 – Access Channels were dredged to a new elevation of -7 feet MLW extending around the Town Pier. The Channel varied between 100 feet wide at the beginning, increasing to 150 feet wide on the east side of the Town Pier and 300 feet wide along the marina basin to the north of the Town Pier. The project included armoring around Shirt Tail Point to create the existing Town Pier footprint and dredge material from this project was used to fill behind the armored slopes to create a large parking lot.

1968 – Contract #2623 (re-advertised as #2644) – the entrance to the channel was moved south by 10 feet to 565 feet from the center of the Town Pier. The channel was also deepened to a depth of -8 feet MLW. The channel width varied with an entrance width of 120 feet increasing to 150 feet at the east side and 170 feet behind the Town Pier on the northern side. Included was a 350 feet long region widened an additional 50 feet opposite to the eastern end of the town pier.

1982 – Contract #3010 – dredging was planned to an elevation of -6 feet MLW for the Access Channels and between the town L-Pier and Boat ramp to the Federal Dredge limits.

2001 – Maintenance dredging of the Access Channels and North Anchorage basin between the L-Pier and boat ramp to an elevation of -6 feet MLW. This project had a total dredge material volume of 126,100 CY but was authorized as two areas – Access Channels and North Anchorage. The Access Channels were authorized by the US Army Corps of Engineers (USACE) as an Individual Permit. The North Anchorage was authorized under USACE Programmatic General Permit for Massachusetts (MA PGP). The permits included maintenance dredging until 2009 for the Access Channels (10 years from permit issue) and 2005 for the North Anchorage (expiry of MA PGP).

WELLFLEET HARBOR LAYOUT

WELLFLEET HARBOR DREDGING
TOWN OF WELLFLEET
WELLFLEET, MA
OCTOBER 2011

0 500
SCALE: 1" = 500'

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EXHIBIT 1

File: \\BCESBS01\ProjDrawings\30774-\30777\exhibit 1.dwg

2005 - Maintenance dredging of clean sand material inside the L-Pier (Mosquito Docks). The permit was for 300 CY, to an approximate elevation of -1 feet MLW. The sand removed was placed as beach nourishment between the two groins on Mayo Beach. Annual maintenance dredging is required to maintain drafts for vessel berthing.

3.1.2. Area II - South Anchorage

1957 – Contract # 1769 – South Anchorage basin was dredged to an elevation of -6 feet MLW in 1957 but no records have been found for dredging since that time. The site was approximately 750 feet wide and 1900 feet in length extending from the L-Pier's southwestern limit. This area is outside the ACEC although there appears to be a slight discrepancy on the eastern boundary between the MA GIS data and the boundary as plotted based on Contract 1769 drawing. The contract drawing shows a basin width of 750 feet matching the Federal Anchorage. The MA GIS data shows a reduced width of 650 feet. The ACEC description is attached at Appendix L and specifically excludes the dredge area of Contract #1769.

3.2. REVIEW OF EXISTING REPORTS AND DOCUMENTS

3.2.1. US Army Corps of Engineers Environmental Assessment (Draft) Feb 2007

The US Army Corps of Engineers (USACE) is proposing to perform maintenance dredging of the existing Federal Channel and Anchorage in Wellfleet Harbor. In preparation for the Federal Dredging project, the USACE prepared an Environmental Assessment which included documentation of Natural Resources and material sampling and testing. This data is also relevant to the Town of Wellfleet dredging project due to the close proximity of the two projects in the harbor.

Natural Resources

Area of Critical Environmental Concern (ACEC) – Wellfleet Harbor with the exception of the existing federal and state channels and anchorages has been designated as an Area of Critical Environmental Concern. Any project within the ACEC boundary will be subject to additional regulatory scrutiny.

Water Quality – Wellfleet Harbor is designated as Class SA Waters intended as "excellent habitat for fish, other aquatic life and wildlife and for primary and secondary contact recreation".

Fisheries Resources – Many species utilize Wellfleet Harbor as a nursery area but some species spend their entire lives in the estuary. The USACE Environmental Assessment includes a listing of species found in the harbor and a review of designated Essential Fish Habitat (EFH) was performed. Many species are included and an extract from the Environmental Assessment is attached in Appendix C.

Shellfish Resources – Wellfleet Harbor is Land suitable for Shellfish and a Designated Shellfish Growing Area. The area supports quahogs, oysters, soft-shell clams and bay scallops.

Wellfleet Bay Wildlife Sanctuary – this is a 700 acre area maintained by the Massachusetts Audubon Society.

Natural Heritage –No federally listed or proposed threatened and endangered species are known to occur in Wellfleet Harbor with the exception of occasional transient endangered bald eagle or peregrine falcons.

Dredge Material Sampling and Testing

Sediment samples were taken at seven locations within the Federal Navigation Channel and Anchorage of Wellfleet Harbor in September of 2003, and subjected to both physical and chemical testing to determine material suitability for various disposal options.

Grain size analysis was performed on all seven samples. Sediments from samples in the Inner harbor and anchorage area consisted primarily of silt/clay (55% to 71%) whereas those from closer to the breakwater and in the Outer Harbor were predominantly sandy material (96%).

Bulk chemistry analysis was performed on three composite samples taken from the seven sediment samples. Bulk chemistry results showed low concentrations of some PAH's and some heavy metals were detected. PCB's and pesticides were non-detectable.

Based on the results of the bulk chemistry and comparison with previous studies for the Cape Cod Bay Disposal Site (CCDS), the dredge material within the Federal Channel and Anchorage was determined to be suitable for offshore disposal at the CCDS. A copy of the Suitability Determination is attached at Appendix D. This memo found that, although some metals and PAH's were higher in the samples from Wellfleet Harbor; they were only slightly higher than for CCDS. Also concentrations of PCB's and pesticides were below or only slightly above detection limits. As such the proposed dredge material was deemed to have low contamination and water column and benthic bio-assay testing was not required.

The Cape Cod Bay Disposal Site is a depositional area with grain sizes varying considerably from sandy muds to more fined grained muds. The general sediment classification is a clayey, sandy silt. The mean sand content of samples taken as part of the CCDS Environmental Impact Report ranged between 10 and 50 percent sand. Thus, it has been concluded that this site appears to have the capability of accepting a wide range of grain size distributions.

Sediment samples from 22 stations within Cape Cod Bay had bulk chemistry test results in the following ranges:

Mercury (Hg) from less than 0.3 ppm to 1.0 ppm
Arsenic (As) from 9 to 22 ppm
Chromium (Cr) from 25 to 56 ppm
Zinc (Zn) from 67 to 122 ppm
Lead (Pb) from 28 to 49 ppm
Cadmium (Cd) from .5 to 1.1 ppm
Nickel (Ni) from 19 to 29 ppm
Vanadium (V) from 68 to 103 ppm
Copper (Cu) from 12 to 24 ppm.
No PCB's and slight traces of PAH's were found within detectable limits.

3.3. MATERIAL SAMPLING AND TESTING FOR PREVIOUS TOWN DREDGING PROJECT

Material sampling and testing for the most recent (2001) Town maintenance dredging project of Wellfleet Harbor occurred over a period of years.

In 1995, ten samples were collected and tested for chemical and physical properties. Grain size analysis showed that the material was 50% silt/clay. In 1996 six more samples were obtained for additional testing due to original testing detection limits not meeting standards. The samples were tested for physical and chemical properties. Average concentrations from these data was found to be: 16.3ppm arsenic, 1.7ppm cadmium, 40.5ppm chromium, 40ppm copper, 69.3ppm lead, .24ppm mercury, 18.1ppm nickel, 118.1ppm zinc, less than 13.6ppm PAH's, 52ppm TPH, .27ppm VOC, less than .12ppm PCB and 18%-26% volatile solids. Based on the results of this first round of chemical testing the dredged material was initially determined to be unsuitable for disposal at the CCDS. Contaminants of concern were cadmium, copper, lead and arsenic.

In 1998, new samples were collected and sent for chemical and biological testing according to federal protocols. The new samples were found to have similar concentrations of contaminants but bio-assay testing showed acceptable limits for toxicity accumulation. Due to the low accumulation, the material was deemed suitable for disposal at CCDS.

Appendix E has copies of the US Army Corps permit and MA DEP Water Quality Certificate for the last Channel and Anchorage Dredging project from 1999.

The Water Quality Certificate describes the material testing as above. Although the Arsenic levels were higher than Category I levels as defined in the regulations, they did not exceed levels in samples taken from other sites in Cape Cod Bay and a waiver was granted from this standard. The levels of Arsenic are consistent with more recent testing performed for the proposed Federal dredging project.

4. SITE INVESTIGATION

On January 5, 6 and March 17, 18 2010, ***BCE*** performed a hydrographic survey of Wellfleet Harbor including all town anchorages and channels. The survey was performed using a Trimble GeoXH GPS and an Odom Hydrotrack single beam echo sounder with an 8º transducer. Data was collected through an on-board laptop computer using Hypack Hydrographic Survey Software. The survey extended approximately 200 feet outside the proposed dredge footprints for both Area I and Area II. Existing Condition Survey Plans are attached in Appendix F with the previously authorized channel and anchorage boundaries superimposed.

4.1. Natural Resources

Data from the Massachusetts GIS data viewer shows the following information relating to Wellfleet Harbor:

- Wellfleet Harbor is within a designated Area of Critical Environmental Concern (ACEC). The boundary runs around the outside of all channels and anchorages including the South Anchorage. These areas are not within the ACEC.
- No eelgrass is mapped within Wellfleet Harbor
- Wellfleet Harbor is mapped as both Priority and Estimated Habitat for Natural Heritage. Boundary does not include most of the channels around the Town Pier but does include Federal Channel and the South Anchorage.
- The entire harbor is mapped as Shellfish Suitability Areas including:
    - American Oyster
    - Quahog
    - Soft-shelled clam
    - Blue Mussel
- The entire harbor is mapped as Designated Shellfish Growing Area and is a major shellfish growing and harvesting area. The mudflats at the southern end of Area II are a very productive shellfish growing site.

Copies of the data printed from the MA GIS data viewer are attached in Appendix G.

4.2. Tidal Water Levels

Based on NOAA Tidal Benchmark Station ref. 8446121 – Provincetown. Tidal elevations are as follows:

Tidal Datum		Elevation feet
Highest Predicted Tide *		11.70
Mean Higher High Water	MHHW	9.98
Mean High Water	MHW	9.52
Mean Sea Level	MSL	4.93
Mean Tide Level	MTL	4.88
Mean Low Water	MLW	0.23
Mean Lower Low Water	MLLW	-0.10
Lowest Predicted Tide		-2.40

- from Tides and Currents Pro version 3.7.0.117

5. EXISTING SITE CONDITIONS

5.1. AREA I - NORTH AND SOUTH ACCESS CHANNELS, NORTH ANCHORAGE AND L PIER ACCESS CHANNEL

North and South Channels

The North and South Channels provide access from the Federal Navigation Project to the Town Marina on the north side of the Town Pier. The Town Marina provides over 150 slips for vessels with drafts up to 6 feet. The Marina consists of 1200 feet of pile moored permanent concrete floats along the north shoreline of the Town Pier and 6500 square feet of seasonal timber floats at the inner west end of the North Channel. All areas of the marina use a Mediterranean style mooring system to increase the number of slips available and there is currently a long waiting list for slips.

The North and South Channels both have significant shoaling. The water depths at Mean Low Water (MLW) in the North Channel are, typically, 3 feet or less which is severely impeding navigation and available draft in the marina slips.

North Anchorage

The North Anchorage is north of the Federal Channel Project and close to the south side of the Town Pier. This anchorage provides seasonal moorings for up to 35 boats with drafts up to 6 feet. The entire anchorage is severely shoaled with depths, typically, 3 feet or less.

5.2. AREA II - SOUTH ANCHORAGE

The South Anchorage directly abuts the south edge of the Federal Navigation Project. Navigational access is directly from the Federal Project. The total area of the 1957 dredging project (Contract #1769) was over 21 acres. This entire area and approximately 11 acres additional area at the southern end provide seasonal moorings for approximately 200 boats.

The entire anchorage is now severely shoaled to the extent that many of the moorings are dry at low tide. Approximately 30% of the historic footprint has now shoaled to become intertidal mudflat with elevations ranging between 0 and +1 feet MLW. The deepest portion of the anchorage abuts the Federal Anchorage with depths ranging between -1 and -2 feet.

All around the perimeter of Area II there are productive shellfish beds producing clams, quahogs and oysters and, in particular towards the southern end.

6. DREDGE MATERIAL DISPOSAL OPTIONS

The previous Town dredging project found the dredge material to be up to 50% silt and clays and more recent testing by the US Army Corps of Engineers found material in the Inner Harbor to between 55% and 70% silts and clays. Given the gradation of the material, it is likely to be unsuitable for use as beach nourishment and there are two considered alternatives for disposal of the dredge material:

1. Offshore disposal
2. Upland disposal with limited or no beneficial reuse.

6.1. OFFSHORE DISPOSAL

Based on the previous Town project and the more recent suitability determination for the Federal project the most likely suitable offshore disposal location is at the Cape Cod Bay Disposal Site. Offshore disposal involves placement of dredge material into a bottom dump scow, towing it out approximately 7 nautical miles to the Cape Cod Disposal Site, where it is dumped into the ocean. This has historically proven to be the cheapest and most used disposal option if the material meets all the extensive testing requirements. It is estimated that the physical cost of dredging and disposal will be in the range $25 to $30 per cubic yard of material. It is assumed that all dredging will be by mechanical means due to the likely gradation of the material.

6.2. UPLAND DISPOSAL

Upland Disposal is significantly more costly than offshore disposal and only becomes a realistic option if a small portion of the area to be dredged is treated as a separate project for some reason. It is an alternative to offshore disposal but is unlikely to be realistic for the entire harbor due to the much higher cost. Upland disposal requires transfer of dredge material from a scow to an upland dewatering site. The material has to be stored and dewatered at an upland site before being trucked to its final destination at a disposal site or landfill. This alternative has greater variability in cost depending on dewatering requirements and availability of disposal sites. Dredging costs are estimated to be $15 to $20 per yard. Dewatering costs requires double handling of material plus special dewatering/amendment systems and is budgeted at $20 - $40 per yard. Finally, the material will be required to be trucked to an acceptable landfill where a “Tipping Fee” payment would be required. This is estimated to be $65 to $90 per yard. This results in a total cost between $105 and $150 per cubic yard of material.

At this point there is no reason to believe that any of the material in Wellfleet Harbor is too contaminated for offshore disposal with no history of spills or contamination in the harbor. However, the dredging of the South Anchorage Basin is the greatest unknown having been undredged for many years. As this project moves forward, we would recommend that sampling, testing and compositing be done in a manner that gives the best opportunity to distinguish between areas and allow different disposal options to be developed if required. The ultimate determination of sampling and testing will be based on requirements of the US Army Corps of Engineers and MA DEP.

7. AREA I DREDGE OPTIONS - NORTH AND SOUTH ACCESS CHANNELS, NORTH ANCHORAGE AND L PIER ACCESS CHANNEL

Dredging alternatives have been developed for Areas I and II as separate projects but this is merely because of the separation between the sites. There is no reason that any of the options for Area I precludes any of the options for Area II and vice versa. A complete dredging project for Wellfleet Harbor could consist of any of the options for Area I combined with any of the options for Area II.

7.1. AREA I - OPTION 1 – NO DREDGE OPTION

This option would not perform any dredging. The Town marina and moorings are a significant economic resource for the Town and provide much needed berthing facilities for boaters in this part of Cape Cod Bay. The demand for slips or moorings significantly exceeds availability and provides a service for both commercial and recreational boats.

The shoaling in all areas of the Harbor is already severe and is impeding the mooring and safe navigation of the vessels. The shoaling becomes progressively more severe further into the harbor and is particularly severe in the North Channel where the marina is located. If no dredging is performed, this will limit or prevent future use of the Town Marina. The North Anchorage is also shoaled and, if no dredging is performed, it will impact use of the moorings.

The loss (or reduction in number) of berthing and mooring facilities will result in negative impacts on the local economy and boating amenities and the No Dredge option is not considered a realistic alternative.

7.2. AREA I - OPTION 2 – DREDGE TO -6 FEET MLW

This option would reestablish the previously authorized channel and anchorage depths throughout Area I. The proposed dredge footprint matches the last dredging project to restore safe navigation and mooring in the Town Marina. The total access channel length is approximately 2,750 feet with the South Channel 100 feet wide increasing to 150 feet wide in the North Channel. The L-Pier Access Channel is approximately 300 feet in length and 0.85 acres. The North Anchorage is approximately 600 feet long and 4.3 acres. All of these areas would be dredged to elevation -6 feet MLW with an over dredge depth of 1 foot MLW. A summary of the required areas and volumes is shown in the table below and proposed dredging footprints are shown on Sheets 1 to 5 in Appendix H.

	Dredge Area (acres)	Target Dredge Volume (Cubic Yards)	1' Over dredge Volume (Cubic Yards)	Total Dredge Volume (Cubic Yards)
North and South Access Channel	10.3	65,000	16,000	81,000
North Anchorage Basin	4.33	25,000	7,000	32,000
L-Pier Access Channel	0.85	2,500	1,000	3,500
Totals	**15.48**	92,500	24,000	**116,500**

The estimated cost of this dredging with offshore disposal is $3.5 million. This figure does not include engineering, permitting and testing costs.

7.3. AREA I - OPTION 3 – DREDGE NORTH ANCHORAGE AND L PIER ACCESS CHANNEL TO -6 FEET MLW AND NORTH AND SOUTH CHANNELS TO -4 FEET MLW

This option seeks to reduce the impacts of dredging by reducing the volume of material to be removed and possibly reduce the area of dredging required. However, typical existing depths in both channels are -3 feet MLW or less and the entire channel footprint needs to be dredged regardless of using a slightly shallower depth. There would be a small reduction in impact area due to the smaller side slopes needed for the shallower depth but this would only amount to a reduction of 16,500 sq feet or less than 5% of the channel dredge footprint.

The estimated reduction in volume to be dredged is 32,000 cubic yards and the potential cost saving assuming offshore disposal is $960,000.

The consequence of the shallower channel depth is a significant loss in amenity. Boats currently using the marina have drafts up to 5 feet and would have to find alternative berths. Navigation is also severely impeded under negative low tide conditions. Tides of -1.0 feet MLW or lower occur on average more than 70 times per year and recommended drafts should be at least 2 feet below the deepest draft vessel. The majority of boats have drafts of up to 3 feet and the recommended channel depth for these boats would be 5 feet at a water elevation of -1 feet MLW, giving a recommended design channel depth of -6 feet MLW. Negatively impacting the navigation into a marina of over 150 slips is not considered a reasonable approach for the small reduction in dredge footprint and this is not considered a realistic alternative.

7.4. AREA I - OPTION 4 – REDUCED CHANNEL WIDTHS FOR NORTH AND SOUTH ACCESS CHANNELS

Reduction of the existing access channel widths was considered in an effort to minimize potential impacts and reduce the volume of dredging required. The absolute minimum channel width for a straight access channel is 75 feet as recommended by State of California in its publication "Layout and Design Guidelines for Marina Berthing Facilities". The South Channel is exposed to more severe wind, wave and current conditions making vessel navigation more difficult. With the sharp bends in the Wellfleet Harbor channel alignment and the number of vessels using the marina, the use of the absolute minimum is not recommended and the existing 100 foot channel width should not be reduced.

The North Channel is wider at 150 feet but the channel is partly obstructed by vessels moored perpendicular to its length. Therefore, the effective navigation channel width is reduced by the length of the longest vessels. The marina provides berthing for vessels up to 45 feet in length thereby reducing the effective channel width to 105 feet. No additional reduction in the width for navigation should be considered because of the additional risk of impact with moored vessels.

8. AREA II DREDGE OPTIONS– SOUTH ANCHORAGE

The currently used South Anchorage mooring field is shown in Appendix J on Sheet 1 of 3 and it extends approximately 500 feet outside the historic dredge footprint into the ACEC. The South Anchorage currently provides moorings for 200 vessels ranging in length from 13 feet to 39 feet and drafts from 1 foot to 5 feet.

Justification for and consideration of options for dredging this area requires consideration of different mooring layouts.

8.1. MOORING BASIN LAYOUTS

8.1.1. Existing Mooring Basin Layout

The existing mooring layout is based on the current Town of Wellfleet Mooring Regulations (copy attached at Appendix I) of which key points are summarized below:

Wellfleet Mooring Regulations

- Mooring anchors shall be mushroom style, sized based on vessel length
- Total length of mooring shall be 3 times the water depth at MHW
- Pennants shall be two times the freeboard at bow plus distance to the mooring cleat
- Total length of chain shall be min of 6' and max of 10'
- Mooring Location:

    - No mooring will be placed within 100' from the nearest edge of a marked channel
    - No mooring will be placed so that a boat attached will be within 50' of a licensed shellfish area.
    - No mooring will be placed less than 50' from the nearest adjacent mooring
- Transient moorings:
    - Placed at northern end of dredged basin
    - 3-500 lb for vessels up to 55ft
    - 3-300 lb for vessels up to 32 ft
    - 9-200 lb for vessels up to 25 ft
- Mushrooms anchors which are exposed at low water, will be completely buried with the shaft in a horizontal position

The current mooring field layout based on these regulations is shown on Sheet 1 of 3 in Appendix J. The current moorings extend some distance beyond the southern boundary into the Area of Critical Environmental Concern (ACEC). Any application for dredging within the ACEC is likely to be problematic and dredging in the ACEC is categorically prohibited unless the dredging can be shown to be maintenance dredging.

8.1.2. Alternative Mooring Basin Layout

The existing mooring field is unable to accommodate all desired moorings and a portion of the existing mooring layout extends into the ACEC. Obtaining approvals to dredge this area is likely to be difficult and an alternative mooring field layout has been developed based on the Town of Wellfleet Mooring Regulations and the following:

Modified Mooring Regulations

- Minimum scope of moorings can be reduced to 2:1 if concrete blocks or helical anchors are used
- Use helical or block anchors to reduce total scope from 3:1 to 2:1
- Vessel spacing can be tightened with overlap provided:
    - Similar type and size boats are placed together
    - Sail vessels will be considered separately from power due to the difference in reaction to wind and current
    - Heavy chain will extend in direction that accounts for the heaviest anticipated wind during the boating season
        - Heavy chain – ¾" Light Chain – ½"
        - Heavier chain is used for the first 10' of length
- Moorings laid out based on equilateral triangles with minimum leg lengths of 2:1 to depth plus design vessel length.
- Moorings laid out based on prevailing winds
    - Prevailing winds are from the west south west direction based from the Wind Data Report for Wellfleet, MA for November 2006-2007 by UMass Amherst http://www.ceere.org/rerl/publications/resource_data/Wellfleet/Reports/Wellfleet_FinalReport.pdf
- Min distance between moorings be 1.25 times the scope plus the vessel length, unless moorings are similar in type and size and can be overlapped
- Pennants are 2.5 times the freeboard at the bow plus the distance to the cleat

The proposed mooring field layout based on these regulations is shown on Sheet 2 of 3 in Appendix J. This mooring field is an extremely tight spacing and can present difficulties for boats navigating through the field. The proposed mooring field would also require complete replacement of all existing moorings and different equipment for installation and removal.

8.2. AREA II - OPTION 5 – NO DREDGE OPTION

This option would not perform any dredging. The Town moorings are a significant economic resource for the Town and provide much needed mooring facilities for boaters in this part of Cape Cod Bay.

As for Area I – No Dredge Option, the shoaling is already very severe and is impeding the mooring and safe navigation of vessels. Currently approximately 30% of the South Anchorage Basin is above water at low tide, causing many of the vessels moored in this area to be resting on the mud at low tide. The demand for moorings significantly exceeds availability and any reduction in number of moorings will result in negative impacts on the local economy and boating amenities. If no dredging is performed, it will ultimately prevent use of the moorings and the No Dredge option is not considered a realistic alternative.

8.3. AREA II - OPTION 6 – DREDGE HISTORIC FOOTPRINT TO -6 FEET MLW

This option seeks to reestablish the historic dredge depths and footprint as per MA DPW Contract #1769. This area is approximately 1750' long and 23 acres and abuts the southern boundary of the Federal Anchorage Basin. The area will be dredged to a depth of -6 feet MLW with overdredge to -7 feet MLW.

With no change in mooring configuration, the historic footprint is not large enough to incorporate all the vessels that are currently being moored in the South Anchorage. This could ultimately result in the loss of 50 moorings if the basin is limited to the historic footprint. The maximum density of vessel moorings based on the existing mooring regulations is shown in Appendix J Sheet 3 of 3.

If the mooring regulations were updated as outlined in Section 8.1 above, the reduction in the mooring spacing would allow all 200 vessels currently moored in the South Anchorage Basin to fit within the historic South Anchorage Area. The mooring layout is shown in Appendix J Sheet 2 of 3.

	Dredge Area (acres)	Target Dredge Volume (Cubic Yards)	1' Over dredge Volume (Cubic Yards)	Total Dredge Volume (Cubic Yards)
Historic Footprint Dredge	**21.72**	211,000	37,000	**248,000**

The estimated cost of this dredging with offshore disposal is $7.5 million excluding engineering, permitting and testing costs.

The estimated installation cost per new mooring is approx. $2,500 per mooring giving a total installation cost for all 200 moorings of $500,000.

The total project cost would be:

Dredging	$7.5 million
Moorings	$0.5 million
Total Project Cost	$8.0 million

8.4. AREA II - OPTION 7 – EXPANDED FOOTPRINT

This option would extend the historic basin south to include the area currently being utilized for vessel moorings. The proposed dredge footprint would have two depths in an effort to minimize impacts to the surrounding environment. The historic dredge footprint would be dredged to an elevation of -6 feet MLW with a 1' overdredge similar to Option 4. The expanded area at the southern would be the same 750 feet width as the historic footprint with a length of approximately 540 feet and a dredge depth of -4 feet MLW with an over dredge to -5 feet MLW. The mooring field layout associated with this dredge footprint is shown in Appendix J Sheet 3 of 3. Grouping the boats according to size allows for a denser spacing and increases the maximum total number of moorings to 245 vessels.

This expanded footprint would accommodate all the vessels currently listed as being moored in the basin with adequate draft at low water without any change in mooring equipment and layout.

	Dredge Area (acres)	Target Dredge Volume (Cubic Yards)	1' Over dredge Volume (Cubic Yards)	Total Dredge Volume (Cubic Yards)
Expanded South Anchorage	**32.73**	313,000	54,000	**367,000**

The estimated cost of this dredging with offshore disposal is $11 million. This figure does not include engineering, permitting and testing costs.

9. SUMMARY AND COMPARISON OF DREDGING OPTIONS

Regulatory Requirements

All of the considered dredge options exceed the MEPA threshold "alteration of 10 or more acres of wetlands" requiring submittal of an Environmental Notification Form (ENF) and Mandatory EIR. The requirement for an EIR can be waived if sufficient information is submitted in the form of an Expanded ENF and a request for a waiver is submitted.

All of the considered dredge options will also require at minimum the following regulatory approvals:

- US Army Corps of Engineers Section 10/Section 404 Permit
- MA DEP Waterways Chapter 91 Permit
- MA DEP WPC 401 Water Quality Certificate
- MA CZM Consistency Review
- Town of Wellfleet Order of Conditions

It should be noted that Area II - Option 7 – Expanded Footprint may be denied a Chapter 91 Permit because there is a prohibition on Improvement Dredging in Areas of Critical Environmental Concern.

Dredge Material Disposal

Offshore disposal is the most cost effective disposal option and, while material within the dredge area has some contaminants, the material is expected to be suitable for offshore disposal, based on the recent testing and suitability determination for the Federal dredging project.

Additional sampling and testing by the Town will be required and bioassay and bioaccumulation testing may be required before the material qualifies for 100 % offshore disposal. Protocols for additional testing will be dictated by the US Army Corps of Engineers, in conjunction with EPA.

Area I – Dredge Options

Option 1 – No Dredge

This option will result in loss of navigation and slips from the marina. The area was last dredged approximately 12 years ago and has severe shoaling. The marina is an important facility for the Town and recreational and commercial boaters for which demand for slips exceeds supply. Any reduction in the existing capacity would negatively impact the facility and economic benefits to the Town.

Option 2 – Dredge to -6 feet MLW.

This option restores channels and anchorages to previously authorized depths for a total estimated cost of $3.5 million. Total estimated volume of dredge material is 116,500 cubic yards and total area of dredging is 15.48 acres. It maintains the existing marina use and moorings for the many boats in Wellfleet Harbor. This is the preferred option for navigation.

Option 3 – Dredge North Anchorage and L Pier Access Channel to -6 feet MLW and North and South Channels to -4 feet MLW.

This option seeks to reduce the impacts of dredging by reduction in the marina access channel depths. Recommended drafts for navigation are 2 feet below deepest draft boat. The marina provides slips for over 150 boats with drafts ranging between 2 and 5 feet. The majority of boats have drafts of 3 feet. This option will not provide adequate draft and does not significantly change the area of impact. It does provide a possible cost saving of $1 million but only with significant negative impact on navigation.

Option 4 –Reduced Channel Widths for North and South Access Channels

This option reviews the potential to reduce the impacts of dredging by reduction in the marina access channel widths. However any reduction in the channel widths would make navigation more hazardous and this option was rejected.

Area II – Dredge Options

Option 5 – No Dredge Option

This option will result in continued worsening of navigation and impacts on moored vessels. The area has severe shoaling but it is believed has not been dredged for more than 50 years. The mooring basin is an important facility for recreational and commercial boaters and demand for moorings exceeds supply. The function of this mooring basin needs to be restored and this no dredge option was rejected.

Option 6 – Dredge Historic Mooring Basin to -6 Feet MLW

This option restores the anchorage to previously authorized depths for a total estimated dredging cost of $7.5 million. Total estimated volume of dredge material is 248,000 cubic yards and the total area of dredging is 21.72 acres. This option restores the use of the historic approved mooring basin but would not dredge the full area that is currently used for moorings.

Option 7 – Expanded Footprint

This option restores the anchorage to previously authorized depths and expands the historic footprint to incorporate the entire area of the currently used mooring field. This option is unlikely to be approved unless it can be demonstrated that the expansion area has been previously authorized and dredged. The total estimated dredging cost is $11 million. Total estimated volume of dredge material is 367,000 cubic yards and the total area of dredging is 32.73 acres.

10. RECOMMENDATIONS

Based on the above considerations, we recommend that the Town pursues Option 2 - Dredge Channels and Northern Basin to -6 feet MLW in conjunction with Option 6 – Dredge Historic Mooring Basin to -6 feet MLW. These options will restore navigation throughout the harbor to previously authorized depths. These depths remain appropriate for the number and types of vessels currently using the harbor. Although desirable from a Town perspective, any expansion of the previously authorized mooring basin is unlikely to receive regulatory approval.

Given the cost advantage for offshore disposal it should be considered as the primary disposal option. Based on proximity to and the recent testing performed for the Federal Project, the dredge material is likely to have low contamination and be suitable for offshore disposal at the Cape Cod Bay Disposal Site (CCDS). Based on the low contamination levels found during sampling and testing for the Federal Project, it may not be necessary to perform water column and benthic bio assay testing. However, it should be noted that bio assay testing was performed for the last channel dredging project in 2000.

The next steps required to allow the dredge project is to move forward include:

1. Hold a Pre-Application Meeting with USACE, DEP and sister agencies to discuss regulatory concerns and environmental impacts. The dredging of the South Anchorage is likely to be of most concern because of the long period since it was last dredged.
2. Finalization of channel and basin details including confirmation of depth and width.
3. Submit a request for a sampling and testing program for the dredging to the US Army Corps of Engineers (USACE) and MA DEP-WPC.
4. Material sampling and grain size analysis based on the approved Sampling and Testing plan
   - Samples could include up to 36 samples within anchorages and channels.
   - Samples will also include a reference sample from the CCDS.
   - Conduct sieve analysis on all samples and submit to USACE for compositing plan.
   - Estimated budget for sampling and testing is $25,000
5. Bulk Chemistry
   - Based on compositing max three field samples into one laboratory samples
   - Estimated chemical testing budget is $15,000
6. Implementation of the solid and suspended phase bio-assay analysis **if required**
   - Likely budget for this testing is $30,000 per sample but number of samples needs to be approved by USACE
7. Determination of final dredge disposal based on final testing results
8. Preparation and filing for the required regulatory approvals including:
   a. The Wellfleet Conservation Commission Notice of Intent
   b. DEP Water Pollution Control - Water Quality Certificate
   c. DEP Chapter 91 Permit
   d. MEPA – ENF filing
   e. USACE – Section 404 Dredging Permit.

Appendix A – Wellfleet Harbor

Historical Dredging and Construction Projects

Project #	Date	Contractor	Engineer	Plan Title	Plan Type	Description
494	May-37	Louis A. Byrne	Department of Public Works	Proposed Shore Protection Wellfleet 1 Sheet	Design Plans	8-12' x 100' long stone Jetties , spaced about 300' apart. For shore protection at Mayo beach. The eastern most jetty, Jetty # 8, is at Shirt Tail Point. The plans show as existing conditions a 170' Pier in the location of the Commercial "L" pier and a bulkhead that extends north along the location of the 2002 gas dock bulkhead.
1208	Feb-52	Turner & Breivogel, Inc.	Department of Public Works	Proposed Timber Pier & Bulkhead, Wellfleet Harbor, Wellfleet 3 Sheets	Design Plans	These plans proposed the "L" shaped Town Dock 110'x30' & 120 x 20' long. This work also entailed a bulkhead that was the Northern Terminus of the pier. The project included an access road that extended Commercial street. The roadway extension replaces jetty #8 (was to be removed) at Shirt Tail Pt from the #494 project. There was also dredging proposed in the work that is hand written "not in contract".
1271	Sep-52	North Atlantic Dredging Co.	Department of Public Works	Proposed Dredging, Wellfleet Harbor, Wellfleet 1 Sheet	Design Plans	Dredging at the New Pier constructed under contract #1208. The dredging was confined to the south side of the pier and included a portion of the approach channel. The dredge depth for the project was to -6' below MLW. Disposal of the material was along Mayo's Beach , between existing Jetties buit in contract #494.
1372	Mar-54	Turner & Breivogel, Inc.	Department of Public Works Division of Waterways	Proposed Shore Protection, Construction of Stone Revetment, Wellfleet Harbor, Wellfleet 1 Sheet	Design Plans	Construction of 230' long 'L' shaped stone revetment. Starting about 350' east of Town Dock at Shirt Tail Pt. The plans indicate, as existing, a bulkhead (the timber bulkhead replaced in 2001) that is not shown as proposed on previous plans. The revetment begins east of a timber bulkhead that extends from the older access road bulkhead North-northeast 140' and then turns east and continues about 245'..

Project #	Date	Contractor	Engineer	Plan Title	Plan Type	Description
1459	Jan-55	Turner & Breivogel, Inc.	Department of Public Works Division of Waterways	Proposed Hurricane Repairs Replacing Riprap & Revetment, Wellfleet Harbor, Wellfleet 1 Sheet (18"" x30")	Design Plans	Hurricane repairs Item 1. New stone riprap to be re-laid along the west side of the access road bulkhead. The relaying of stone between the timber bulkhead and the revetment east of the Town Dock There were two other locations of additional stone to be laid east of the timber bulkhead between the now existing boat ramp. There was also one location of bituminous repair adjacent to the "L" pier.
1478	Mar-55 Revised 9/55	Bay State Dredging Co.	Department of Public Works Division of Waterways	Proposed Harbor Development Dredging & Timber Bulkhead, Wellfleet Harbor, Town Pier to Shirttail Point, Wellfleet 4 Sheets	Design Plans	Project entailed the construction of the rip-rap protection that now extends the Town parking area east of the "L" pier onto Shirttail Point. This rip rap was filled with the dredge spoils from the Channel originating from the eastern edge of the contract #1271project, cutting through Shirt Tail point and making the basin on the north side of the point. Channel & Basin were dredged to -6' below MLW. This project also utilized a timber bulkhead (still existing in 2002) on the north west side of the point, beginning at commercial street. New break water extending out along the point 200' from the existing revetment. The timber bulk head on the north side of the point b extending between Commercial St. and the proposed breakwater for a total length of 95'.
1567	Jan-56	Rev-Lyn Construction	Department of Public Works Division of Waterways	Proposed Harbor Development Timber Quay Wall & Bulkhead Wellfleet Harbor Wellfleet 3 Sheets	Design Plans	18' x 362' long timber Quay Warf and Bulkhead to replace existing timber bulkhead between break water and Commercial St. this appears to the same bulkhead work as shown in Contract #1478 with the addition of a second row of deadman piles. The wharf is new and is existing in 2002. The dredging for depicted in #1478 is shown as complete

Project #	Date	Contractor	Engineer	Plan Title	Plan Type	Description
1606	Apr-56	Frank Joy, Inc.	Department of Public Works Division of Waterways	Proposed Harbor Development Concrete Boat Ramp Wellfleet Harbor Vicinity of Town Pier Wellfleet 1 Sheet	Design Plans	14' x 110' long reinforced concrete boat ramp (single lane) that is supported by plies, 3 per row at 10' spacing. The ramp is on an 8 to 1 slope. The ramp is located between the timber bulkhead and the break water in the vicinity of the exiting boat ramp.
1651	Aug-56	Dane Construction Corp.	Duffill Associate Inc-Boston, Ma	Proposed Harbor Development Timber Finger Piers, Wellfleet 5 Sheets	Design Plans	The project entailed the construction of the 205' long pier that parallels the "South Bulkhead". There are 5 finger piers that extend 30 south of the main pier. There are four connections to land that are comprised of 4' wide fixed gangways. The project also entailed the placement of the grout encased gravel (concrete) at the toe of the south bulkhead.
1768	Jun-57	Turner & Breivogel Inc.	Duffill Associate Inc-Boston, Ma	Proposed Harbor Development Stone Breakwater & Groin Wellfleet Harbor Wellfleet 3 Sheets	Design Plans	250' long stone groin west of "L" pier & 1008' long stone breakwater and light tower on Indian Neck (Whitman Property). The groin was designed to be 6' wide at top with a 4' minimum depth. The break water was designed to be 8' wide at top with a 2:1 slope on the seaward side and a 1.5:1 slope on the harbor side. The breakwater was to have a steel framed light tower.
1769	Jun-57	North Atlantic Dredging Corp.	Walter Rowley, Consulting Engineer-West Wareham Ma	Proposed Dredging Anchorage Basin Wellfleet Harbor Wellfleet 1 Sheet	Design Plans	Dredging to -6 below MLW for anchorage basin extending south and east from Town Dock, "L" pier to Whitman Property. There are two disposal areas, Area 1 is on the inshore side of Commercial street. and Mayo's Beach Rd, the second area is on the south side of the Breakwater at Indian Neck.

Project #	Date	Contractor	Engineer	Plan Title	Plan Type	Description
1879	Mar-58	McKie Lighter Co.	Walter Rowley, Consulting Engineer-West Wareham Ma	Proposed Docking Facilities, Timber Pier Extension and Dredging, Wellfleet Harbor, Wellfleet 2 Sheets	Design plans	14' x 150' long timber addition along the south side of the Town Dock. Expanding the width of the seaward portion of the dock to 34' wide. Dredge to -10' below MLW along it's south face. The dredge footprint extends out 50' (south) from the enlarged face of the pier.
1958	Sep-58	McKie Lighter Co.	Walter Rowley, Consulting Engineer-West Wareham Ma	Proposed Harbor Improvements Dredging and Marina Extension, Wellfleet Harbor, Wellfleet 2 Sheets	Design Plans	This project extended the armoring around Shirttail Point for a total length of 1000' +/-. The armoring was "slope pavement" as set up to contain the dredge spoils for the deepening of the channel and marina area (anchorage) to -7 MLW. The dredge spoils were then to be graded, covered with a clay hardener and have guardrails installed all around to make the area a large parking lot.
1973	Sep-58	N.E. Dredge & Dock Co.		On DEM Master List		Dredging and channel Basin. - **No Plans**
1975	Nov-58	Joseph Perry, Inc	Walter E. Rowley & Associates West Wareham Ma	Proposed Harbor Improvements Stone Revetment & Grading Wellfleet Harbor Wellfleet 1 Sheet	Design Plans	This work appears to be the stone work, fill and grading that was outlined in contract #1958. The limits, scope and drawings all look the same.

Project #	Date	Contractor	Engineer	Plan Title	Plan Type	Description
1977	Dec-58	H.A. Murphy Construction Co.	Walter E. Rowley & Associates West Wareham Ma	Proposed Harbor Improvements Timber Walkways, Ramps, Floats and Piles Wellfleet Harbor Wellfleet 3 Sheets	Design Plans	3 Timber walkways (fixed piers) leading to 954' of timber floats that are timber pile supported. The floats are installed in sections containing 9 - 30' floats positioned between each walkway. Mooring piles area at 15' on center on the south side of the floats. This marina is located on north side of Shirttail Point, adjacent to the dredged anchorage basin.
2572	Jan-67	Fairhaven Marine	Walter E. Rowley & Associates West Wareham Ma	Proposed Docking Facilities Timber Pier Repairs Wellfleet Harbor Wellfleet 1 Sheet	Design Plans	Timber Repairs to "L" pier, Town Dock. This includes the removal and replacement of all decking, cross bracing, fender piles and hardware. This work included the installation of a wave screen and the installation of ladders. The cleats were replaced with new pads.
2623	May-68	Hydro-Dredge Corp.	Department of Public Works, Division of Waterways	Proposed Harbor Improvements Dredging Channel and Inner Harbor Wellfleet Harbor, Wellfleet 1 Sheet	Design Plans	Dredging to -8' for the channel leading to and including the anchorage basin for the marina on the north side of Shirt Tail Point. Beginning old approach channel to Marina Anchorage Basin was moved south from 555' to 565' from center of New Town Pier.
2644	Oct-68	Hydro-Dredge Corp.	**Readvertisement of 2623**			
2919-D	Aug-82		Tibbetts Engineering Corp. New Bedford Ma.	**No Plans**		*Dredging to -6' for the channel leading to and including the anchorage basin for the marina on the north side of Shirt Tail Point.*

Project #	Date	Contractor	Engineer	Plan Title	Plan Type	Description
3010	Aug-82	J.M. Cashman, Inc	Tibbetts Engineering Corp. New Bedford Ma.	Proposed Harbor Improvements Maintenance Dredging Wellfleet Harbor Wellfleet 1 Sheet	Design Plans	Dredging to -6' for the channel leading to and including the anchorage basin for the marina on the north side of Shirt Tail Point. -6 Dredge of the inside of the town dock to the ACOE dredge area and to the Boat ramp.
3055-D	Jun-85		Barman Engineering Co.Buzzard's Bay Ma.	**No Plans**		Design of dredging to -6 along access road to town Dock and bulkhead improvements along access road to Town Dock An addition to the existing parking lot and proposed bulk head to support it. No plans currently found to elaborate on what was proposed.
3086	Jun-85	East Coast Marine	Barman Engineering Co. Buzzard's Bay Ma.	Proposed Harbor Improvements Bulkhead Replacement and Dredging at Town Pier Wellfleet Harbor Wellfleet, Mass 3 Sheets	Design Plans	Construction of north-south steel sheet pile bulkhead (at gas dock) to support expansion of parking lot and improvements along access road to Town Dock. -Dredging-Eliminated from this project on4/6/86 to be done at a later date. No plans found to detail when dredge portion completed.
	Sept-98	Regan Construction Corporation, Inc.	Bourne Consulting Engineering	Rehabilitation of the Fish Pier, Town of Wellfleet, Mass 5 sheets	Design Plans	Fish Pier rehab and repairs including x-bracing, fender piles, decking, stringers, cap logs, cleats, and the davit.
	Apr-00	AGM Marine Construction, Inc.	Bourne Consulting Engineering	South Bulkhead Replacement	Design Plans	Reconstruction of South Bulkhead using timber sheetpile bulkhead

Project #	Date	Contractor	Engineer	Plan Title	Plan Type	Description
	Jun-07	Robert B Our Co. Inc.	Bourne Consulting Engineering	Wellfleet Town Pier Rehabilitation, Town of Wellfleet, Mass 10 sheets	Design Plans	Town Pier Rip Rap reconstruction incl. electrical for pier and floats, plumbing, drainage, septic, curbs, railings, docks, site work, Demolition of the Quay Wharf with sloping of material to meet grading of slope adjacent.
	Dec-08	Aqualine Utility Inc.	Bourne Consulting Engineering	Wellfleet Town Pier Rehabilitation, Wellfleet, Mass	Design Plans	Drainage, paving and striping of new paving on the town pier

APPENDIX B – List of Historical Permits

September 7, 1995

MEPA Certificate # 10094R – 135,000 cy (-6 MLW) from Wellfleet Inner Harbor and North of Town pier, disposed at CCDS. Also 2,552 cy south of Town Pier for access to boat ramp and fuel dock. With expected maintenance dredging expected to occur in 20,000 cy increments every three to four years. Includes CZM, APCC and EOEA comments about proposed dredged material.

- Did not recommend the preparation of an EIR.- EOEA.
- PCBs less then 1.3ppm, less then 0.91 is some cases.
- Total PAHs are less then 17.8, les then 13.8 in some cases.
- Arsenic level range 12 to 23 with average of 16.3ppm. DWPC Category 1 threshold is 10ppm. According to the FEIR ranges for Cape Cod bay is 9-22ppm. Disposal would be in keeping with existing CCDS levels.

July 1999

Order of Conditions – Dredging at Wellfleet Harbor, north basin, associated approach channel, and the area adjacent to the commercial dock and town anchorage.

September 24, 1999

Water Quality Certificate File No. SE77-655; Transmittal No. 69778
Based on the chemical data of the dredged material the USACE determined the material unsuitable for disposal at the CCDS. Contaminants of concern were_cadmium, copper, lead and arsenic.

- Initial sampling and testing indicated material unsuitable for CCDS
- New sediment samples were obtained in 1998 for chemical and biological testing according to federal protocols.
    - Chemical concentrations were found to be similar to found earlier.
    - PAH were found to be 4.375ppm on the north side of the pier, 14.8ppm on the south side and 3.870ppm in the town landing
    - Amphoid survival in the 10 day acute toxicity test was within acceptable limits as was the survival of the Macoma nasuta and Nereis Virens int eh 28 day bioaccumulation tests.
    - No significant accumulation of cadmium, copper, lead, or arsenic were found thus sediments from the town pier and town landing were deemed suitable for disposal at CCDS
- Samples were taken in 1999 of the town anchorage area with similar concentration levels.
    - Concentrations were similar to previous samples
    - PAH were less than .61ppm PCB were low at .032ppm
- Allowable period for dredging is June 1 to June 15 and September 15 to December 31.

October 5, 1999

Department of Environmental Protection Chapter 91 Permit #381 - To dredge approximately 126,100 cy in the channels and anchorage areas of Wellfleet Harbor, with disposal at CCDS. Expires October 5, 2009.

- Maintenance dredging may be performed for 10 years.

November 9, 1999

USACE permit #199800874 – individual permit to mechanically dredge approximately 93,500 cubic yards of sandy material from town landing access channels and the north and south access channels, with disposal at CCDS. Expires November 9, 2004.

- Also includes north anchorage.

August 10, 2001	USACE permit # 200101989 – to dredge and maintain 32,600 cy (-6 MLW) in the Wellfleet Town Anchorage_area with disposal at the CCDS. Includes maintenance dredging with upland disposal, until the expiration of the PGP (under USACE Permit number 199901470) on January 11, 2005. • Town Anchorage South of Pier adjacent to L-Pier.
December 20, 2001	USACE permit # 200101989 –additional work added to include dredge and maintain 2,600 cy (-6 MLW) in the ACOE anchorage basin area with disposal at the CCDS. Includes maintenance dredging with upland disposal, until the expiration of the PGP on January 11, 2005. • South of Pier at mouth of channel.
September 27, 2001	FPN 2001-01989 dredging of the town anchorage area. Letter authorizing initiation of open water disposal. DWG attached denotes phase 1 and Phase 2 Dredge projects.
May 24, 2005	WPA Form 5- Order of Conditions (DEP file # SE77-1069) • Expired May 24th 2008 •
July 12, 2005	USACE permit # NAE 2005-1059 - to maintenance dredge 300 cy (-1 MLW) in the L-pier with deposit for beach nourishment at Keller's Corner. • Adjacent to L-pier at Mosquito Docks. • Expires Jan 10th 2010
August 23, 2005	Water Quality Certificate – (USACE # NAE 2005-1059) Area adjacent to L-pier at Mosquito Docks. Sediment comprised primarily of clean, medium to find sand with less then 1% passing the No. 200 sieve. Sediment is appropriate for beach nourishment.
October 3, 2005	CH. 91 for (USACE # NAE 2005-1059)Environmental Protection Permit – to perform to maintenance dredge 300 cy (-1 MLW) in the L-pier with deposit for beach nourishment at Keller's Corner. • Expires October 3rd 2015

APPENDIX C – Federal Channel Dredging Environmental Assessment – Essential Fish Habitat

5.4 Essential Fish Habitat

The dredging of Wellfleet Harbor will have minimal effects on designated Essential Fish Habitat. A mechanical dredge will be used to dredge the mostly fine-grained material from the authorized channel and anchorage areas. A sediment plume associated with the dredge will increase turbidity in the area surrounding the dredge. However, the increase in turbidity is expected to be short-term and localized. Turbidity increases will also be seen at the disposal area. An initial

Benthic organisms serve as an important food source for many fish species. Benthic organisms inhabiting the area to be dredged will be removed by the dredging activities. Benthic resources will recolonize the areas dredged by recruitment from surrounding areas. Therefore, impacts to EFH as a result of this project are expected to be minimal.

EFH for all life stages of Atlantic cod (*Gadus morhua*) is designated within the project area. All life stages of cod are generally found in deeper waters than those found in Wellfleet Harbor. Cod EFH at the disposal area will be temporarily impacted, however, any impacts will be short-term and localized. Therefore, no significant impacts to cod EFH are anticipated.

EFH for haddock (*Melanogrammus aeglefinus*) eggs and larvae is designated in this area. All life stages of haddock are generally found in deeper waters than those found in Wellfleet Harbor, while eggs and larvae have the potential to occur at the CCBDS from January through July. No significant impacts haddock EFH are anticipated as this project has a construction window of September 15 through December 31.

EFH for pollack (*Pollachius virens*) larvae, juveniles, and adults is designated in this area. All three stages have the potential to occur at the dredging and disposal site. Juvenile and adult pollack are highly mobile and should be able to avoid construction areas. The potential exists for larvae, juveniles, or adults to be buried during a disposal event. However, impacts to pollack EFH are anticipated to be minimal as environmental impacts at both the dredging and disposal site will be short-term and localized.

All life stages of whiting (*Merluccius bilinearis*) are designated as having EFH within the project area. The four life stages of whiting are generally found in deeper waters than those found in Wellfleet Harbor. All stages have the potential to occur at the CCBDS throughout the year. The potential exists for eggs, larvae, juveniles, or adults to be buried during a disposal event. However, impacts to whiting EFH are anticipated to be minimal as environmental impacts at disposal site will be short-term and localized.

EFH is designated within the project area for all life stages of red hake (*Urophycis chuss*). Eggs and larvae of red hake are generally found offshore. Juvenile red hake are most often observed in low temperature ($<16^{o}$), high salinity waters (31-33 ppt), while adult red hake are generally observed in waters between 10 and 130 meters deep. This project is expected to have minimal effects on EFH for red hake in Wellfleet Harbor, as the harbor is generally shallower than

their preferred habitat. Red hake EFH at the CCBDS will be impacted as the potential exists to bury eggs, larvae, juveniles and adults. However, impacts at the CCBDS are expected to be localized and not significantly affect hake EFH.

EFH is designated for all life stages of white hake (*Urophycis tenuis*) within the project area. Eggs and larvae are generally found in pelagic waters offshore. Juveniles and adults can be found in waters as shallow as 5 meters and as deep as 225 meters. No more than minimal impact to white hake EFH is expected as a result of this project as both the dredging and disposal of material will only impact localized areas for short durations of time.

EFH is designated within the project area for all life stages of the winter flounder (*Pseudopleuronectes americanus*). The eggs of winter flounder, which are demersal, are typically found at depths of less than 5 meters in bottom waters in a broad range of salinities (10-30 ppt). Spawning, and therefore the presence of eggs, occurs from February to June. EFH for larvae, juveniles, and adults includes bottom habitats of mud and fine-grained sandy substrate in waters ranging from 0.1 to 100 meters in depth. Spawning adults are typically associated with similar substrates in less than 6 meters of water. Although winter flounder EFH is located within the project area, juveniles and adults are very mobile and would be able to flee from the construction area once activities commence. Flounder adults and juveniles will have ample opportunity to avoid any potential impact. Eggs and larvae may be affected by sediment removal and the associated turbidity during construction activities. Construction will be limited to a period of September 15 through January 1 to avoid impacts to marine mammals present at the disposal area, and as a result, no construction will be in progress during peak winter flounder egg and larvae abundance. Therefore, no more than minimal impacts on all life stages of the winter flounder EFH is anticipated as a result of this project.

EFH for all life stages of yellowtail flounder (*Pleuronectes ferruginea*) is designated within the project area. The four life stages of yellowtail flounder are generally found in deeper waters than those found in Wellfleet Harbor. Eggs and larvae are present at the CCBDS in the summer months , while the juveniles and adults are present year round. The potential exists for juveniles or adults to be buried during a disposal event. However, impacts to EFH are anticipated to be minimal as environmental impacts at the disposal site will be short-term and localized. Therefore, no more than minimal impacts to yellowtail flounder EFH are anticipated.

EFH is designated within the project area for all life stages of the windowpane flounder (*Scopthalmus aquosus*). Eggs are buoyant and typically found in the water column in water depths of 1 meter to 70 meters. Larvae are found in pelagic waters. Juveniles and adults prefer bottom habitats of mud or fine-grained sand and can be found in salinities ranging from 5.5 ppt to 36 ppt. Seasonal occurrences in the project area are generally from February to November, with peaks in occurring May and October. Although EFH for the windowpane is within the project area, this species is broadly distributed in north and mid-Atlantic waters from the Gulf of Maine to Cape Hatteras. Any disruption of EFH will be associated with the construction activities and therefore will not be long-term. As was the case with the winter flounder, windowpane flounder adults and juveniles should be able to avoid any potential impacts because of their mobility. Eggs and larvae will only have the potential to be impacted by localized, short-term turbidity associated with the construction activities. Therefore, no more than minimal impact on all life stages of windowpane flounder EFH is anticipated as a result of this project.

EFH is designated within the project area for American plaice (*Hippoglossoides platessoides*) eggs, larvae, juveniles, and adults. All life stages of American plaice are generally found in waters with depths of over 30 meters. This project is expected to have minimal effects on EFH for plaice, as Wellfleet Harbor is generally shallower than their preferred habitat and the construction window (September 15 – December 31) will not interefere with peak abundances of eggs and larvae (April and May).

EFH is designated within the project area for all life stages of ocean pout (*Macrozoarces americanus*). This species is a nearshore species that inhabits hard bottom substrates with salinities greater than 30 ppt. No more than minimal impacts to oceanpout EFH are expected at the dredging site or disposal area, as the majority of the material to be dredged from Wellfleet Harbor is fine material from soft bottom habitats and the CCBDS is mainly soft-bottom.

EFH for all life stages of Atlantic halibut (*Hippoglossus hippoglossus*) is designated within the project area. However, all life stages of Atlantic halibut are generally found in deeper waters than those found in Wellfleet Harbor. No impacts to Atlantic halibut EFH are anticipated at the dredging site. Impacts to EFH at the disposal site are anticipated, however they will be minimal as the area of impact will be localized and impacts will be short-term.

EFH is designated within the project area for all life stages of Atlantic sea herring (*Clupea harengus*). All life stages are typically found in depths of 15 to 130 meters, depths that are generally deeper than those found within Wellfleet Harbor. Therefore, no more than minimal impacts are expected to occur to Atlantic sea herring EFH at the dredging site. Impacts to sea herring EFH at the disposal site are anticipated, however they will be minimal as the area of impact will be localized and impacts will be short-term.

EFH is designated within the project area for monkfish (*Lophius americanus*) eggs, larvae and juveniles. These life stages are generally found in waters deeper than those in the dredging area. Impacts to monkfish EFH at the disposal site are anticipated to be minimal, as the area of impact will be localized and impacts will be short-term. Additionally, the construction window will avoid the peak months that monkfish eggs and larvae are present (March to September). No more than minimal impacts on monkfish EFH are anticipated as a result of the proposed project.

EFH is designated within the project area for bluefish (*Pomatomus saltatrix*) juveniles and adults. Although juveniles and adults are found in the surface waters of mid-Atlantic estuaries from May through October, EFH for this species is mostly pelagic waters over the Continental Shelf. Bluefish adults are highly migratory and are generally found in salinities greater than 25 ppt. No more than minimal impact on bluefish EFH is anticipated as a result of the proposed project.

EFH is designated in the project area for juvenile and adult long finned squid (*Loligo pealei*) and short finned squid (*Illex illecebrosus*). These species are common inshore in warm weather months. The proposed project should have no more than minimal effects on long finned squid and short finned squid EFH at the dredging area as no dredging will occur in the summer months. Impacts to squid EFH at the disposal site are anticipated, however they will be minimal as the area of impact will be localized and impacts will be short-term. Additionally, squid are

highly mobile and would be able to avoid disposal activities should they be present.

EFH is designated within the project area for all life stages of Atlantic butterfish (*Peprilus triacanthus*). All life stages of this species are generally found in deeper waters than those found in Wellfleet Harbor. Therefore, no impacts to Atlantic butterfish EFH at the dredging area are anticipated. Impacts to butterfish EFH at the disposal site are anticipated, however they will be minimal as the area of impact will be localized and impacts will be short-term. Additionally, butterfish are highly mobile and would be able to avoid disposal activities should they be present.

EFH is designated within the project area for all life stages of Atlantic mackerel (*Scomber scombrus*) at the dredging and disposal areas. Impacts to mackerel EFH are anticipated, however they will be minimal as the area of impact will be localized and the impacts will be short-term. Additionally, mackerel are highly mobile and would be able to avoid construction and disposal activities should they be present. Therefore, no more than minimal impacts to mackerel Efh are anticipated.

EFH is designated within the project area for adult summer flounder (*Paralicthys dentatus*). Adults migrate into shallow coastal and estuarine systems during the warm summer months and then move offshore during colder months. Although summer flounder may occur in the project area, adults should be able to avoid any potential impacts because of their mobility. Therefore, no more than minimal impacts to summer flounder EFH is anticipated as a result of this project.

EFH is designated in the project area for juvenile and adult scup (*Stenotomus chrysops*). Scup juveniles and adults have the potential to occur in estuarine systems during the spring and summer months. All life stages of scup prefer salinities greater than 15 ppt. Juveniles and adults use structured areas for foraging and refuge, however, they are highly mobile and should be able to avoid construction activities. No more than minimal impacts to scup EFH are anticipated as a result of this project.

EFH is designated for black sea bass (*Centropristus striata*) adults within the project area. EFH for the juveniles and adults of this species is predominantly within estuarine systems with oceanic salinities. Juveniles and adults are found in estuaries during spring and summer months in water temperatures above 6°C and salinities greater than 18 ppt. Black sea bass prefer rough, shelly substrates and can be found in natural and man-made structured habitats. Although sea bass may occur in the project area, adults should be able to avoid any potential impacts because of their mobility. Therefore, no more than minimal impacts to black sea bass EFH are anticipated as a result of this project.

EFH is designated for juvenile and adult surf clams (*Spisula solidissima*) in the project area. Surf clams are generally found on ocean beaches and not in soft bottom habitats like those associated with the dredging and disposal areas. Therefore, no more than minimal effects to surf clam EFH are expected.

EFH is designated within the project area for juvenile and adult spiny dogfish (*Squalus acanthius*). Impacts to dogfish EFH are anticipated, however they will be minimal as the area of

impact will be localized and the impacts will be short-term. Dogfish are highly mobile and should be able to avoid construction and disposal activities if present. No more than minimal impacts on spiny dogfish EFH are anticipated as a result of the proposed project.

EFH for the two highly migratory species, bluefin tuna (*Thunnus thynnus*) and blue shark (*Prionace glauca*), are designated in the project area. These species are highly mobile and should be able to avoid construction and disposal activities if present. Therefore, no impacts to tuna or blue shark EFH are anticipated.

APPENDIX D – Federal Channel Dredging Suitability Determination for Offshore Disposal at Cape Cod Bay Disposal Site

CENAE–R-PT (1145–2–303B) 9 December 2003

MEMORANDUM THRU

PFH for Joanne M. Barry, Chief, Policy Analysis and Technical Support Branch

FOR: Roger Juhola, Project Manager, CENAE-P-M

SUBJECT: Suitability Determination for CENAE, Wellfleet Harbor FNP, Wellfleet, MA, Application Number 200301161.

1. **Project Description:**

The CENAE is proposing to dredge an area of approximately 10.5 acres in Wellfleet Harbor and remove approximately 135,000 cu. yds. of material. This material is proposed to be mechanically dredged and disposed of at the Cape Cod Bay Disposal Site (CCDS). This area was last dredged 7 years ago.

A sampling plan for this project was prepared on 30 June 2003. The plan called for seven cores to be taken from the project area. This plan was followed and produced data.

2. **Summary:**

This memorandum addresses compliance with the regulatory evaluation and testing requirements of 40 CFR Section 230.60 and 230.61, subpart G under the Clean Water Act 404(b)(1) guidelines. This evaluation confirms that sufficient information was obtained to properly evaluate the suitability of this material for open water disposal under the guidelines and finds the sediments suitable for disposal as proposed.

3. **Clean Water Act Regulatory Requirements:**

The disposal of sediments below mean low water in **Cape Cod Bay** is regulated according to Section 404 of the Clean Water Act. Subpart G of the Section 404(b)(1) guidelines describes the procedures for conducting this evaluation, including any relevant testing that may be required.

§230.60 General Evaluation of Dredged or Fill Material

(a) The sediment proposed to be dredged is not mostly sand located in an area of high water energy. This exclusion does not apply to this project.

(b) According to the Wellfleet Harbormaster, there have been no recent spills. The Town of Wellfleet submitted a plan of nearby storm water outlets.

(c) The material to be dredged and the material at the disposal site are not adjacent, composed of the same materials and subject to the same sources of contaminants. Further testing was therefore required.

(d) This subsection states that further testing may not be necessary if the material to be dredged is constrained to reduce contamination within the disposal site and to prevent transport of contaminants beyond the boundaries of the disposal site. As such constraints in handling are not proposed, this subsection does not apply.

§230.61 Chemical, Biological and Physical Evaluation and Testing

(a) This subsection describes the purpose of §230.61 and does not give any criteria for the evaluation of sediments.

(b) Water column and benthic bioassay testing is not needed as it was determined, on the basis of evaluation of §230.61(c), that the contamination is low.

(c) An inventory of the total concentration of contaminants is of value in comparing sediment at the disposal and dredging sites. See the attached spreadsheets for comparisons to the CCDS reference areas. While some of the concentrations of metals and PAH's are higher than the reference values, they are not very much higher. The concentrations of PCB's and pesticides were all lower than the detection limits or only slightly higher. Therefore, this project's sediment is similar to that of the reference area and is suitable for unconfined open water disposal at CCDS.

CENAE and the federal agencies did not think an analysis of biological community structure was needed for this project.

(d) The physical effects of the disposal of the dredged material at the disposal site should be minimal. Although some benthic marine organisms will be buried by the disposal, the disposal site should be rapidly re-colonized.

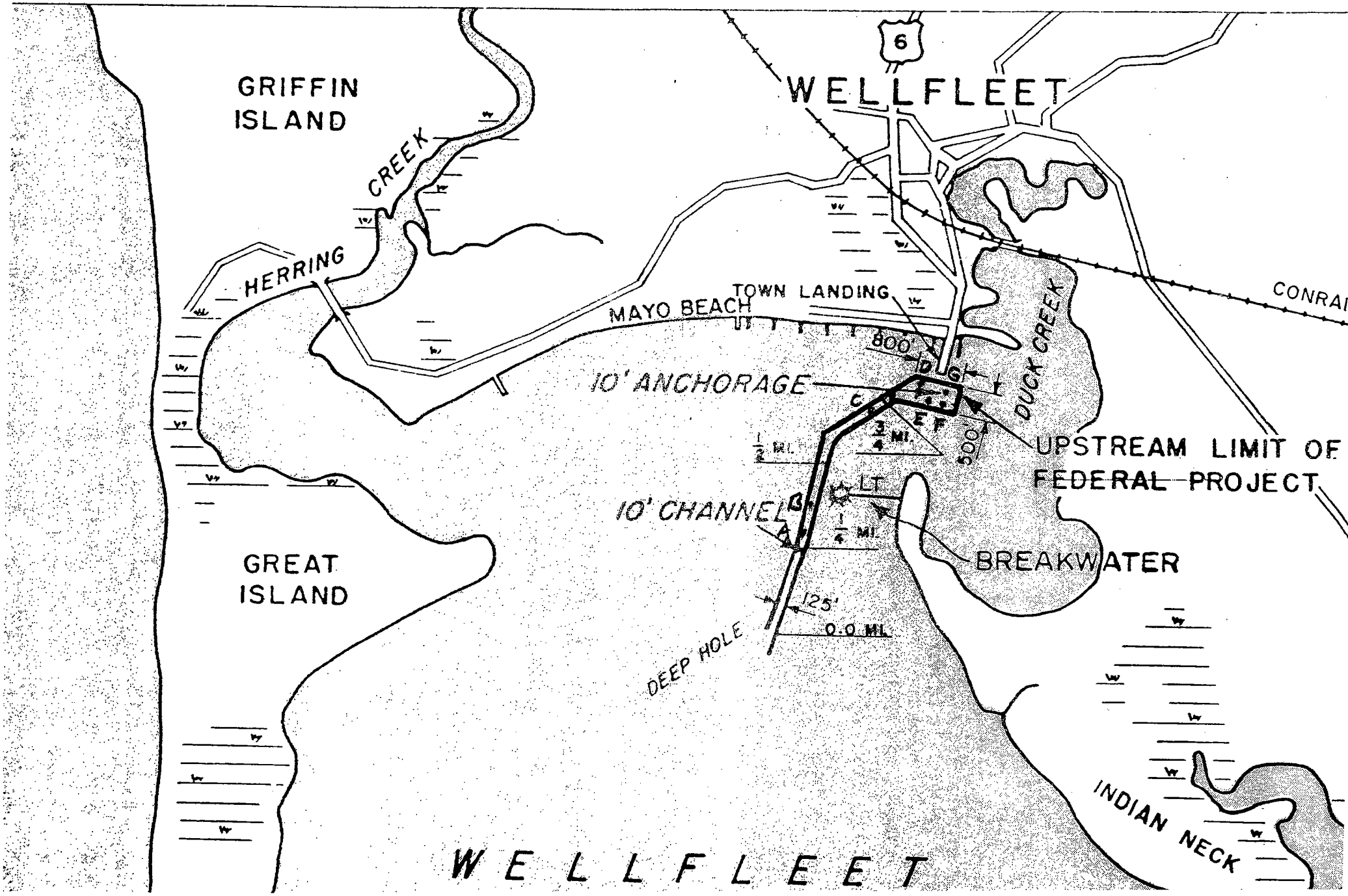
4. Copies of the draft of this suitability determination were sent to the State DEP, US EPA, and US NMFS for their review. The agencies either responded to say that they concur with the determination or did not respond within the 10 day response period.

5. If you have any questions, please contact me at 78660.

Phillip W. Nimeskern Jr.

PHILLIP W. NIMESKERN, JR.
Project Manager,
Marine Analysis Section

ENGINEERS


GRIFFIN ISLAND
CREEK
HERRING
6
WELLFLEET
CONRAI
TOWN LANDING
MAYO BEACH
800'
10' ANCHORAGE
DUCK CREEK
C
D
G
E
F
3/4 MI.
1/2 MI.
500'
UPSTREAM LIMIT OF FEDERAL PROJECT
LT
10' CHANNEL
B
A
1/4 MI.
BREAKWATER
GREAT ISLAND
125'
0.0 MI.
DEEP HOLE
INDIAN NECK
WELLFLEET

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Pollutant concentrations comparisons												
2	Application #200301161												
3	Wellfleet Harbor FNP												
4													
5	Sample Site		CCDS-1986		Sample AB			Sample CDE			Sample FG		
6	Metals (ppm)		mean		Raw Data	Normalized		Raw Data	Normalized		Raw Data	Normalized	
7	Arsenic		16		1.5		ok	24		*	29		*
8	Cadmium		0.9		0.12		ok	1.6		*	1.8		*
9	Chromium		48		2.8		ok	39		ok	41		ok
10	Copper		20		2		ok	34		*	37		*
11	Mercury		0.4		0.00385		ok	0.11		ok	0.096		ok
12	Nickel		27		1.5		ok	20		ok	21		ok
13	Lead		36		2.6		ok	38		*	40		*
14	Zinc		88		8.3		ok	110		*	120		*
15													
16	% fines				57.9			60.5			57.85		
17	PAH's (ppb)												
18	Fluorene		75		11		ok	40		ok	45		ok
19	Phenanthrene		75		49		ok	40		ok	45		ok
20	Anthracene		75		28		ok	40		ok	45		ok
21													
22	Fluoranthene		75		290		*	130		*	160		*
23	Pyrene		75		330		*	180		*	210		*
24	Benzo(a)anthracene		75		130		*	40		ok	45		ok
25	Chrysene		75		120		*	40		ok	45		ok
26	Total Benzofluoranthenes		150		203		*	124		ok	155		*
27	Benzo(a)pyrene		75		120		*	40		ok	45		ok
28	Dibenzo(a,h)anthracene		75		11		ok	40		ok	45		ok
29	Benzo(g,h,i)perylene		75		52		ok	40		ok	45		ok
30	Ideno(123-cd)pyrene		75		56		ok	40		ok	45		ok
31													
32	TOC				0.21			6.6			7		
33													
34	Sum of PAH's				1400			794			937		
35													
36	* = > REFERENCE SAMPLE				ARG = CAN'T COMPARE								
37	ok = < REFERENCE SAMPLE												
38													
39	Reference data is from "Final Report, Pre-Disposal Surveys, Cape Cod Disposal Site, Cape Cod Bay, MA"; 11 August, 1994.												

APPENDIX E – Permits for 1999 Town of Wellfleet Channel and Anchorage Dredging

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

REPLY TO
ATTENTION OF

November 9, 1999

Regulatory Branch
CENAE-CO-R-199800874

Mr. Bill Dugan
Wellfleet Town Administrator
Town of Wellfleet
300 Main Street
Wellfleet, Massachusetts 02667

Dear Mr. Dugan:

Enclosed are two copies of a Department of the Army permit authorizing the work described therein. Your signature is necessary to execute this permit. If the conditions are acceptable, please sign both copies and return one signed copy to us.

Please post the enclosed ENG form 4336 (i.e., Notice of Authorization) in a conspicuous location at the job site whenever work is ongoing. This permit requires you to notify us before beginning work so that we may inspect the project. Therefore, please complete and return the attached Work Start Notification Form to this office no later than two weeks before the anticipated starting date. If the plans or construction methods (i.e., for work in our jurisdiction) need to be changed, please contact us immediately to discuss modification of your permit prior to undertaking these changes.

This permit is a limited authorization containing a specific set of conditions. Please read the permit thoroughly to familiarize yourself with those conditions, including any conditions contained on the attached state water quality certification. If a contractor does the work for you, both you and the contractor are responsible for ensuring that the work is done in compliance with the permit's terms and conditions, as any violations could result in civil or criminal penalties.

An onboard Corps of Engineers-certified inspector must witness every discharge of dredged material. The dredged material must be released at a specified buoy or set of coordinates within the disposal site. Please notify the Marine Analysis Unit, Regulatory Branch by phone at (978) 318-8292 at least ten working days in advance of the time that disposal operations will begin so that specific coordinates for your project can be sent to you. This phone notification requirement is in addition to the requirement for submission of the Work Start Notification Form as previously stated in this letter.

Finally, please note that the Department of the Army permit process does not supersede any other agency's jurisdiction. Hence, if other federal, state, and/or local agencies have jurisdiction over your project, you must receive all applicable permits before you may begin work.

The Corps of Engineers recently issued final regulations regarding an administrative appeals process for permit denials or proffered permits that you object to the terms and conditions of. A Notification of Applicant Options (NAO) form and flow chart are enclosed with this letter, which explains the appeals process and your options. The North Atlantic Division Office will hear all accepted appeals. However, in order to retain your right to appeal, should you intend to, you must respond to the attached NAO form within 60 days of this letter's date. Responses and questions regarding the Corps of Engineers appeals process should be directed to Ms. Christine Godfrey, Policy and Technical Support Section at (978) 318-8673 or at the above address.

If you have any questions regarding this correspondence, please contact Mr. Greg Penta, of my staff, at (978) 318-8862.

Sincerely,

William F. Lawless, P.E.
Chief, Regulatory Branch
Construction/Operations Division

Enclosures

Copies Furnished:

Mr. Kevin Mooney, Massachusetts Department of Environmental Management,
349 Lincoln Street, Building 45, Hingham, Massachusetts 02043
Mr. David P. Anderson, P.E., , Project Engineer, Fay, Spofford & Thorndike, Inc.
5 Burlington Woods, Burlington, Massachusetts 01803

November 4, 1999
Date

199800874
File Number

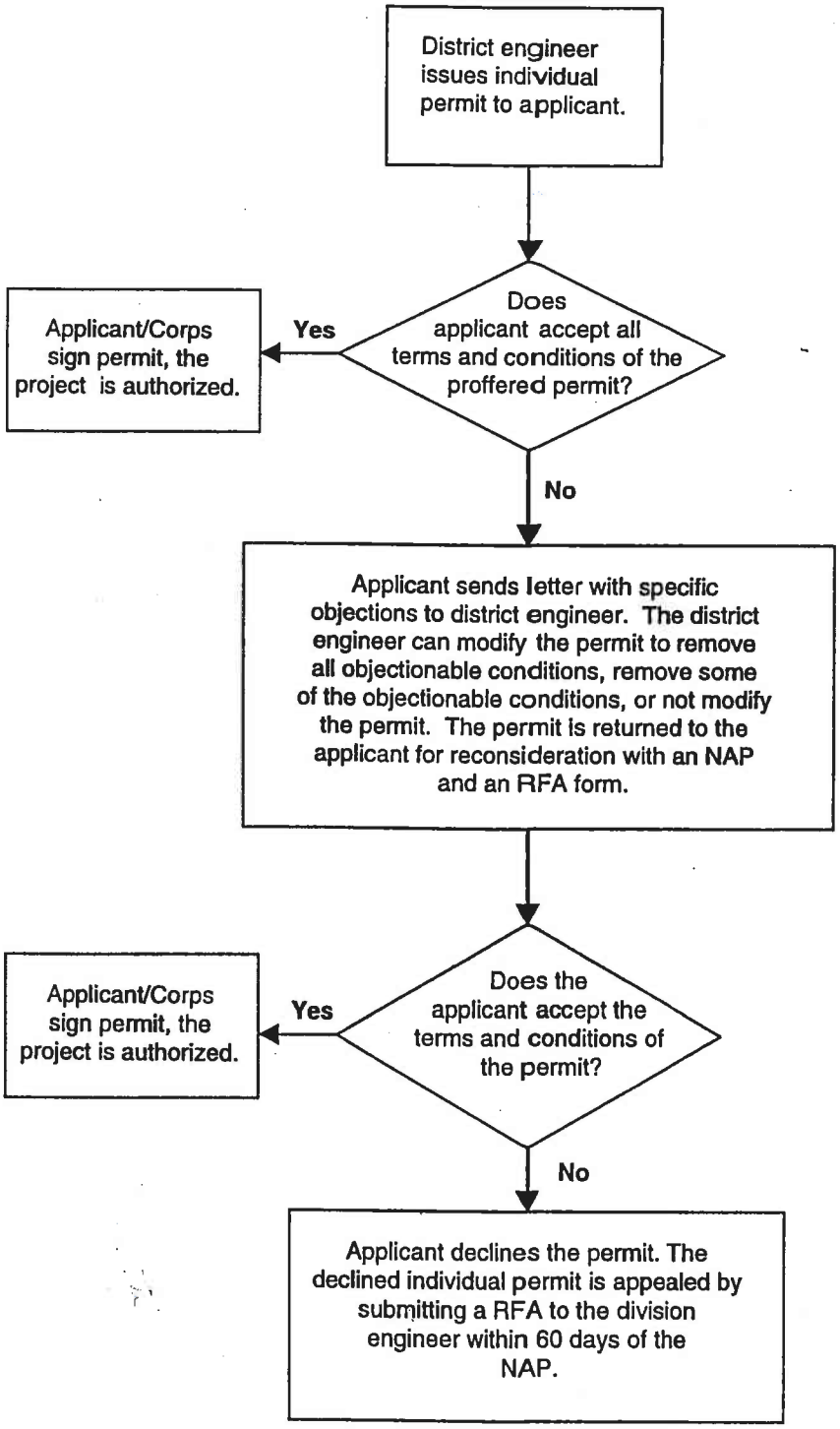
NOTIFICATION OF APPLICANT OPTIONS (NAO) FOR PARTIES ISSUED A DEPARTMENT OF THE ARMY INDIVIDUAL PERMIT

You are hereby advised that the following options are available to you in your evaluation of the enclosed permit:

1) You may sign the permit, and return it to the district engineer for final authorization. Your signature on the permit means that you accept the permit in its entirety, and waive all rights to appeal the permit, or its terms and conditions.

2) You may decline to sign the permit because you object to certain terms and conditions therein, and you may request that the permit be modified accordingly. You must outline your objections to the terms and conditions of the permit in a letter to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this NAO, or you will forfeit your right to request changes to the terms and conditions of the permit. Upon receipt of your letter, the district engineer will evaluate your objections, and may: (a) modify the permit to address all of your concerns, or (b) modify the permit to address some of your objections, or (c) not modify the permit, having determined that the permit should be issued as previously written. In any of these three cases, the district engineer will send you a final permit for your reconsideration, as well as a notification of appeal (NAP) form and a request for appeal (RFA) form. Should you decline the final proffered permit, you can appeal the declined permit under the Corps of Engineers Administrative Appeal Process by submitting the completed RFA form to the division engineer. The division engineer must receive the RFA within 60 days of the date of the NAP that was transmitted with the second proffered permit.

Applicant Options with Proffered Individual Permit



DEPARTMENT OF THE ARMY PERMIT

Permittee Wellfleet Town Administrator, Town of Wellfleet, 300 Main Street, Wellfleet, Massachusetts 02667

Permit No. 199800874

Issuing Office New England District

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description:

The work involves maintenance dredging the town landing access channel (approximately 45,000 square feet) and the north and south access channels (approximately 430,000 square feet) to a depth of –6' MLW with a 1' allowable overdredge in Wellfleet Harbor, Wellfleet, Massachusetts. Approximately 93,500 cubic yards of sandy material will be removed by mechanical method and disposed of at the Cape Cod Disposal Site (CCDS). The proposed work is shown in detail on the enclosed four sheets entitled "PLAN ACCOMPANYING PETITION OF THE TOWN OF WELLFLEET TO DREDGE AND MAINTAIN ACCESS CHANNELS AND ANCHORAGE AREAS WELLFLEET HARBOR WELLFLEET MASSACHUSETTS". An additional sheet shows the disposal site.

Project Location:

This project is located on the USGS Wellfleet quadrangle sheet at UTM coordinates N 4642250 and E 414750.

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on November 9, 2004. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

1. The permittee shall ensure that a copy of this permit is at the work site whenever work is being performed and that all personnel performing work at the site of the work authorized by this permit are fully aware of the terms and conditions of the permit. This permit, including its drawings and any appendices and other attachments, shall be made a part of any and all contracts and sub-contracts for work which affects areas of Corps of Engineers jurisdiction at the site of the work authorized by this permit. This shall be done by including the entire permit in the specifications for work.

(Special Conditions continued on Page 4)

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

(✓) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

(✓) Section 404 of the Clean Water Act (33 U.S.C. 1344).

( ) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

(PERMITTEE) *(DATE)*

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

(DISTRICT ENGINEER) 1/9/99 *(DATE)*

for Brian E. Osterndorf
Colonel, Corps of Engineers

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

(TRANSFEREE) *(DATE)*

☆U.S. GOVERNMENT PRINTING OFFICE: 1986 — 717-425

SPECIAL CONDITIONS (Continued from Page 2)

1. (continued) If the permit is issued after the construction specifications but before receipt of bids or quotes, the permittee must include the entire permit as an addendum to the specifications. If the permit is issued after receipt of bids or quotes, you must include the entire permit in the contract or subcontract as a change order. The term "entire permit" includes permit amendments. Although the permittee may assign various aspects of the work to different contractors or subcontractors, all contractors and subcontractors are obligated by contract to comply with all environmental protection provisions of the entire permit, and no contract or subcontract shall require or allow unauthorized work in area of Corps of Engineers jurisdiction.

2. Periodic maintenance dredging to the area and depth limits described herein is authorized for ten years from the date of issuance of this permit, **provided disposal of the dredged material is at an upland site**. However, the permittee must notify this office, in writing, 60 days before the intended date of any such dredging and shall not begin such dredging until written authorization has been obtained. This 60-day notification is not required for the initial new and/or maintenance dredging authorized by this permit. A separate authorization shall be required for such dredging if the material to be dredged is to be deposited in open or ocean waters and/or wetlands.

3. Every discharge of dredged material at the disposal site must be witnessed by an onboard inspector who has been trained by, and who holds a current certification from, the New England District of the Corps of Engineers. Failure to adhere to this requirement will be considered a violation of this permit and cause for invoking its enforcement provisions, which carry substantial penalties. The inspector shall be contracted and paid for by the permittee.

4. For the initiation of disposal activity, and anytime disposal operations resume after one month or more has elapsed, the Corps must receive notification from the permittee or the permittee's representative **at least ten working days in advance** of the time that disposal operations will begin. Disposal operations must not begin until you receive an Authorization to Dredge letter from our Marine Analysis Unit, which will include disposal-point coordinates for this specific project (which may differ from coordinates specified for other projects using the same disposal site). Contact the Marine Analysis Unit, Regulatory Branch by phone at (978) 318-8292. The Corps will review the permit to insure compliance to that point with all permit conditions, will specify disposal-point coordinates, and will provide, on request, a list of currently certified inspectors.

5. The permittee must ensure that a separate Corps of Engineers disposal inspection report is fully completed by the inspector for every trip to the disposal site, and that this report is received by the Corps New England District (ATTN: Marine Analysis Unit, Regulatory Branch) within one week of the trip date. The Regulatory Branch telefax number is (978) 318-8303. For each dredging season during which work is performed, the permittee must notify the Corps upon completion of dredging for the season by completing and submitting the form that will be supplied by the Corps for this purpose when disposal-point coordinates are specified.

6. Except when directed otherwise by the Corps DAMOS Program Manager for site management purposes, all disposal of dredged material shall adhere to the following requirements. Disposal shall not be permitted if these requirements cannot be met due to weather or sea conditions. In that regard, special attention needs to be given to predicted conditions prior to departing for the disposal site.

a. The permittee shall be required to release the dredged material at a specified buoy or set of coordinates within the disposal site.

b. All disposal is to occur at the buoy with the scow at a complete halt. This requirement must be followed except when doing so will create unsafe conditions because of weather or sea state, in which case disposal within **100** feet of the buoy or specified set of coordinates with the scow moving only fast enough to maintain safe control (generally less than one knot) is permitted.

7. There shall be no dredging or disposal operations at the Cape Cod Disposal Site (CCDS) between January 1st and May 15th of any year in which the dredging occurs. This is to protect the endangered Kemp's ridley sea turtles (*Lepidochelys kempii*) in the Wellfleet Harbor area, and the endangered northern right whale (*Eubalaena glacialis*) in the disposal area vicinity.

8. A marine mammal/turtle observer approved by the National Marine Fisheries Service (NMFS) shall be present on the towing vessel for all disposal activities. The observer may also be the dredged material disposal inspector, provided that he/she has the necessary agency approvals.

9. In the event that marine mammals or turtles are sighted within 1500 feet of the marker buoy, the tug captain and observer shall observe the following disposal procedures:

a. If marine mammals or turtles are sighted within 1500 feet of the marker buoy, record the species, number of animals, direction of travel and behavior (feeding, in transit, etc.)

b. If the animals are within 1500 feet of the marker buoy and appear to be moving away from the buoy, wait until they have cleared the buoy by 1500 feet and then proceed with disposal at the buoy.

c. If the animals are within 1500 feet of the marker buoy and appear to be stationary, or are outside 1500 feet and appear to be moving towards the buoy, proceed to the center of the CCDS and discharge the material at the position specified by the Water Quality Certification.

d. If the disposal occurs in darkness or in otherwise limited visibility, the tug shall employ its searchlight for the benefit of the observer, beginning 2000 feet from the disposal buoy.

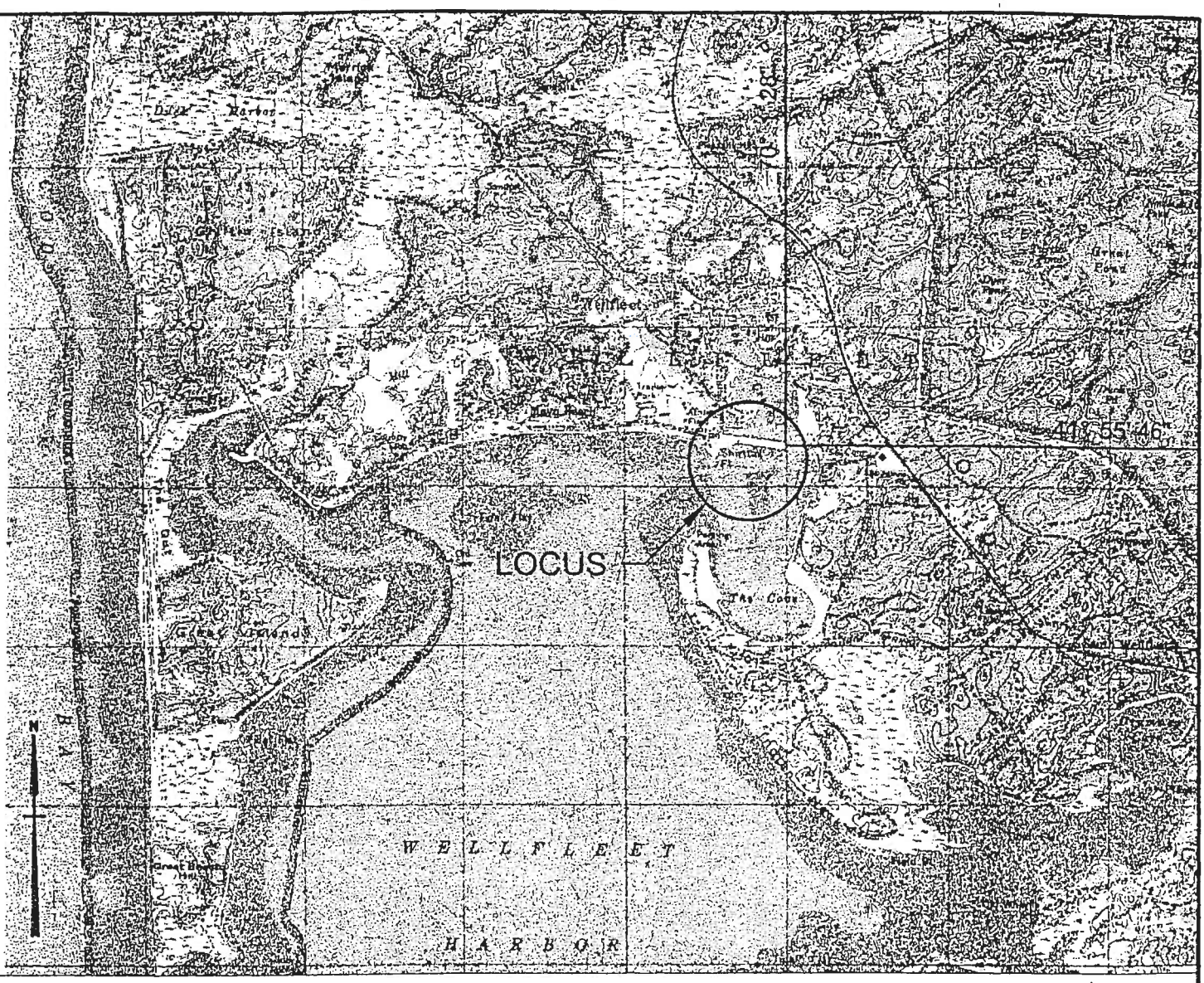
e. In all cases, no disposal shall occur within 1500 of a sighted marine mammal or turtle.

f. The observer shall document each trip using the sighting log form supplied by the Corps of Engineers. The permittee must ensure that these sighting log forms are fully completed and received by the Corps of Engineers, New England District within one week of the trip date.

10. At least ten working days in advance of the start date, the First Coast Guard District, Aids to Navigation Office, (617) 223-8338, shall be notified of the location and estimated duration of the dredging and disposal operations.

11. The Coast Guard Marine Safety Office, Boston, (617) 223-3000, shall be notified prior to the start of this project.

12. The Corps is not requiring post-dredge surveys. If post-dredge surveys are performed, the results of each survey shall be forwarded to the following: Eric Hutchins, Habitat Conservation Division, National Marine Fisheries Service, One Blackburn Drive, Gloucester, Massachusetts 01930.



GENERAL NOTES:

1. COORDINATES, IN FEET, ARE BASED UPON THE NORTH AMERICAN DATUM OF 1983 (NAD 83).
2. ELEVATIONS, IN FEET, ARE REFERRED TO THE MEAN LOW WATER (MLW) DATUM. +1.0 = ELEVATION ABOVE MLW 1.0 = EL BELOW MLW. MEAN HIGH WATER (MLW) EL =+10.0. HIGH TIDE LINE (HTL) EL =+13.1.
3. HARBOR SHORE LINE, STREETS AND PARCEL LINES HAVE BEEN COMPILED FROM WELLFLEET ASSESSORS ATLAS 21, 22 & 28, WITH ADDITIONAL INFORMATION PROVIDED BY D.E.M. WATERWAYS.

PLAN ACCOMPANYING PETITION OF THE
TOWN OF WELLFLEET
TO DREDGE AND MAINTAIN ACCESS CHANNELS AND ANCHORAGE AREAS
WELLFLEET HARBOR
WELLFLEET MASSACHUSETTS
FAY, SPOFFORD & THORNDIKE, INC.

LOCUS PLAN
FROM USGS WELLFLEET QUADRANGLE
SCALE: 1"=10,000'

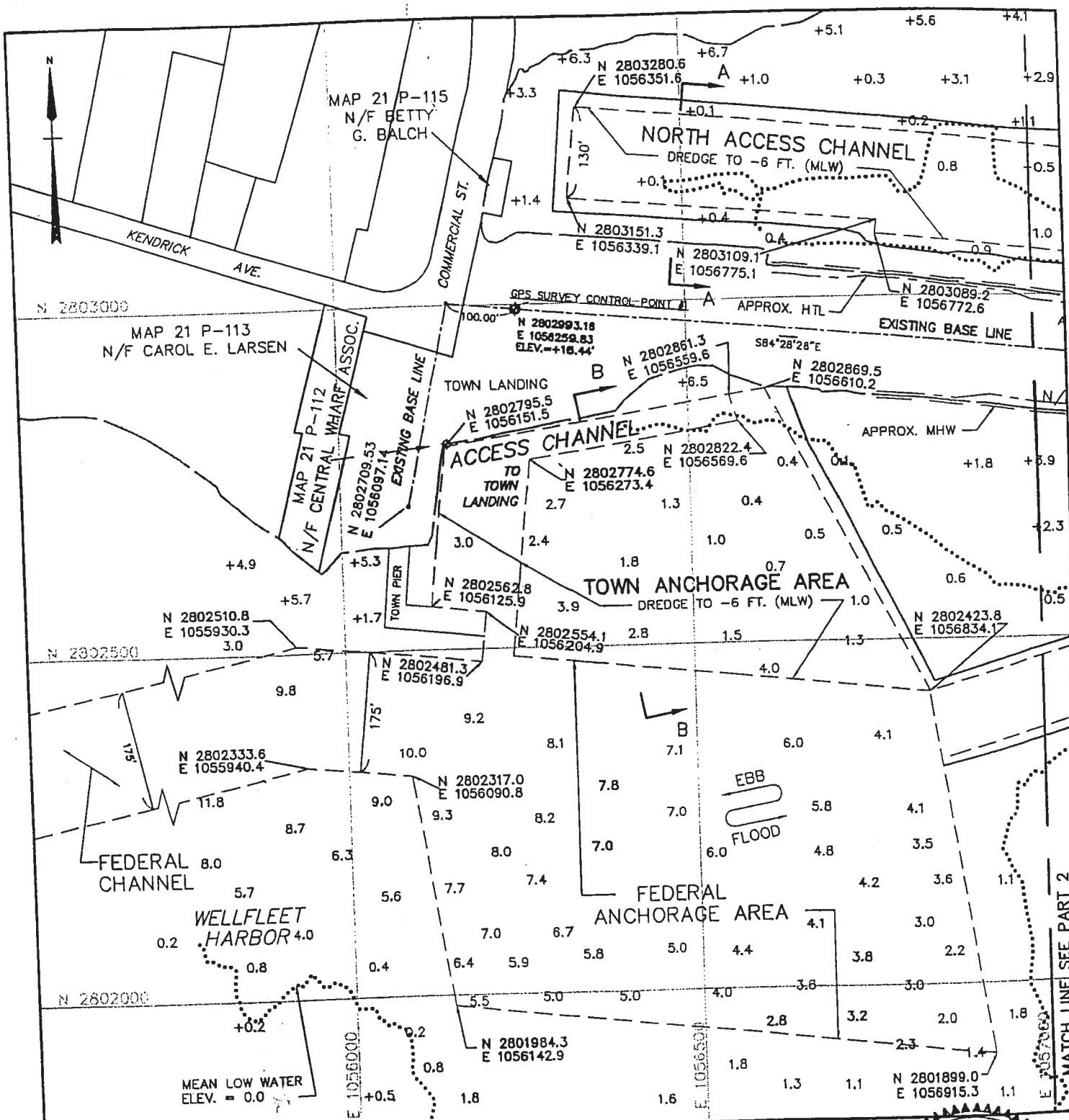
FOR PERMITTING ONLY

MAY 27, 1999

SHEET 1 OF 4

COMMONWEALTH OF MASSACHUSETTS
DAVID P. ANDERSON
CIVIL
No. 37119
REGISTERED PROFESSIONAL ENGINEER

5/27/99



PLAN ACCOMPANYING PETITION OF THE

TOWN OF WELLFLEET

TO DREDGE AND MAINTAIN ACCESS CHANNELS AND ANCHORAGE AREAS

WELLFLEET HARBOR

WELLFLEET MASSACHUSETTS

FAY, SPOFFORD & THORNDIKE, INC.

PLAN—PART 1

SCALE: 1"=200'

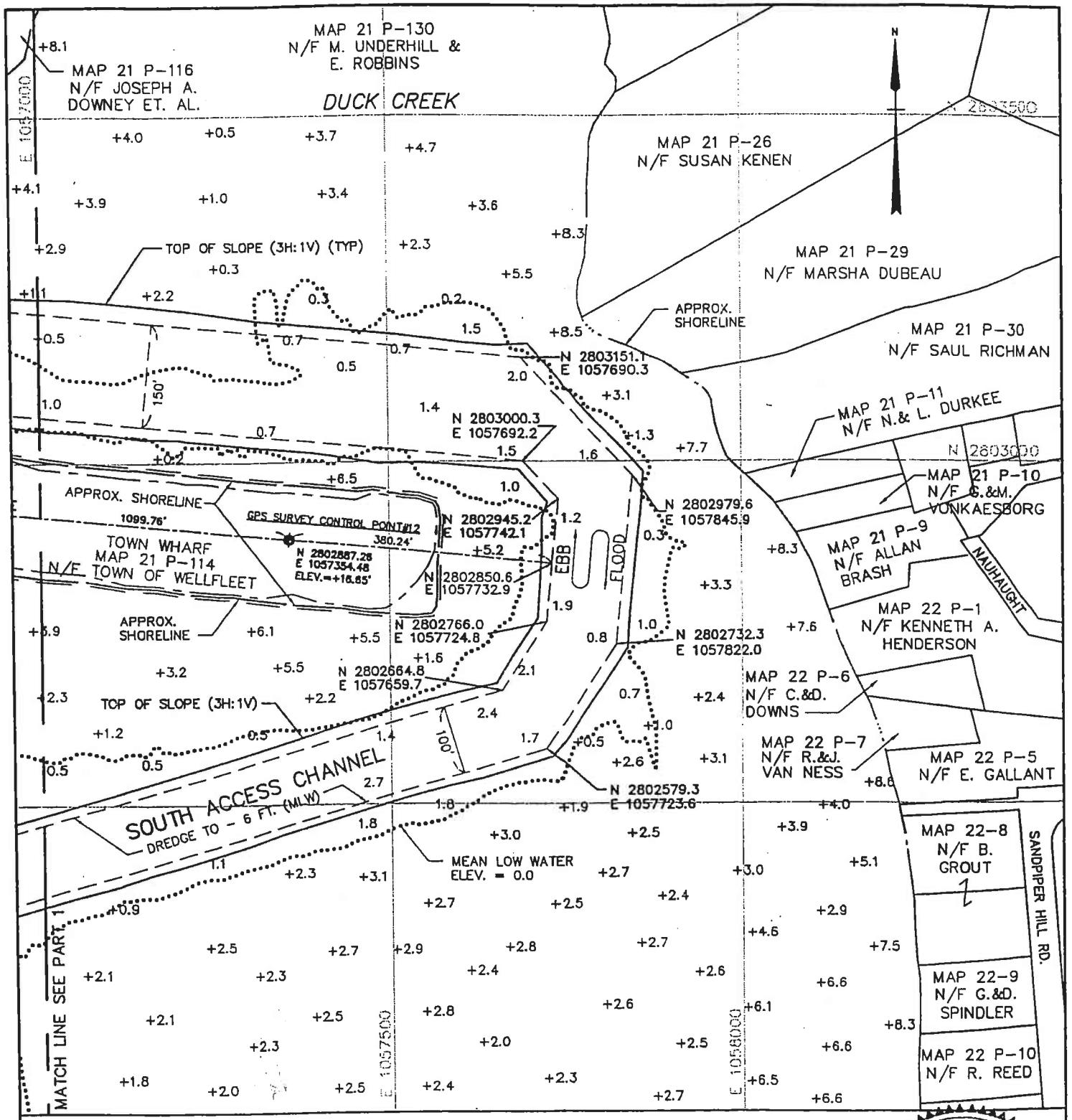
FOR PERMITTING ONLY

MAY 27, 1999

SHEET 2 OF 4

COMMONWEALTH OF MASSACHUSETTS
DAVID P. ANDERSON
CIVIL
No. 37119
REGISTERED PROFESSIONAL ENGINEER

5/27/99



PLAN ACCOMPANYING PETITION OF THE
TOWN OF WELLFLEET
TO DREDGE AND MAINTAIN ACCESS
CHANNELS AND ANCHORAGE AREAS
WELLFLEET HARBOR
WELLFLEET MASSACHUSETTS
FAY, SPOFFORD & THORNDIKE, INC.

PLAN—PART 2
SCALE: 1"=200'

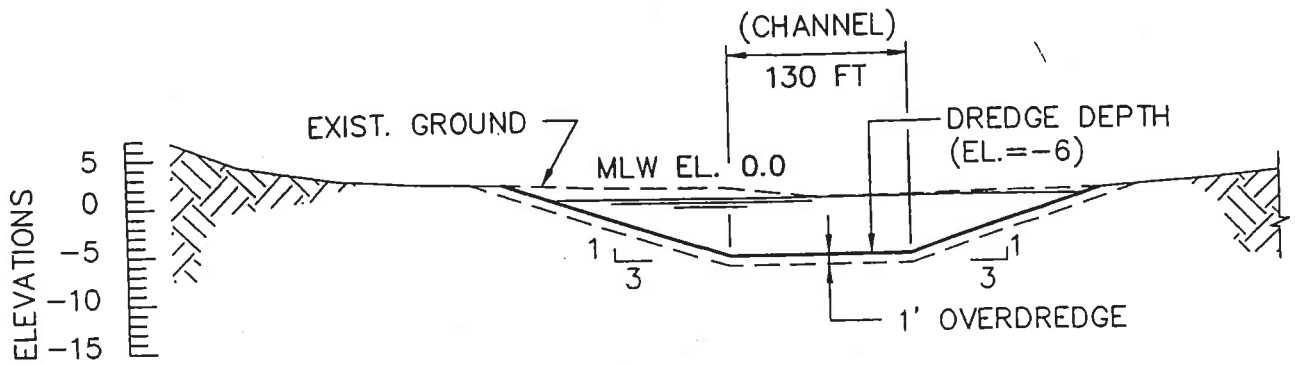
FOR PERMITTING ONLY

MAY 27, 1999

SHEET 3 OF 4

COMMONWEALTH OF MASSACHUSETTS
DAVID P. ANDERSON
CIVIL
No. 37119
REGISTERED PROFESSIONAL ENGINEER

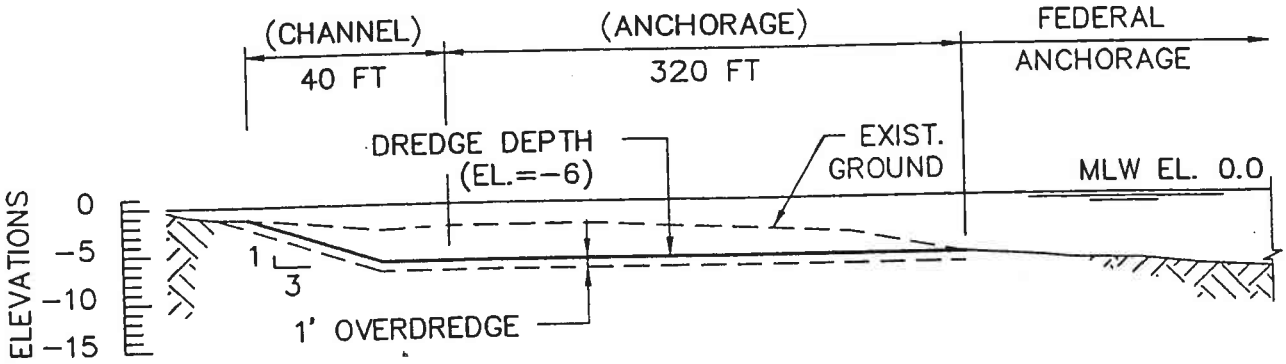
5/27/99



SECTION A–A

NOT TO SCALE

N ← | → S



SECTION B–B

NOT TO SCALE

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DREDGE VOLUME SUMMARY

AREA	DREDGE DEPTH	VOLUME (CY) DESIGN	VOLUME (CY) OVERDREDGE	TOTAL VOLUME (CY)
NORTH ACCESS CHANNEL	EL -6.0	29,200	5,200	34,400
SOUTH ACCESS CHANNEL	EL -6.0	42,300	10,800	53,100
TOWN LANDING ACCESS CHANNEL	EL -6.0	4,900	1,100	6,000
TOWN ANCHORAGE AREA	EL -6.0	26,300	6,300	32,600
TOTALS		102,700	23,400	126,100

PLAN ACCOMPANYING PETITION OF THE

TOWN OF WELLFLEET

TO DREDGE AND MAINTAIN ACCESS CHANNELS AND ANCHORAGE AREAS

WELLFLEET HARBOR

WELLFLEET MASSACHUSETTS

FAY, SPOFFORD & THORNDIKE, INC.

SECTIONS

SCALE AS NOTED

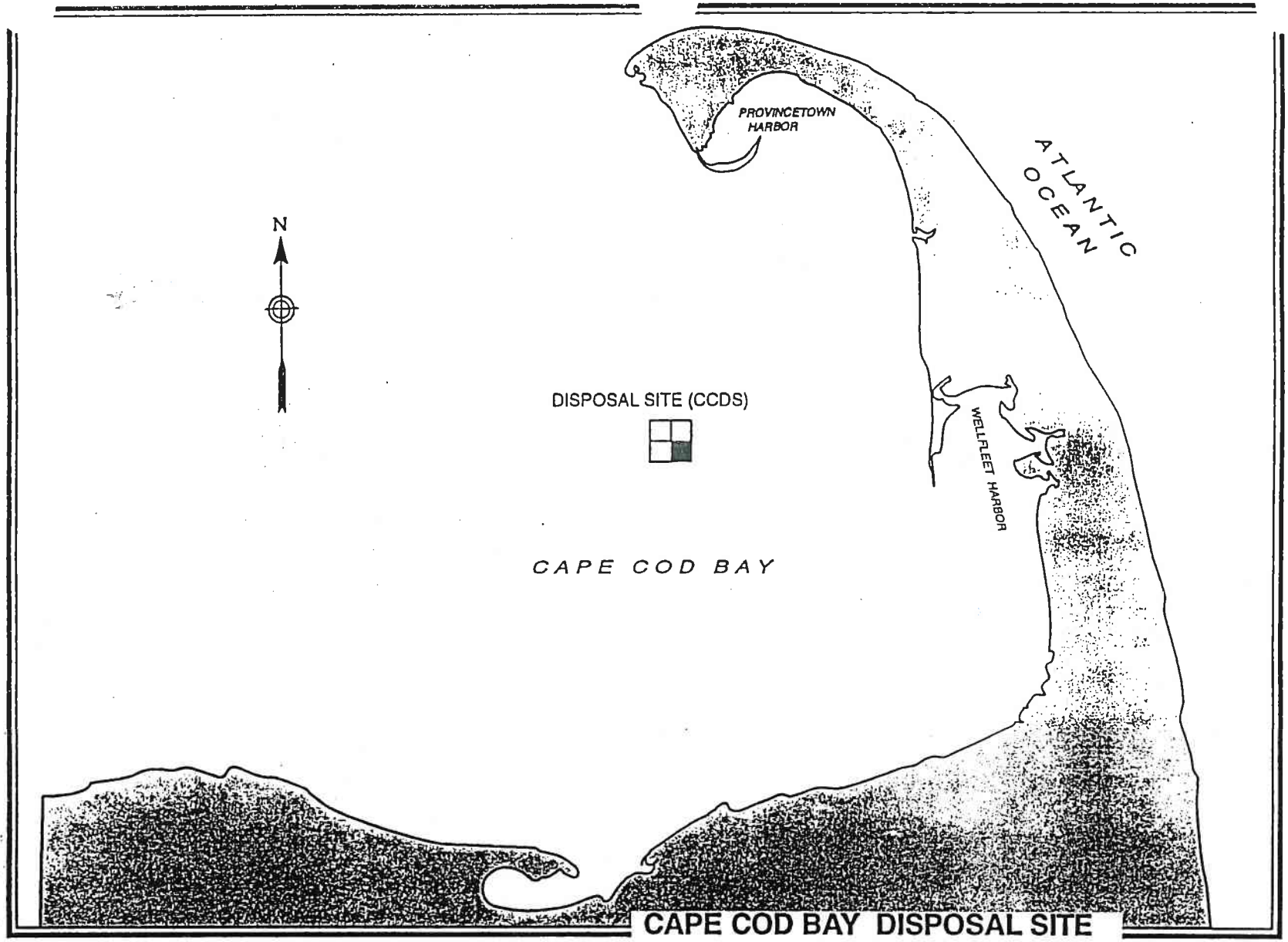
FOR PERMITTING ONLY

MAY 27, 1999

SHEET 4 OF 4

COMMONWEALTH OF MASSACHUSETTS
DAVID P. ANDERSON
CIVIL
No. 37119
REGISTERED PROFESSIONAL ENGINEER

5/27/99



CAPE COD BAY DISPOSAL SITE

Description: This site is one nautical mile square area oriented north-south with center at 41° 54.4'N, 70° 13.3'W. It is located in eastern Cape Cod Bay approximately 17.3 km south of Provincetown and 8.6 km northwest of Billingsgate Shoal near the entrance to Wellfleet Harbor. Depth at center: 31 meters. The authorized disposal point (within the overall disposal area) is specified for each dredging project in other project document.

NOTE: The map depicts the disposal site's location in relation to landmarks. It is not intended for use in navigation.

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
ONE WINTER STREET, BOSTON, MA 02108 617-292-5500

ARGEO PAUL CELLUCCI
Governor

JANE SWIFT
Lieutenant Governor

BOB DURAND
Secretary

LAUREN A. LISS
Commissioner

September 24, 1999

Town of Wellfleet
C/o Glenn Shields, Harbormaster
300 Main Street
Wellfleet, MA 02667

Re: Water Quality Certification
Application for BRP WW07
Major Project Dredging, disposal at Cape Cod Bay Disposal Site

At: Wellfleet Town Pier, Town Landing and Anchorage areas
Commercial Street, WELLFLEET

DEP Wetlands File No. SE77-655
DEP Transmittal No. 69778

Dear Mr. Shields:

The Department has reviewed your application for Water Quality Certification, as referenced above. In accordance with the provisions of Section 401 of the Federal Clean Water Act as amended (33 U.S.C. §1251 et seq.), MGL c.21, §§ 26-53, and 314 CMR 9.00, it has been determined there is reasonable assurance the project or activity will be conducted in a manner which will not violate applicable water quality standards (314 CMR 4.00) and other applicable requirements of state law.

The waters of Wellfleet Harbor and Cape Cod Bay are designated as Class SA Waters in the Massachusetts Surface Water Quality Standards. Such waters are intended "as excellent habitat for fish, other aquatic life and wildlife and for primary and secondary contact recreation". Anti-degradation provisions of these Standards require that "existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected".

Wellfleet Harbor is designated as an Area of Critical Environmental Concern; however the federal and state channel and anchorage areas are exempted from this designation.

RECEIVED
SEP 28 1999
REGULATORY DIVISIO

Project Description:

The project as proposed consists of three areas of dredging. First, maintenance dredging of the channels on the north and south sides of the Wellfleet Town Pier to restore a depth of -6 feet mean low wat

Some 87,500 cubic yards would be removed from these channels. Second, 6000 cubic yards of sediment would be dredged from the Town Landing adjacent to the pier to provide access from the town boat ramp, fuel dock and emergency boat dock to the federal channel. Third, some 32,600 cy is proposed to be removed from the Town Anchorage adjacent to both the Town Landing and the south side of the Town Pier. As estimated 126,100 cubic yards of sediment would be removed from these three areas by barge-mounted clamshell dredge, placed in disposal scows and transported to the Cape Cod Disposal Site for clean dredged material.

Sediment characterization: Sediment samples were collected and analyzed in 1994, 1995, and 1996 to characterize the proposed Town Pier dredge area. The resulting data indicate the bottom material contains approximately 50% silt/clay, and relatively low (Category I, 314 CMR 9.07) concentrations of organic contaminants and metals except for arsenic which exceeds Category I levels. Average concentrations from these data are as follows (dry weight): 16.3 ppm arsenic, 1.7 ppm cadmium, 40.5 ppm chromium, 40 ppm copper, 69.3 ppm lead, 0.24 ppm mercury, 18.1 ppm nickel, 118.8 ppm zinc, less than 13.6 ppm PAHs (polynuclear aromatic hydrocarbons), 52 ppm TPH (total petroleum hydrocarbons), 0.27 ppm VOCs (volatile organic compounds), less than 0.12 ppm PCBs, and 18 to 26% volatile solids.

The smaller volume of sediment to be dredged at the town landing was tested also and found to contain similar or lower concentrations of all contaminants except cadmium (about 3 ppm) and arsenic (20.7 to 31.5 in three of four samples). PAH concentrations were reported as less than 1 ppm in all four samples.

Based on these chemical data the Corps of Engineers determined these sediments unsuitable for disposal at the Cape Cod Bay Disposal Site (CCDS). Sediments of concern were cadmium, copper, lead and arsenic. New sediment samples were obtained in 1998 for chemical and biological testing according to federal protocols. Chemical concentrations were similar to concentrations found earlier. PAHs were 4.375 ppm on the north side of the town pier, 14.8 ppm on the south side, and 3.870ppm in the town landing sediments. Amphipod survival in the 10 day acute toxocity test was within acceptable limits as was survival of *Macoma nasuta* and *Nereis virens* in the 28 day bioaccumulation tests. As there was no significant accumulation of cadmium, copper, lead or arsenic in the test animals, the sediments from the Town Pier and Town Landing areas were deemed suitable for disposal at CCDS.

Sediments from the Town Anchorage area were obtained and analyzed in 1999. Contaminants were found in concentrations similar to previously sampled project areas. Total PAHs were less than 0.61 ppm and PCBs were low at 0.032 ppm (congener summation value). A suitability determination is pending at the Corps of Engineers regarding disposal at MBDS.

Resources and Mitigation for anticipated impacts: According to a report prepared by the Town's consultants, Fay Spofford and Thorndike (April 1999), "Natural Resources Plan and Report for the Vicinity of Duck Creek and Chapmans Cove in Wellfleet Harbor", shellfish resources in the project vicinity include heavy populations of oyster along the south side of the Town Pier and in areas of Duck Creek near the north side of the Pier. (Other shellfish are located at greater distances from the project area.) The Town Shellfish Warden is referenced as the source of this information in the report. No eel grass beds are located either within or near the project area as determined by DEP records and field verification in February 1999.

The MA Division of Marine Fisheries recommends that no dredging occur in the period February 1 to June 1 in order to protect winter flounder, alewife, and white perch spawning and larval development. No dredging between June 15 and September 15 is recommended to protect shellfish. Since the CCDS is not open for disposal from January through May 15 in order to protect right whales, the allowable period for dredging and disposal is limited to the periods June 1 to June 15 and September 15 through December 31. Work is scheduled for the fall of 1999.

Section 61 Findings: Pursuant to M.G.L. Chapter 30, Sections 61 to 62H inclusive (M.E.P.A.) this project was reviewed as EOEA # 10094R and the Secretary's Certificate issued September 7, 1995 indicated that preparation of an Environmental Impact Report was not necessary. Additional sediment data as requested by the Department were required; such data were provided. Concerning the Cape Cod Disposal Site, the Department of Environmental Management submitted an Environmental Notification Form in February 1999 as required three years after the first use of the CCDS. Monitoring data were included in the ENF, the management and monitoring plan was revised, and federal protocols were recommended as the sole determinant of sediment suitability for disposal. The Secretary's Certificate for the CCDS ENF was issued March 12, 1999 with no requirement to prepare a generic environmental impact report on the proposed continued use of the site.

No public notice was published for this application as it was received in 1994 prior to the revision of the WQC regulations requiring public notice.

Therefore, based on information currently in the record, the Department grants a 401 Water Quality Certification for this project subject to the following conditions to maintain water quality, to minimize impact on waters and wetlands, and to ensure compliance with appropriate state law:

1. All waters including wetlands are protected by anti-degradation provisions of the Massachusetts Surface Water Quality Standards. The Contractor shall take all steps necessary to assure that the proposed activities will be conducted in a manner which will avoid violations of said standards.

2. Dredging may begin once all other permits have been received

3. The dredged mataerial shall be disposed of at the Cape Cod Bay Disposal Site (CCDS). Disposal shall be conducted under the following conditions as approved by the CCDS Technical Advisory Committee:

   a) Timing

   (1) Disposal of dredged material at the CCDS shall not occur between January 1 and May 15 in order to protect right whales.

   b) Disposal Coordinates

   (1) Disposal shall occur within 100 feet of the yellow, lighted "cc" buoy (marker buoy) located in the **northwest quadrant of the CCDS** at

   latitude 41 degrees 54.674 minutes N,
   longitude 70 degrees 12.895 minutes W.

   (Because of the anchoring system of the buoy it will be located within an 85 foot diameter circle with the center position as indicated.)

   (2) If the buoy is on-site but its location does not correlate with the coordinates given above, the material shall be dumped at the buoy.

   (3) If the buoy is not on-site, the material shall be dumped at the coordinates given above.

   c) Marine Mammals/Turtles

   (1) A marine mammal/turtle observer certified by the National Marine Fisheries Service (NMFS) shall be present on the towing vessel for all disposal activities. The observer may be the dredged material disposal inspector required by the Corps of Engineers (USACE) provided that

he or she holds observer certification from NMFS.

(2) In the event that marine mammals or turtles are sighted within 1,500 feet of the marker buoy, the tug captain and observer shall observe the following disposal procedure:

- If marine mammals or turtles are sighted within 1,500 feet of the marker buoy, note species, number of animals, direction of travel, and behavior (feeding, in transit, etc.);

- If the animals are within 1,500 feet of the marker buoy and appear to moving away from the buoy, wait until they have cleared the buoy by 1,500 feet and then proceed with disposal at the buoy.

- If the animals are within 1,500 feet of the marker buoy and appear to be remaining stationary, or are outside 1,500 feet of the buoy but appear to be moving towards the buoy, proceed to the center of the CCDS and dump the material at:
  latitude 41 degrees 54.4 minutes N,
  longitude 70 degrees 13.3 minutes W.

(3) If the disposal occurs in darkness or otherwise limited visibility, the tug shall employ its searchlight for the benefit of the observer beginning 2,000 feet from the disposal buoy.

(4) In all cases, no disposal shall occur within 1,500 feet of a marine mammal or turtle.

d) Prior Notice and Reporting

(1) Prior to disposal, the Department of Environmental Management (Attention Leslie Lewis, Office of Waterways, 349 Lincoln Street, Building 45, Hingham, MA 02043) shall be notified as to the anticipated start date for disposal of dredged material at the CCDS.

(2) The coordinates of each disposal activity shall be logged using a Differential Global Positioning System, if available. Otherwise, coordinates shall be logged using Loran C.

(3) In the event that marine mammals or turtles are sighted and the procedures listed above are employed, the observer shall document the conditions that lead to the disposal of the material.

(4) On completion of disposal operations, the contractor shall provide a duplicate copy of a completed USACE form entitled "Inspector's Daily Report of Disposal by Scow" to the Massachusetts Department of Environmental Management, attn. Leslie Lewis, Office of Waterways, 349 Lincoln Street, Building 45, Hingham, MA 02043.

(end of CCDS conditions)

4. No dredging shall occur between February 1 and June 1 in order to protect fisheries; no dredging shall occur between June 15 and September 15 in order to protect shellfish in the project vicinity.

5. Dredging at the Town Anchorage Area (32,600 cy) is contingent upon the sediments being found suitable for disposal at the Cape Cod Bay Disposal Site.

6. No upland or near shore disposal of dredged material is authorized by this Certification.

This certification does not relieve the applicant of the obligation to comply with other applicable state or

federal statutes or regulations. Any changes made to the project as described in the previously submitted Notice of Intent, 401 Water Quality Certification application, or supplemental documents will require further notification to the Department.

Any person aggrieved by this Certification may obtain judicial review pursuant to MGL c. 21 §46A by filing an application for review in Superior Court within thirty days after receipt of this Certification.

Failure to comply with this certification is grounds for enforcement, including civil and criminal penalties, under MGL c.21 §42, 314 CMR 9.00, MGL c. 21A §16, 310 CMR 5.00, or other possible actions/penalties as authorized by the General Laws of the Commonwealth.

If you have further questions on this decision, please contact Judith Perry at 617-292-5655.

Sincerely,

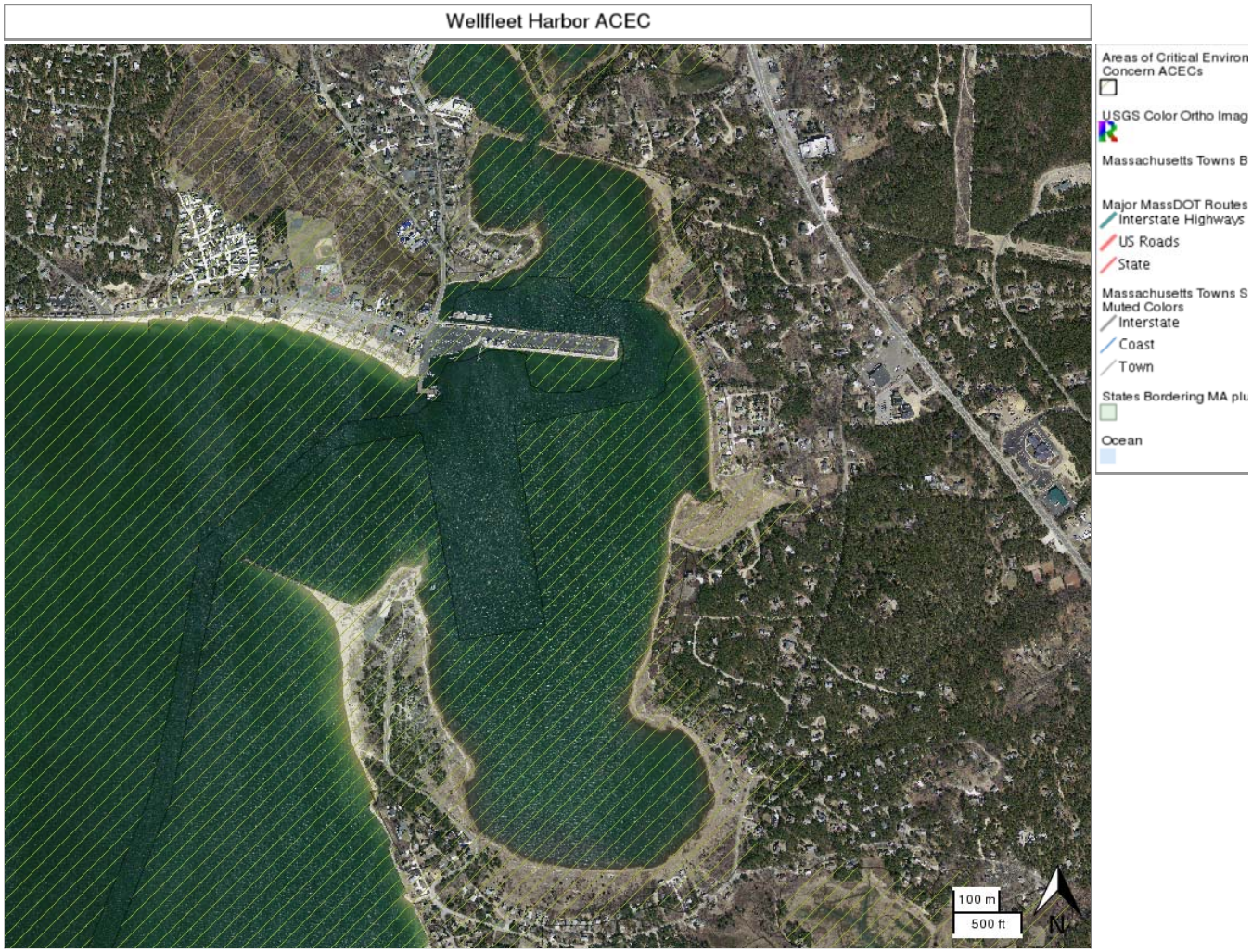
Glenn Haas, Director
Division of Watershed Management

cc: Wellfleet Conservation Commission, Main Street, Wellfleet 02667
Karen Adams, Regulatory/Enforcement Division, U.S. Army Corps of Engineers, 696 Virginia Road, Concord, MA 01742-2751
David Anderson, P.E., Fay, Spofford & Thoprndike, Inc., 5 Burlington Woods, Burlington 01803
Jane Mead, CZM
Ken Reback, MDMF , 50A Portside Drive, Pocasset, MA 02559
Liz Kouloheras, DEP/SERO, Cape Cod Watershed Chief
Ron Potter, DEP/SERO, Ch 91
Kevin Mooney, DEM Office of Waterways, 349 Lincoln St., Building 45, Hingham, 02043

Wqc\wellfltpr.

Appendix F – Existing Condition Survey Plans

Appendix G – MA GIS Data


Wellfleet Harbor ACEC
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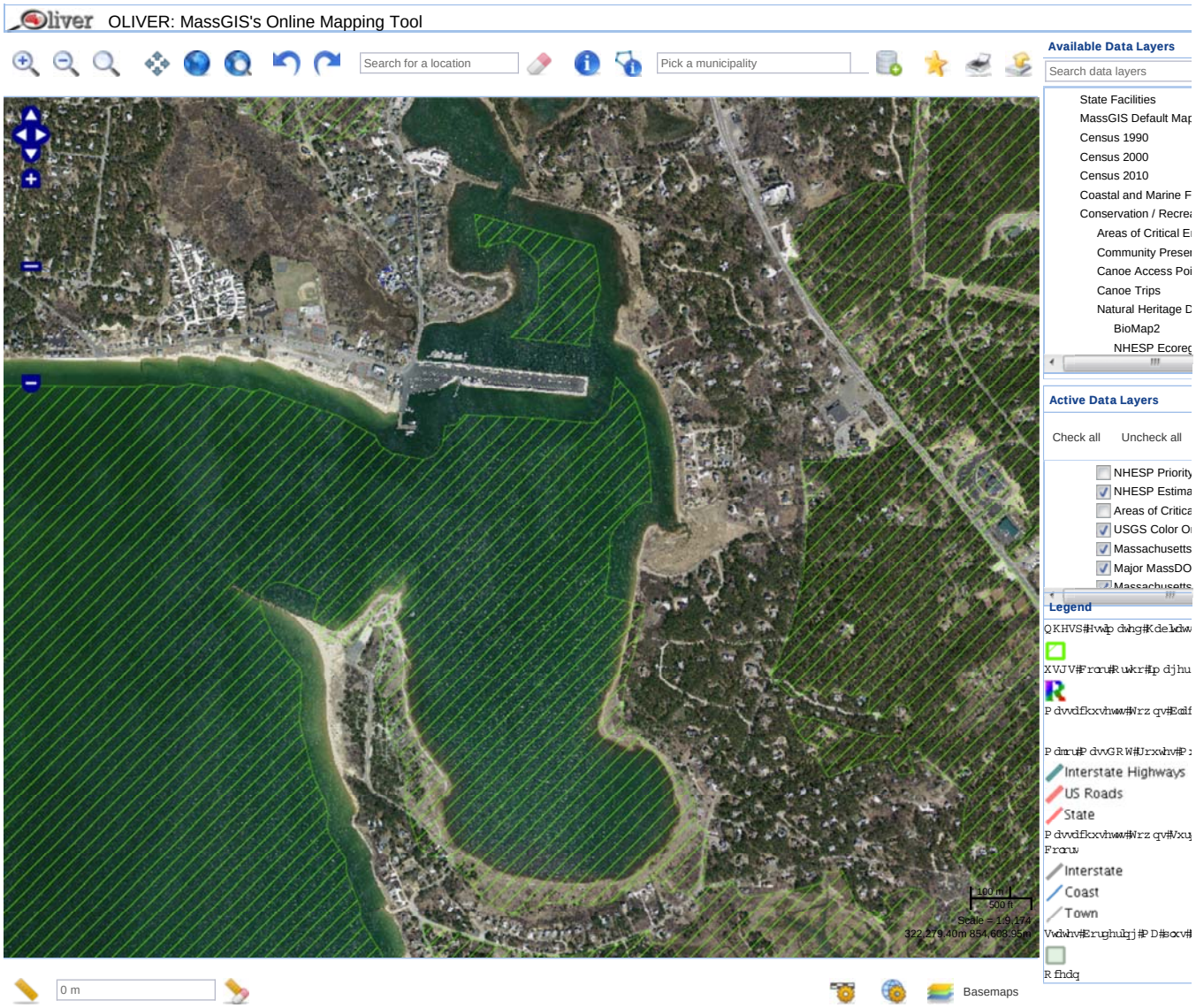
OLIVER: MassGIS's Online Mapping Tool
Search for a location
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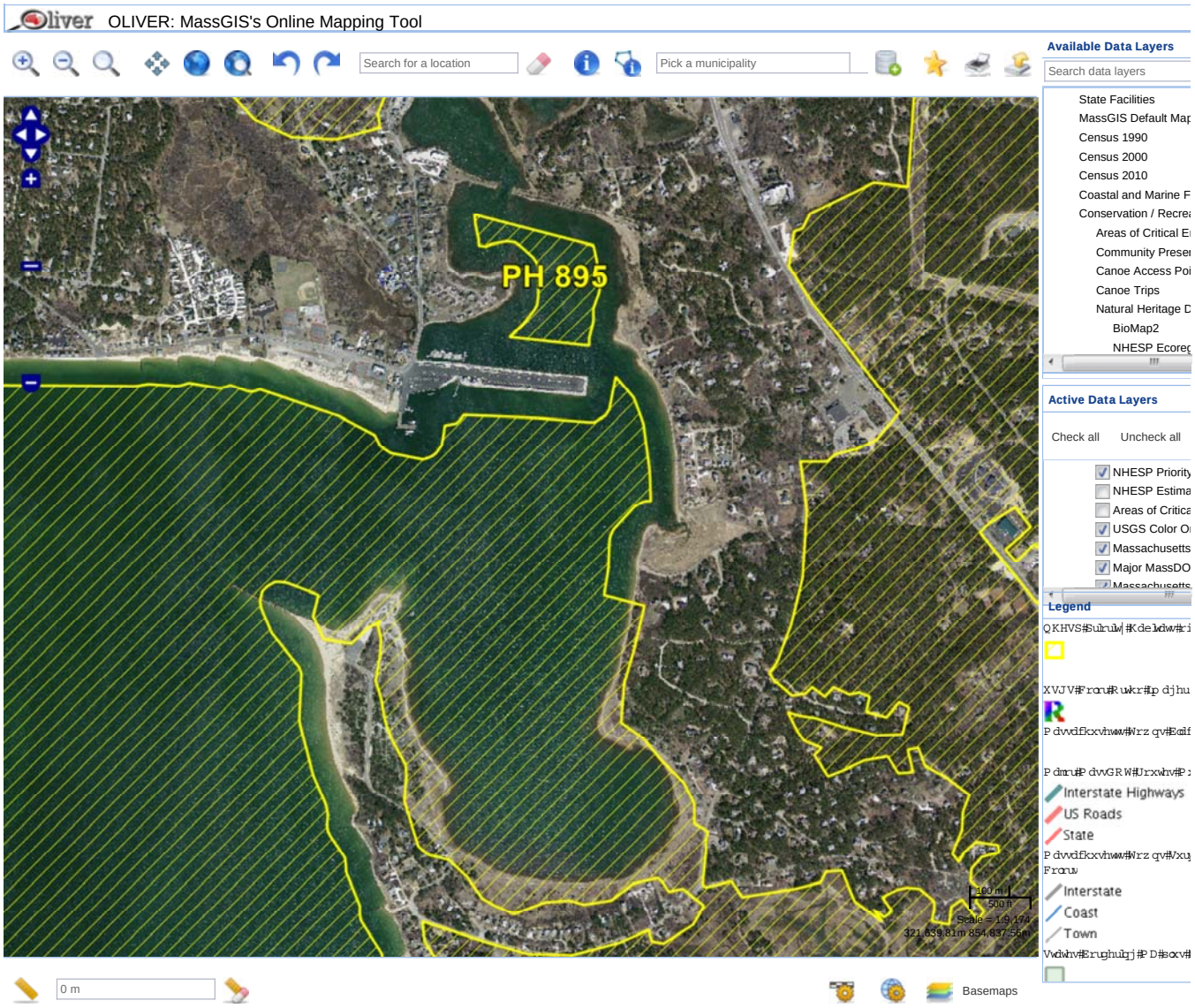
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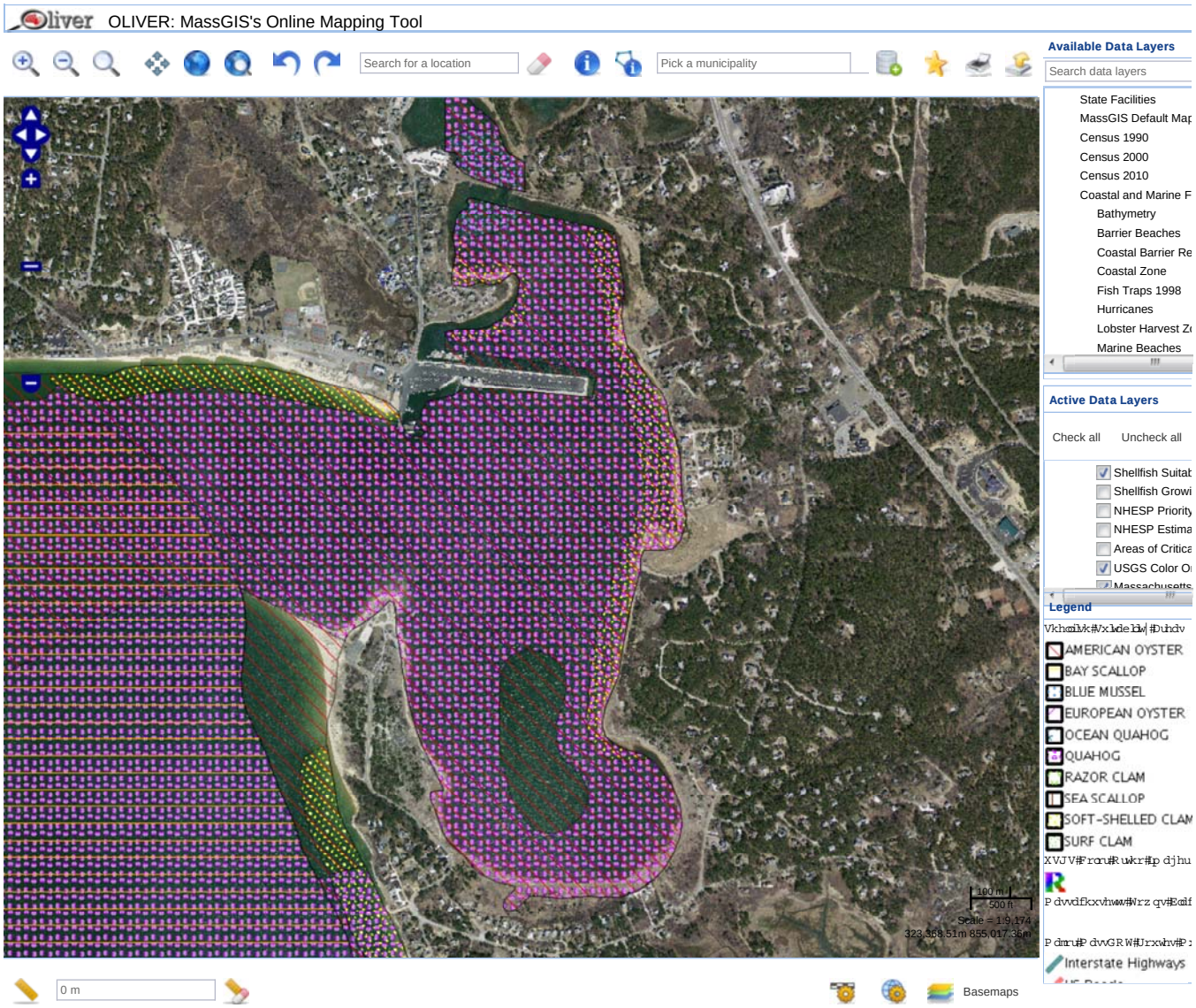
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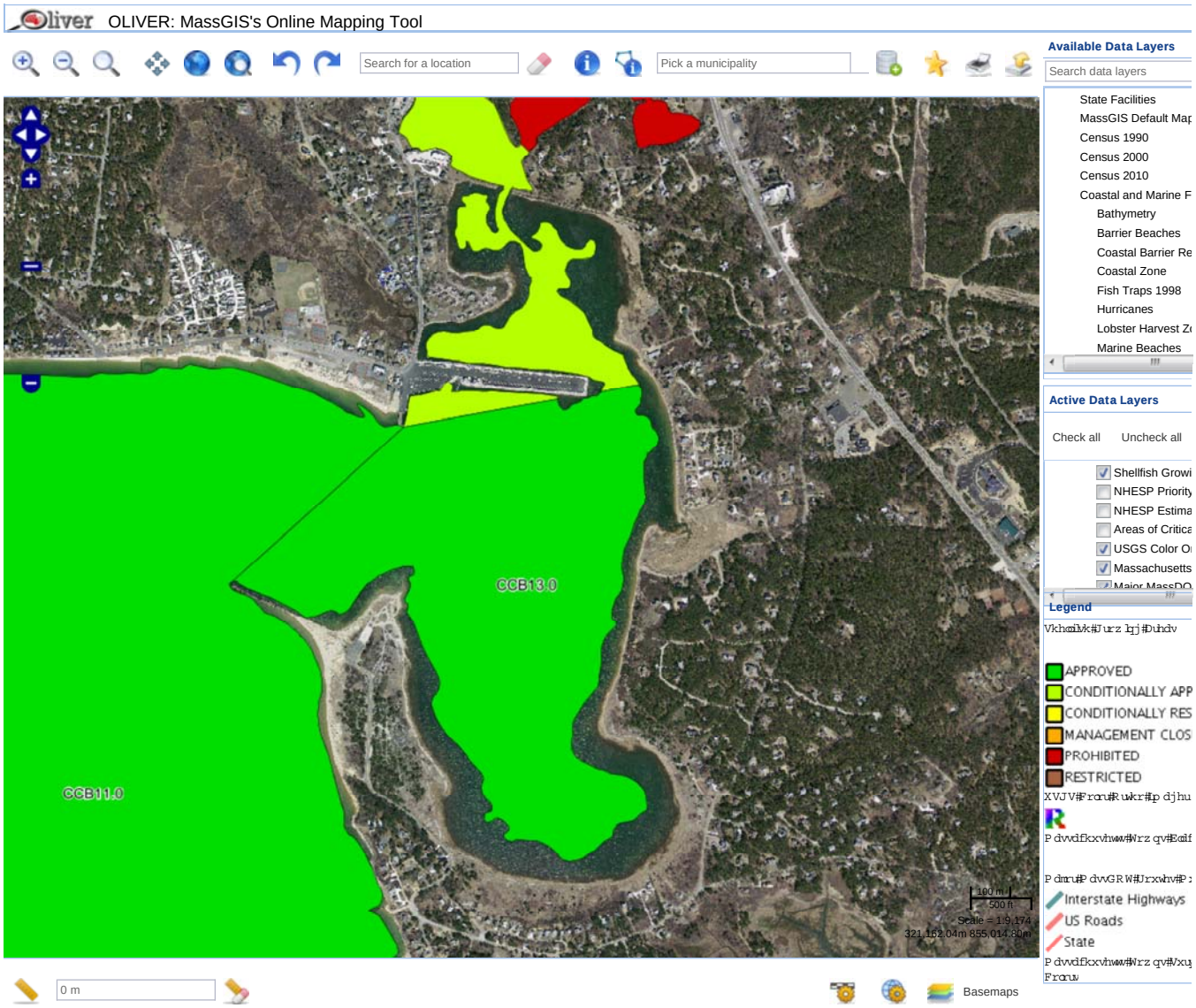
Basemaps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Hurricanes
Lobster Harvest Z
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Shellfish Growi
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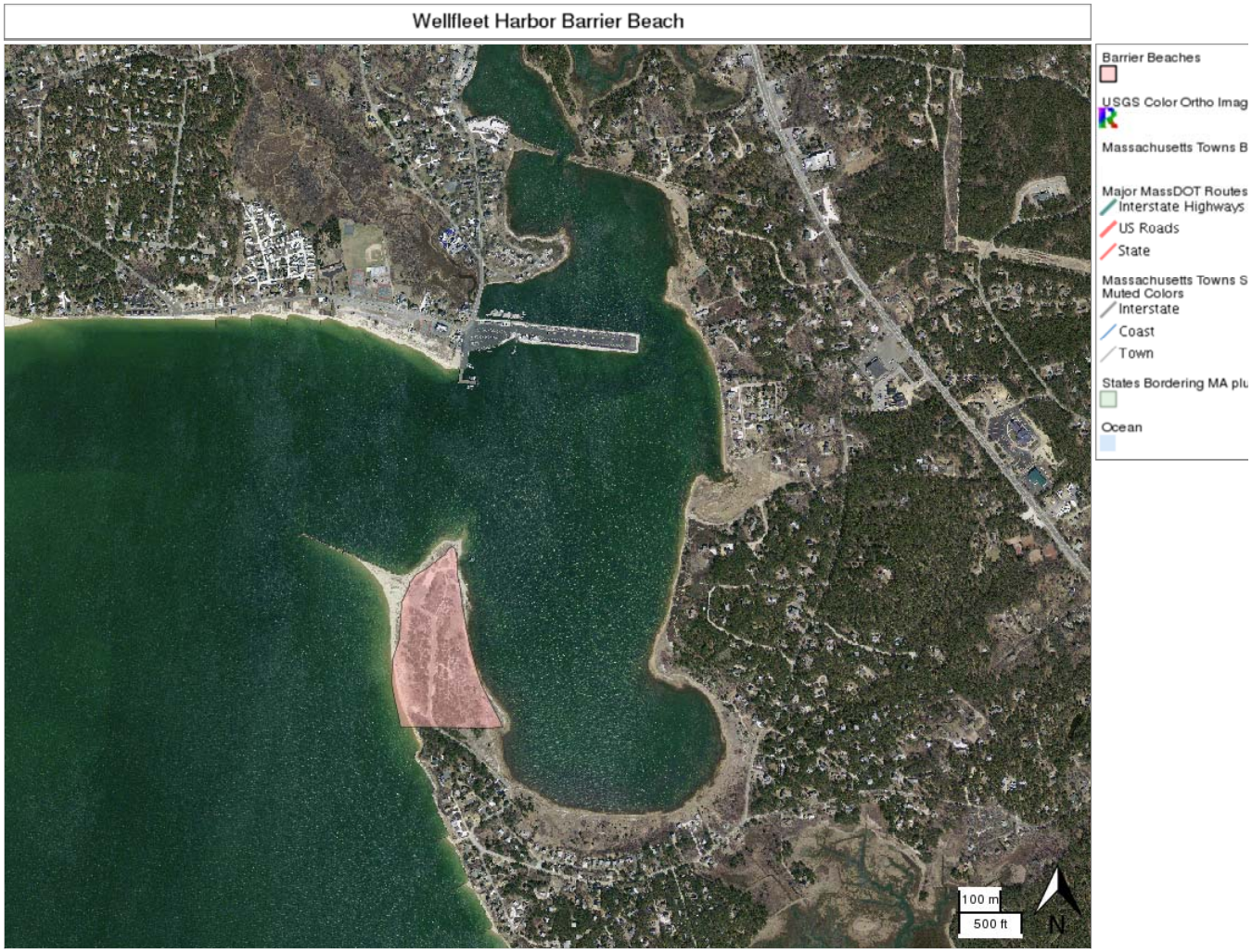
Wellfleet Harbor Barrier Beach
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APPENDIX H – Area I Dredging

APPENDIX I – Town of Wellfleet Mooring Regulations

TOWN OF WELLFLEET 2003 MOORING REGULATIONS

THESE REGULATIONS SHALL SUPERSEDE ALL PREVIOUS REGULATIONS

1. PURPOSE:
The Town Of Wellfleet mooring regulations have been established in order to provide the most efficient and optimum utilization of the Harbor, to provide for the safety of moored and berthed vessels, protect the environment and water quality, and to provide space for all users of the Harbor. This shall be done by controlling the placement of moorings, establishing standards for mooring tackle, provide for the safe disposal of oil and septic waste, and by establishing regular systematic mooring inspections.

2. RESPONSIBILITY:
It shall be the responsibility of the applicant/boat owner to ensure compliance with the law and these regulations.

These regulations/specifications are the minimum and boaters can exceed same except where it would be unsafe or hazardous to do so. Each boater is encouraged to contact their own specialist in such matters for advice as may relate to the particulars of their vessel and location. While the Town has made reasonable attempts to develop specifications believed proper, they are not a guaranty or assurance of a safe mooring, safety or assistance. Due to weather, use, and other factors over which the Town has no control, ultimate responsibility and liability rests on the individual boat owner.

3. MOORING PERMITS:
For a chart of the Town Mooring Basin and the Federal Anchorage, see Appendix A
a. Any person wishing to moor a vessel in the Wellfleet Harbor mooring basin or Wellfleet waterways must first obtain permission from the Harbormaster to place and maintain such a mooring. Mooring assignments will be fair and equitable and open to all and assigned on a first come first served basis.
b. All moorings must be registered with the Harbormaster Department. All applications for moorings in the Town of Wellfleet must be submitted in writing on an approved form from the Harbormaster Department.
c. No Town of Wellfleet mooring basin permit applicant, excluding those in the Federal Anchorage, shall hold a permitted mooring and a slip lease agreement for the same vessel in the same year. Slip agreements will not be provided to vessels with a mooring permit.
d. All mooring permits are issued for the use of the vessel indicated on the permit. The use of the mooring by any other vessel is prohibited and will be grounds for the revocation of the mooring permit. Mooring permits are issued based on one boat per mooring
e. Moorings assigned to a service company or corporations are to be used for the mooring of the company's boats only and for no other purpose. Any deviation will result in the loss of said moorings.f. Commercial vessels are vessels used to make a profit or to provide a livelihood or means of employment for the applicant. (Charter boats, shell fishing boats and skiffs used to make a living are considered commercial.)
g. Falsifying information on a mooring permit application or failure to submit a fully completed mooring permit application shall be cause for denial or revocation of such application.
h. A one-year grace period shall be allowed for an unused mooring, provided the application fee is paid.
i. Vessel owners are required to submit the following documentation with new applications or renewal applications when applicable.
    i). Copy of the state registration or documentation of the vessel.
    ii). Completed mooring application.

Individual mooring permits in the Town of Wellfleet mooring basin are transferable within the immediate family, immediate family being applicant/boat owner, his or her spouse, and children.

Individual mooring permits in the federal anchorage are transferable to the applicant/boat owner and his or her spouse. Transfer to children, siblings, or a parent is not allowed.

Any person wishing to view or copy The Town Of Wellfleet Marina Rules and Regulations, Mooring Regulations, Slip and Mooring holders, Slip and Mooring Waiting Lists, Marina Fee Schedules, and The Town of Wellfleet Harbor Management Plan may do so at The Town of Wellfleet Marina Harbormasters Office, Town Pier, Wellfleet Massachusetts.

4. MOORING SPECIFICATIONS:
a. All moorings shall meet the minimum standards before placement. These standards are set for normal weather conditions. In case of gale winds, hurricanes, or extreme tides it is the mooring owners responsibility to ensure certain precautions are taken. (See Storm Precautions.) The Town of Wellfleet realizes that mooring loads are variable, that it is impossible to say all boats of equal length require the same size mooring and such standards cannot be applied to all boats. The Harbormaster reserves the right to require a boat owner to increase the minimum mooring standard for any vessel should the Harbormaster feel the minimum standard would be inadequate for the vessel because of unusual design, but not limited to excessive weight, windage, or draft.
All moorings minimum size:

Length of vessel	Mushroom mooring	Chain size	Line size
14’- 16’	#75	5/16”	1/2”
17’- 19’	#100	5/16”	1/2”
20’- 25’	#150	3/8”	5/8”
26’- 30’	#200	1/2”	5/8”
31’- 40’	#250	1/2”	3/4”

All moorings must be mushroom anchors.All pennants shall be made of non-floating line.
Pennant length shall be two times the free board at the bow plus the distance to the mooring cleat.
Pennants shall have proper chafing gear so as to cover an area one foot either side of the bow chocks.
Total length of chain and line shall be three times the depth at mean high water. The length of the chain should be a minimum of six feet and a maximum of ten feet.
All chains, shackles, shackle pins, line, thimbles, swivels, buoys and pennants shall be in good condition and of proper size.
If the mushroom anchor is exposed at low water, the anchor must be completely buried with the shaft in a horizontal position.
Moorings found to be inadequate to the Town of Wellfleet specifications shall be corrected immediately. Responsibility and liability for corrective action rests on the individual boat owner.
k. Mooring buoys shall be inflated, formed, molded, or fabricated from white Styrofoam, rubber, plastic or fiberglass. Each buoy shall be white with a one-inch horizontal blue stripe. The first three (3) letters of the permit holders last name, three inches high, in a contrasting color shall be visible at all times.

5. MOORING TAGS:
Each permitted mooring shall have attached on the mooring buoy, above the waterline and visible at all times, a numbered annual mooring tag issued by the Harbormaster Department.

6. BOAT STICKERS:
Each vessel for which a mooring permit has been issued shall have attached on the stern in a visible location, an annual sticker issued by the Harbormaster Department. The sticker shall display the mooring permit number, vessel registration or documentation number, make, length, color and owners name.

7. CANOES AND BOATS IN GREAT PONDS:
a. No boats, kayaks, or canoes may be left on or moored off of public landings at any great pond in the Town of Wellfleet with the exception of Gull Pond Landing.
All boats, kayaks, and canoes at Gull Pond must have a Town of Wellfleet boat sticker as described in these regulations. (See Section 6. Boat Stickers.)
Any boat, kayak, or canoe left or moored at Gull Pond without a boat sticker or at any other great pond will be confiscated by the Town and if unclaimed after six months from the date of confiscation will be sold at auction.
d. Any boat, kayak, or canoe left on a public landing at any great pond other than Gull Pond will be confiscated by the Town and if unclaimed after six months from the date of confiscation will be sold at auction.
Confiscated boats, kayaks, or canoes may be claimed by their owners
i. After proper identification and
ii. At the convenience of the Harbormaster or Beach Administrator and
iii. Only during regular business hours,
· 8AM TO 4PM
· Monday through Friday

The owner must pay all fines and storage fees before any confiscated vessel can be returned to the owner.
Fines: $15.00 per vessel
Storage fees: $5.00 per diem with a maximum storage fee of $150.00

8. PLACEMENT OF MOORINGS IN THE TOWN OF WELLFLEET/CORPS OF ENGINEERS MOORING BASIN:
No mooring shall be placed, altered or shifted except under the direction of the Harbormaster. The Harbormaster may relocate permitted moorings if in his opinion it is warranted due to congestion, to ease navigation, or as a measure of public safety.

Renewal applicants will be reassigned their previous positions.

New moorings are assigned on a "move up" policy, based on date of application, physical characteristics of the boat and purpose of the boat. (Commercial or recreational.) The Harbormaster Department shall maintain a mooring waiting list providing for the fair and equitable distribution of mooring assignments open to all and assigned on a first come first served basis. Persons who are making applications for a different vessel from that of previous years will not automatically be granted space. When a person increases boat size beyond capability of the mooring space an effort will be made to affect a switch in mooring space, but there will be no guaranty this can be done. When there is a decrease in boat size, steps will be taken to affect a switch to assure best overall use of the mooring basin.

The Town of Wellfleet is under no obligation to provide any applicant specialized space. The Harbormaster Department will do its best to accommodate within the framework of available space and physical situation prevailing at any given time.

All moorings shall be removed at the end of the boating season except those with commercial uses.

All mooring permits are issued for the use of the vessel indicated on the permit. The use of the mooring by any other vessel is prohibited and will be grounds for revocation of the mooring permit. Mooring permits are issued based on one boat per mooring.

Individual mooring permits in the federal anchorage are transferable to the applicant/boat owner and his or her spouse. Transfer to children is not allowed.

The Harbormaster, at his discretion, will make every effort to provide a mooring position of similar characteristics in the Town anchorage to any bona-fide commercial vessel that is transferred to children and loses the position within the federal anchorage.

9. PLACEMENT OF MOORINGS IN WELLFLEET WATERWAYS:

No mooring shall be placed within 200 feet of mean high water of a public recreational beach.

No mooring shall be placed within 100 feet of the nearest edge of a marked channel or federal channel.

No mooring shall be placed less than 50 feet from the nearest adjacent mooring.

No mooring shall be placed on any private property of other than that of the applicant if objected to by the owner of said property.

If the mushroom anchor is exposed at low water, the anchor must be completely buried with the shaft in a horizontal position.

No mooring shall be located so that a boat lying on it shall be less than 50 feet to a licensed shellfish area (grant) designated by the Shellfish Constable. This restriction shall not apply to moorings permitted to the licensee of a grant and placed within or adjacent to said grant.

All moorings shall be removed at the end of the boating season except those with a commercial use. Permitted moorings may be removed at the seasons end by the Harbormaster Department at the owner's expense.No mooring shall be placed within the federal channel or close enough to interfere with channel passage.

10. TRANSIENT MOORINGS:
The Town of Wellfleet shall maintain fifteen transient moorings available for use from May 15 to October 15. They shall be used for transient vessels only and in the following manner.

- Fifteen moorings are to be placed on the northern end of the dredged basin.
- Three shall be #500 mushroom anchors with a maximum vessel length of 55 feet.
- Three shall be #300 mushroom anchors with a maximum vessel length of 32 feet.
- Nine shall be #200 mushroom anchors with a maximum vessel length of 25 feet.
- All transient buoys shall be marked "TRANSIENT" and numbered. g. Reservations and assignment of transient moorings shall be made by the Harbormaster Department depending on availability and on a first come first served basis. Reservations shall be made by mail or in person and include the first nights rental fee as a non-

refundable deposit. The Harbormaster Department shall maintain a radio watch on channel 09 VHF to book daily transient rentals. Temporary transient moorings (not to exceed five hours) shall be allowed when available for a fee.

- A transient mooring log shall be maintained by the Harbormaster Department.
- Transient moorings are to be rented for a period not to exceed thirty consecutive days in a season.
- A fee shall be charged for the use of transient moorings. (See fee schedule.)
- The Town of Wellfleet accepts no responsibility for the safety of transient moorings during periods of extreme weather including but not limited to gale winds, hurricanes and extreme high water.

11. MOORING OF RAFTS, FLOATS AND BARGES:

Rafts, floats, barges, and vessels whose sole use is for shellfish propagation may be granted permission to moor in the vicinity (not more than 50 feet) or on the owners shellfish grant after obtaining a Floats and Rafts permit at no cost from the Harbormaster Department.

Rafts, floats, barges and vessels whose sole use is for shellfish propagation shall be moored according to specifications of the Town of Wellfleet mooring regulations, and to any special conditions as may be required by the Harbormaster.

Rafts, floats, barges and vessels whose sole use is for shellfish propagation shall have the owners name or grant number affixed to one side of the vessel, above the water line with three inch letters and numbers.

Rafts, floats, barges and vessels whose sole use is for shellfish propagation moored within 100 feet of the nearest edge of a marked channel shall display at night a 360 degree white anchor light.

Rafts, floats, barges and vessels whose sole use is for shellfish propagation moored in the waters of Wellfleet whose size exceeds 100 square feet shall display at night a 360 degree white anchor light.

Winter storage on Town property or Town landings of rafts, floats, barges and all other equipment used for the purpose of shellfish propagation is prohibited without the permission of the Harbormaster.

Rafts, floats, and barges will not be permitted in the Federal Anchorage or channel.

12. MOORING INSPECTIONS:

Before a mooring permit, mooring tag or boat sticker is issued; the mooring owner must submit his/her mooring for an out of the water inspection by the Harbormaster Department.

Each year the mooring buoy, pennant, chafing gear, chain, line and connecting hardware must be inspected visually by the Harbormaster Department prior to placement of the permitted mooring.

If, as a result of such inspection, in the opinion of the Harbormaster, any link of chain, shackle, swivel or any other piece of mooring gear has become damaged or worn, it shall be replaced. Failure to replace worn or damaged pieces shall be grounds for revocation of mooring permit.

The Town of Wellfleet assumes no responsibility or liability for inspected moorings that fail.

13. TERMINATION OF USE:

Upon termination of use each season all non-commercial mooring owners must remove the mooring from the waters of Wellfleet at his/her expense.

14. ANCHORING:

No vessel shall anchor in the waters of Wellfleet for a period of greater than one (1) week without notifying the Harbormaster Department.

No anchoring is allowed in the Town of Wellfleet mooring basin.

15. GRACE PERIOD:

At the discretion of the Harbormaster, a mooring owner may request permission to leave the mooring vacant for a period of not more than one mooring year. The mooring owner is required to apply and pay for the mooring permit for that period. Failure to make such application and pay the fee shall result in the forfeiture of said mooring location. Any subsequent mooring permit application shall be considered a new mooring and shall be subject to constraints of such.

16. ENFORCEMENT:

The Harbormaster Department, Town of Wellfleet Police Department and any other official whom the Board of Selectmen may designate shall enforce these rules and regulations.

17. PENALTIES:
M.G.L. c. 102, section 28 Penalties: Provides in part that violations of sections 17-27 or a refusal or neglect to obey the lawful orders of a Harbormaster, or resisting a Harbormaster who is carrying out his duties, are punishable by a fine of up to $50.00 and the offender is liable in tort to any person suffering damage thereby.
b. Non-criminal disposition: As an alternative to initiating criminal proceedings as described above, the enforcing agent may dispose of a violation of these regulations pursuant to the following procedure. Whoever violates any provisions of these rules and regulations may in the discretion of the Harbormaster or Assistant Harbormaster be penalized by a non-criminal complaint pursuant to the provisions of M.G.L. c. 40, section 21D. Whoever violates any regulations as stated above shall be subject to a fine of $25.00 for each separate offense. A violation of each specific regulation shall be deemed a separate offense. And each day on which a violation occurs or continues shall be deemed a separate offense, and subject to the penalties stated therein.

18. STORM PRECAUTIONS:
Hurricane season usually lasts from mid August through October. Besides high winds, you can expect higher than normal tidal conditions, rough seas in protected areas and a tidal surge of 10 feet or greater.
Plan and be prepared to make storm plans with your boatyard or mooring contractor, enabling them to do one or more of the following in the event of a storm; haul your vessel, add lines, move your vessel to a more protected area, etc.
Take your boat out of the water if at all possible and place well above high water taking into account extreme tidal conditions and storm surge. Remember, haul out areas and ramps will be extremely busy.
If you can’t haul your vessel: You should remove from your boat:
· All sails, roller furlings, etc.
· All dodgers, Biminis and enclosures.
· Antennas and electronics.
· All non-permanent equipment (deck chairs, rafts, boxes, etc.)
· Ships papers and valuables.
· Portable fuel tanks. (Gas, propane.)
ii. Pump out excess water from bilge and drain water tanks.
iii. Make sure batteries are charged; pump switches and intakes are not jammed and are working freely.
Secure windows, hatches, seacock's and fuel lines to engine and cooking appliances. Make your boat as watertight as possible.
Check chafing gear.
Ultimate responsibility is that of the boat owner.

19. PUMP OUT INFORMATION:
The Harbormaster Department requests your assistance in enhancing water quality and protecting our natural resources. All boaters with Marine Sanitation Devices on board shall use pump out facilities to purge their holding tanks. The Town of Wellfleet Marina will maintain a pump out cart and a pump out boat to provide service to the mooring basin. Boaters may obtain information on pump outs and marine wastes by contacting the Harbormaster Department at 508-349-0320.

APPENDIX J – Mooring Field Layouts

APPENDIX K – Area II Dredging Alternatives

APPENDIX L – ACEC Description

DESIGNATION OF PORTIONS OF THE TOWNS OF EASTHAM, TRURO AND WELLFLEET

AS THE

WELLFLEET HARBOR AREA OF CRITICAL ENVIRONMENTAL CONCERN

WITH SUPPORTING FINDINGS

Following an extensive formal review required by the regulations of the Executive Office of Environmental Affairs (301 CMR 12.00) including nomination review, research, meetings, and evaluation of all public comments, I, the Secretary of Environmental Affairs, hereby designate portions of the Towns of Eastham, Truro, and Wellfleet and portions of the Wellfleet Harbor adjacent to these Towns as an Area of Critical Environmental Concern (ACEC). I take this action pursuant to the authority granted me under Massachusetts General Law c. 21A, s. 2(7).

I also hereby find that the coastal wetland resource areas included in the Wellfleet Harbor ACEC are significant to the protection of groundwater and public water supplies, the prevention of pollution, flood control, the prevention of storm damage, the protection of land containing shellfish, fisheries, and wildlife habitat; those public interests defined in the Wetlands Protection Act (MGL c. 131, s. 40; 310 CMR 10.00).

I. Boundary of the Wellfleet Harbor ACEC

Upon review of the boundaries as recommended in the nomination letter, subsequent recommendations made in testimony received and EOEA agency review, the final boundaries generally include those areas seaward of a line 100 feet inland from the 10 foot contour (MSL), referring to the Wellfleet Quadrangle of the USGS topographic map, or seaward of the Cape Cod National Seashore Boundary, and including the waters of Wellfleet Harbor and associated wetlands and watercourses. The nominated boundary substantively differs from the one described herein only in that it did not include, on the proposed boundary map, two important wetland resource areas, Pole Dike Creek and Mayo Creek, which have been included in the designated boundary.

Specifically, the boundary is defined as follows: Beginning at the northwest corner of the boundary of the Cape Cod National Seashore (CCNS boundary), located in South Truro, the ACEC boundary proceeds southerly along said boundary to its southernmost point, where it turns easterly, proceeding across the mouth of Wellfleet Harbor to Sunken Meadow Beach, in Eastham. The ACEC boundary proceeds eastward along the northerly side of South Sunken Meadow Road to the 10-foot elevation contour line and follows said contour line northeasterly to North Sunken Meadow Road, crosses this road, and continues along the aforementioned contour line to the easterly side of West Road. The ACEC boundary continues along a line 100 feet southerly of Hatches Creek until it intersects U.S. Route 6, follows northerly along the westerly side of U.S. Route 6 until it intersects with a line 100 feet northerly of Hatches Creek. The ACEC boundary follows along said line until it again intersects with the line 100 feet inland of

the 10 foot-contour, which it follows along the thread of the shore generally in a northwesterly direction to a point on Chequesset Neck where the CCNS boundary intersects the beach. The ACEC boundary then follows the CCNS boundary initially to the west but generally in a northeasterly direction to a point of intersection with Old County Road, where it proceed in an easterly direction along a line 100 feet inland from the 10-foot contour, then following the thread of the shoreline along the marshes and watercourses until it again intersects with the CCNS boundary. The ACEC boundary then follows the CCNS boundary in a northerly direction until it intersects a line 100 feet inland of the 10-foot contour line, where it follows the thread of the shoreline in a westerly direction until it intersects with the CCNS boundary and Old County Road. The ACEC boundary continues along the CCNS boundary generally in a northeasterly direction to an intersection with U.S. Route 6, where it continues along a line 100 feet inland of the 10-foot contour along the southerly side of Herring River, around and encompassing Herring Pond, Higgins Pond, Gull Pond, and Williams Pond, and back along the northerly side of Herring River and the easterly side of Bound Brook, in and out of Paradise Hollow and Lombard Hollow to a point where this line again intersects Old County Road. The ACEC boundary then proceeds northwesterly along the western side of Old County Road and thence along the southerly side of Ryder Beach Road to the northerly side of the barrier beach (TR-5 of the MCZM Barrier Beach Inventory), and thence along this boundary to its westerly corner and continuing due west into the Cape Cod Bay to a northerly extension of the westerly CCNS boundary, and southerly to the point of beginning.

Within this above described boundary are three areas which, above a line 100 feet inland of the 10-foot contour, are excluded from the designated area. These include the eastern and western portions of Lieutenant's Island, Old Wharf Point westerly of the causeway, and that portion of Indian Neck southerly of the of Sewall's Gutter. Specifically included in the boundary are Mill Hill Island and Cannon Hill in Duck Creek. A number of areas within the harbor have also been excluded to facilitate their dredging. Areas which have been previously dredged, (fully described in DEM, Division of Waterways Contract Nos. 1271, 1478, 1769, 1879, 2644, 3010, and US Army Corps of Engineers Federal Navigation Project Description for Wellfleet Harbor, Massachusetts) and are excluded from the boundary of this ACEC, are generally described as the inner basin (north of the parking area on Shirttail Point), the channel around Shirttail Point, the mooring basin, and the buoyed channel leading out of the harbor, approximately three-quarters of a mile long, to Buoy #12. Additional areas which have not been dredged previously, but may be dredged in the future, and are therefore excluded from the boundary, include a 100-foot wide strip along the northern side of the inner basin, and an approximately 2500-yard long extension of the previously-licensed 125-foot wide dredged channel from Buoy #12 due south to Buoy #10.

II. Designation of the Resources of the Wellfleet Harbor ACEC

In my letter of acceptance of the nomination of the Wellfleet Harbor as an ACEC, I indicated that our evaluation indicated that it easily met the minimum threshold for consideration. Indeed, this nomination cited the presence of nine of the eleven resource categories, listed at 301 CMR 12.06, in the Wellfleet Harbor system. The nomination letter clearly lists the quantity and quality of the resources present.

The presence of these critical resources, and their relatively undisturbed nature, clearly indicate their value to the region and the state.

III. Procedures Leading to ACEC Designation

On December 21, 1988, a letter of nomination, signed by ten citizens of the Commonwealth, pursuant to 301 CMR 12.05(1)(a), was received by my office. The nomination was formally accepted by letter on February 1, 1989, and the review process was begun.

Notice of the acceptance of the nomination and of an informational meeting and a public hearing was published in the Cape Codder, and in the Massachusetts Environmental Monitor on or about February 27, 1989. Numerous informational articles appeared in the local and regional newspapers.

In addition to the many public meetings held by the nominating committee during the preparation of the nomination and its local review, an informational meeting for the general public was held on March 30, 1989. A public hearing was held on April 6, 1989, and the public comment period was held open until April 14, 1989. Written and oral testimony was received from numerous individuals and organizations and is on file at the MCZM office.

IV. Discussion of Criteria for Designation

In the review process leading to the decision on a nominated area, the Secretary must consider the factors specified in Section 12.09 of the EOEA regulations regarding the designation of Areas of Critical Environmental Concern. As stated in these regulations, the factors need not be weighed equally, nor must all of these factors be present for an area to be designated. While the more factors an area contains the more likely its designation, the strong presence of even a single factor may be sufficient for designation.

Based on the information in the nomination letter, presented at the public hearing, and through written comments, and on the research of my staff, I find the following factors relevant to the designated ACEC:

Quality of the Natural Characteristics

The Wellfleet Harbor system possesses outstanding natural resource attributes such as well-preserved and largely unaltered barrier beaches (24 of which are state-designated), islands, marsh systems, salt and fresh water ponds, rivers, bays and tidal flats. Although there has been considerable development in the region, Wellfleet Harbor has not yet experienced significant degradation from this activity, though the warning signs are evident. Most of the marshes, tidal flats and barrier beaches are unaltered and undeveloped, allowing them to function at their maximum capacity as habitat areas, nursery and spawning areas, and, in the case of barrier beaches, for the purposes of storm damage prevention.

In addition to the biological resources in the Wellfleet Harbor system, the area has been identified by Department of Environmental Management in their Massachusetts Landscape Inventory (1982) as containing visual landscapes and cultural resources that place it in the top 5% of all landscapes in the Commonwealth. As such, while this important resource may be less tangible than a barrier beach or sand flat, and its attributes more difficult to define than habitat for an endangered species or the flood protection afforded by a coastal bank, its preservation is equally important. Therefore, all EOEA agencies should give the preservation of this resource due consideration when implementing the ACEC designation.

Productivity

The high productivity of estuarine/saltmarsh ecosystems has been well documented in the scientific literature. The plant growth within the marsh is exported by the tides and ultimately incorporated into the marine food web. The protected, shallow waters of the estuary act as a nursery for shellfish and finfish and the relatively high water quality of the tributaries and headwaters provide spawning sites for anadromous fishes. The diverse benthic population supported by the marshes, estuary and tidal flats is also extremely important as a food source for migratory and resident shorebirds and waterfowl. When compared to the whole of Barnstable County, while the Town of Wellfleet accounts for only 5.1% of the land area of the County and 7.5% of the tidal shoreline, the ACEC contains 6.8% of all salt marsh acreage, 9.8% of all shrub marsh acreage, and over 10% of the tidal flat acreage.

Of particular interest with regard to the productivity of this system is shellfish productivity. The various tributary streams and direct groundwater inputs, as well as the generally good water quality, provide a highly favorable growing environment for shellfish, particularly the renowned Wellfleet oyster. In 1987, harvest of shellfish in Wellfleet contributed $1.5 million to the local and regional economy. Recent aquacultural successes with quahogs reinforce the especially productive nature of Wellfleet Harbor.

Uniqueness of the Area

The designated area is not unique by virtue of the inclusion of any single significant attribute, but the presence of so many. Such factors include: 1) The DEM Scenic Landscape classification - as described above; 2) The presence of an extraordinarily large amount of habitat for Federally-listed or state-listed rare, threatened, and endangered species - while described in greater detail in the nomination, the most important statistic in this regard is that well over half of the area of the ACEC lies within estimated habitat of state listed rare wildlife species, as defined by the Massachusetts Natural Heritage and Endangered Species Program; 3) Kettle ponds - the kettle ponds at the headwaters of the Herring River are frequently referred to by geologists as the Cape Cod archetype of a kettle pond complex; 4) Archeological resources - The Indian Neck Ossuary is considered, by the Massachusetts Historical Commission, to be the most unusual Native American burial site yet discovered on Cape Cod; 5) The unique environmental conditions as related to shellfish - as described above.

Irreversibility of Impact

Changes in the salinity regime of estuaries may eliminate or substantially alter the broad mixing zone important as a nursery for juvenile fishes and shellfish, an issue of particular concern in Wellfleet Harbor. Both coastal development, which changes the runoff characteristics of the adjacent upland, and dredging of channels within the marsh, which may lead to overdrainage of watersheds, saltwater intrusion into groundwater, and disrupt nutrient inputs, can act to irreversibly alter estuarine ecosystems.

Threats to Public Health through Inappropriate Use

As has been emphasized in both the nomination and this designation, the shellfish resources of Wellfleet Harbor are very important. Portions of the designated area are used for recreational shellfish harvesting, commercial harvesting, and shellfish aquaculture. Most of the areas are currently open to shellfishing. Inappropriate discharges, either direct or indirect, into the headwater areas, ponds, tidal waters, or even groundwater could have public health repercussions through contamination of these shellfish. Salt marshes are valuable for their ability to remove contaminants from adjacent waters. Disruptions of this function of the marsh could also have detrimental effects on the quality of the harvested shellfish.

The numerous barrier beaches within the ACEC act as natural storm buffers to protect landward areas and structures from coastal storm damage. The marsh system also aids in this protective role. Disruption of this protection could lead to significant storm damage to public property and private homes in exposed coastal areas.

Imminence of Threat to Resources

Cape Cod, in the past decades, has been under increasing development pressure. The Cape Cod Planning and Economic Development Commission predicts these pressures will increase in the future, especially in the towns affected by this designation. Development presents two particular forms of threat to the areas included in the designated area.

First is the incremental effect of construction along the edges of marshes and waterways. Run-off from roadways and landscaped areas can bring increased levels of nutrients to the aquatic system resulting in eutrophication, possible algal blooms, and the resultant lowering of oxygen levels in the water to the detriment of marine organisms. Seasonal anoxia, caused by both natural and man-induced factors, has already been identified as a problem in a number of tributary streams within the Wellfleet system. Runoff can also carry pathogens (often indicated by elevated counts of coliform bacteria), oil and gasoline residues, and other contaminants. Even properly designed, installed, and maintained septic systems can allow leaching of nutrients into marshes and waterways in levels which cannot be easily assimilated, while failing systems can discharge raw sewage directly into surface waters.

Despite laws and regulations to the contrary, construction along marshes and waterways can also bring incremental filling over time.

Second, the increasing population has led to increased proposals for dredging tidal creeks and flats for private, recreational boating activities. The protections afforded by designation will act to limit this activity to only those areas excluded by nomination and supported by full and sufficient documentation.

It is hoped that this designation will serve to focus attention on the value and sensitivity of the area and will serve as a guide for future development proposals.

Economic Benefits

This area has intrinsic values related to the region's economic stability. The local and regional economy is largely based on fishing, tourism, and retirement industries. The fisheries are supported through the healthy and productive marsh and estuarine systems and serve a regional recreational, and commercial finfish and shellfish harvesting industry. People come to Cape Cod, either to visit or to live, for its pockets of unspoiled beauty, recreational opportunities, and quality of life. Tourism is supported through the waterfront vistas, the historical significance, and the recreational facilities of the public beaches. The retirement community is attracted to the region because of the serenity of the landscape and the relatively untouched nature of the environment. Any alteration of the area that results in a decrease in its productivity, attractiveness and use carries a potential for adverse economic impact.

Supporting Factors

There has been virtually unanimous agreement on the appropriateness of the designation among local residents, environmental groups, and Boards and Commissions from the affected towns. There has also been strong support from state legislators, and the National Park Service. Each of the towns, and the Cape Cod National Seashore, has taken steps to protect their natural resources and have indicated that the ACEC designation will be an important part of planning and protection policies. It is therefore my strong feeling that Wellfleet Harbor is very appropriate for designation as an Area of Critical Environmental Concern.

John P. DeVillars
Secretary of Environmental Affairs

5/18/89
Date