



CDF Locations
Craffey, Paul (DEP)

to:

Dave Dickerson, Larry Brill

01/06/2010 09:50 AM

Hide Details

From: "Craffey, Paul (DEP)" <Paul.Craffey@state.ma.us>

Superfund Records Center

SITE: New Bedford

BREAK: 3-1

OTHER: 509396

To: Dave Dickerson/R1/USEPA/US@EPA, Larry Brill/R1/USEPA/US@EPA

History: This message has been replied to and forwarded.

1 Attachment



New_Bedford_MDF.jpg

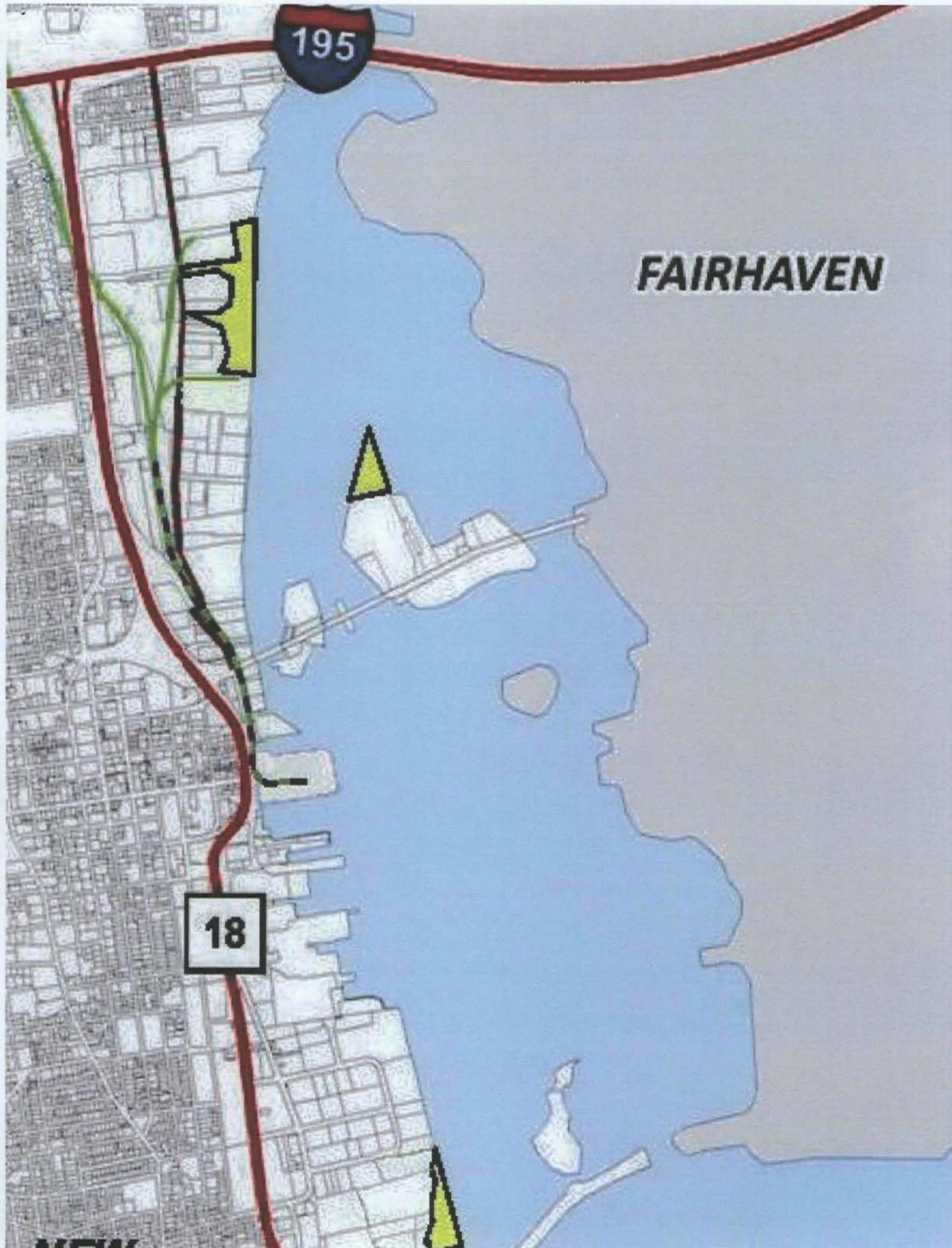
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SDMS DocID

509396



195

FAIRHAVEN

18

NEW



CDF Locations
Craffey, Paul (DEP) to: Dave Dickerson

01/07/2010 11:53 AM

History: This message has been replied to.

1 attachment



SouthTerminalCDF.pdf

The DEP letter is currently proposing 3 CDFs, CDF D, South terminal, and one additional location that would be a CDF in the FS. We will let you know if the 3rd CDF is needed and where it is located before the ESD goes out. I have told the HDC (Fairhaven may have a problem with it) but the 3 CDFs will be the only ones allowed under the Superfund Exemption.

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If you want the Tiger Grant Application let me know.

-----Original Message-----

From: dickerson.dave@epamail.epa.gov [mailto:dickerson.dave@epamail.epa.gov]
Sent: Thursday, January 07, 2010 10:53 AM
To: Craffey, Paul (DEP)
Subject: Re: CDF Locations

Paul -- one question: do you know whether the HDC would propose other CDFs in the future, or is this it?

"Craffey, Paul
(DEP)"
<Paul.Craffey@state.ma.us>

01/06/2010 09:49
AM

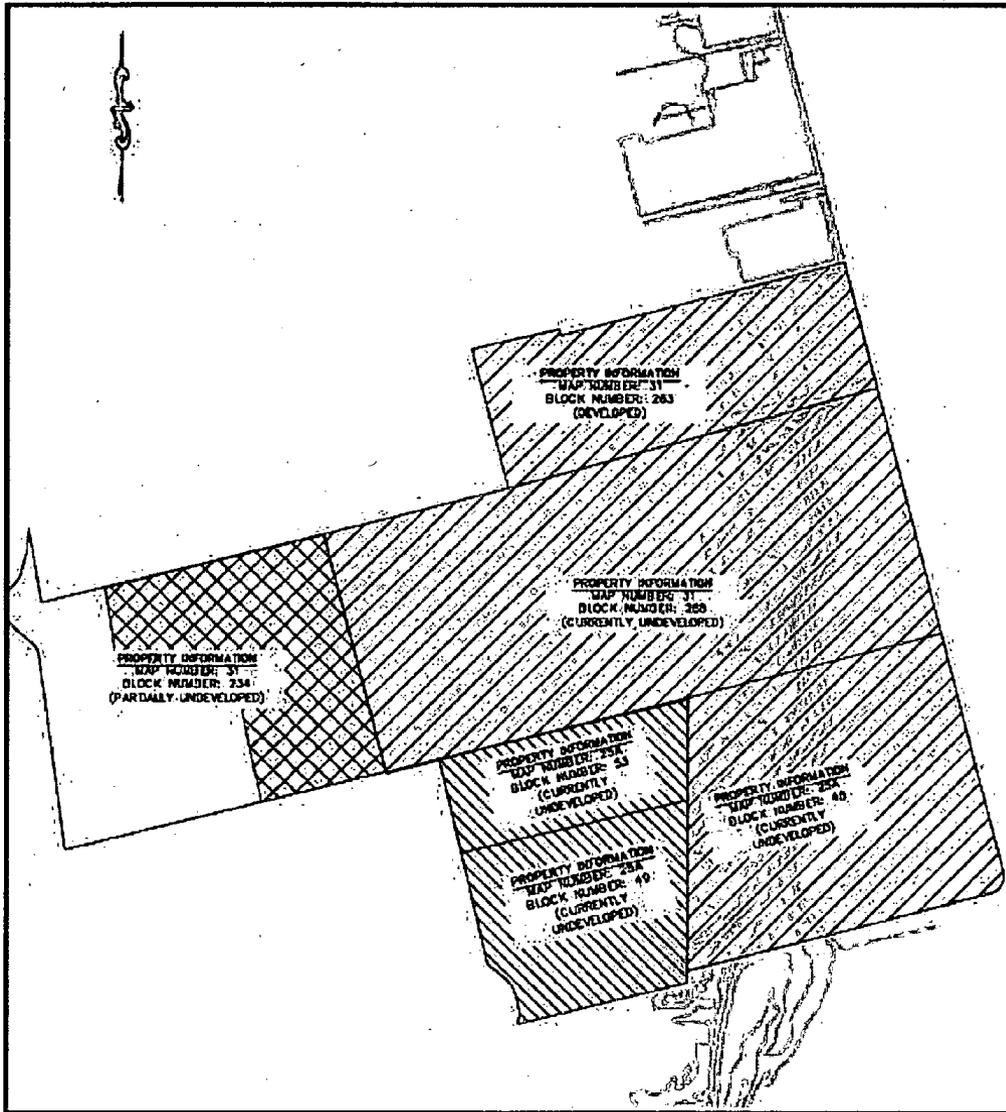
To
Dave Dickerson/R1/USEPA/US@EPA,
Larry Brill/R1/USEPA/US@EPA

cc

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FLOOD
CBB

NOTES

1. OUTLINE SKETCH ON PLANS TAKEN FROM NEW BEDFORD ASSESSORS MAPS.
2. BASE PLAN FOR THIS PLOT OBTAINED FROM U.S. ARMY CORPS OF ENGINEERS. EXISTING CONDITIONS SHALL BE FIELD VERIFIED BY THE CONTRACTOR.



BUILD OUT SCENARIO #1: PLOTS OF LAND TO BE INCLUDED WITHIN SOUTH TERMINAL MARINE INFRASTRUCTURE PARK DEVELOPMENT

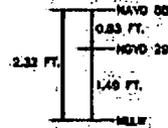


LANDWARD PORTION OF BUILD-OUT SCENARIO #1: PLOTS TO BE INCLUDED WITHIN PROPOSED SOUTH TERMINAL MARINE INFRASTRUCTURE PARK DEVELOPMENT



PLOTS OF LAND WITH POTENTIAL TO BE INCLUDED WITHIN PROPOSED SOUTH TERMINAL MARINE INFRASTRUCTURE PARK DEVELOPMENT

GRAPHIC DEPICTION OF DATUM SEPARATIONS FOR NEW BEDFORD HARBOR



NO SCALE
DATE: 08/14/19
BY: [Signature]

NO.	DESCRIPTION

THIS DOCUMENT IS THE PROPERTY OF AECOM AND IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF AECOM.



PROJECT TITLE
SOUTH TERMINAL MARINE INFRASTRUCTURE PARK

PREPARED FOR
THE NEW BEDFORD HARBOR DEVELOPMENT COMMISSION

DESIGN TITLE
CONCEPTUAL DESIGN B OF RECREABLE ENERGY SOURCE PARK

NOT FOR CONSTRUCTION

NO.	DESCRIPTION	DATE



RE: DPA
Craffey, Paul (DEP) to: Dave Dickerson

01/11/2010 12:15 PM

1 attachment



20000801_DPA_NB_Fairhaven.pdf

Not sure what the DPA was before 2000, but here is the figure.

-----Original Message-----

From: dickerson.dave@epamail.epa.gov [mailto:dickerson.dave@epamail.epa.gov]
Sent: Monday, January 11, 2010 11:56 AM
To: Craffey, Paul (DEP)
Subject: Re: DPA

didn't your original figure show the northern CDF extending to Revere Copper?

more importantly this should be the first thing on the agenda for the 1/28 SER meeting, and we would expect the DEP to be highly proactive in making sure that as many resource agencies attend as possible (e.g., DMF, Corps, Waterways, NB ConComm, etc.)

"Craffey, Paul
(DEP)"
<Paul.Craffey@state.ma.us>

Dave Dickerson/R1/USEPA/US@EPA
To
cc

01/11/2010 11:09 AM

Subject

DPA

Attached is a figure showing the DPA, it is from the draft 2009 Harbor Master Plan. Both the proposed CDFs (South and North terminals) are with in the DPA. The northern boundary goes to the southern end of McClean's Seafood not to Packer. However, it might make sense to stop at Packer. Details worked out with HDC.

The DPA has not changed from the figure in 2000 Harbor Master Plan.

-----Original Message-----

From: dickerson.dave@epamail.epa.gov
[mailto:dickerson.dave@epamail.epa.gov]
Sent: Monday, January 11, 2010 8:32 AM

To: Craffey, Paul (DEP)
Subject: Re: CDF Locations

thanks Paul. I assume you mean the S terminal proposed CDF, correct?

On the northern end, my understanding is that the DPA's current northern boundary is at the new Packer pier, which would mean that the northern tip of the N terminal proposed CDF is outside of the CDF. Let me know if this is any different than your understanding!

Dave

"Craffey, Paul
(DEP)"
<Paul.Craffey@state.ma.us>
01/09/2010 02:35
PM

To
Dave Dickerson/R1/USEPA/US@EPA
cc
Subject
Re: CDF Locations

You asked if the proposed CDF was in the DPA. Kristen told me that it is.

----- Original Message -----

From: dickerson.dave@epamail.epa.gov <dickerson.dave@epamail.epa.gov>
To: Craffey, Paul (DEP) <Paul.Craffey@state.ma.us>
Sent: Thu Jan 07 10:53:21 2010
Subject: Re: CDF Locations

Paul - one question: do you know whether the HDC would propose other CDFs in the future, or is this it?

"Craffey, Paul
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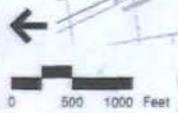
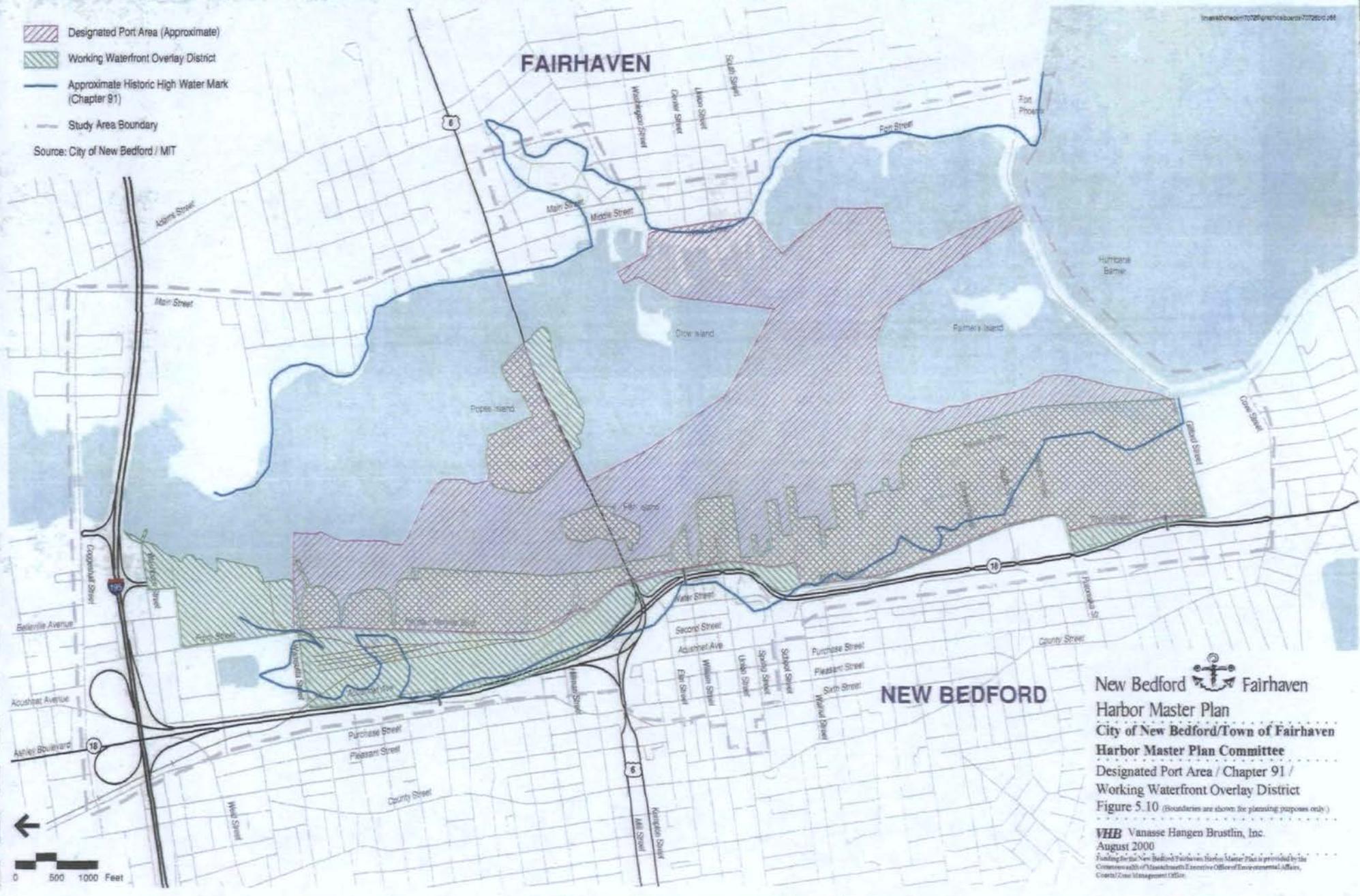
(See attached file: 20090701_DPA_NB_Fairhaven.pdf)

-  Designated Port Area (Approximate)
-  Working Waterfront Overlay District
-  Approximate Historic High Water Mark (Chapter 91)
-  Study Area Boundary

Source: City of New Bedford / MIT

FAIRHAVEN

NEW BEDFORD



New Bedford  Fairhaven
 Harbor Master Plan
 City of New Bedford/Town of Fairhaven
 Harbor Master Plan Committee
 Designated Port Area / Chapter 91 /
 Working Waterfront Overlay District
 Figure 5.10 (Boundaries are shown for planning purposes only)

VHB Vanasse Hangen Brustlin, Inc.
 August 2000
 Funding for the New Bedford Fairhaven Harbor Master Plan is provided by the
 Commonwealth of Massachusetts Executive Office of Environmental Affairs,
 Coastal Zone Management Office

ImageName: \\7025\proj\hobart\702500.dwg



RE: CDF Locations
 Craffey, Paul (DEP) to: Dave Dickerson

01/07/2010 03:52 PM

History: This message has been replied to and forwarded.

2 attachments



20091201_EngineeringSouthTerminal MarinePark.pdf



Dredge8.JPG

The letter went to the assistance commissioner this afternoon. It should be out soon.

The 3rd CDF will probably be Pope's island. The HDC wants to configure the CDF to best limit the impacts to the businesses located there. Also, they need to figure out roughly how much extra storage/disposal they need for the clean sand. If the area is not needed as a CDF we will let you know.

Attached is the grant. The Figure was on Page 13 of 45. There is another scale of the location on Page 9. The estimated land below the high tide line is 4.7 acres that will be impacted by the South Terminal expansion.

The foot print of the CDF does not go from the hurricane barrier. Looking at the figure on page 9, it seems about half the existing open shoreline would be impacted. Attached is a picture of some of the shoreline. When I was there overseeing the dredging in late June, I never saw anyone using the beach near the existing south terminal. I think there is a fence on the property next to where the boat launch is and there are fences from the other properties blocking access to the shoreline.

-----Original Message-----

From: dickerson.dave@epamail.epa.gov [mailto:dickerson.dave@epamail.epa.gov]
 Sent: Thursday, January 07, 2010 1:55 PM
 To: Craffey, Paul (DEP)
 Subject: Re: CDF Locations

thanks Paul, its helpful to know that you are limiting any CDFs to three. Sounds like the Popes Island CDF is being reconsidered?? Any idea when to expect DEP's letter?

Also, I have what I thought was the complete TIGER grant application but can't find this figure in it. Is there another document I should be aware of? But note that the beach/open space/salt marsh runs all the way from the hurricane barrier up to the existing South Terminal bulkhead, so that this proposed CDF would wipe out all of those natural resources within its footprint.

Dave

"Craffey, Paul
 (DEP) "
 <Paul.Craffey@state.ma.us>

To
 Dave Dickerson/R1/USEPA/US@EPA
 cc

01/07/2010 11:51
AM

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(See attached file: SouthTerminalCDF.pdf)

**Engineering Analysis/Feasibility Review
for
The South Terminal Marine Infrastructure Park Development
for
The Port of New Bedford,
New Bedford, Massachusetts**



Prepared For:



*New Bedford Harbor Development Commission
106 Co-Op Wharf - New Bedford, MA 02740*

Prepared By:



*Apex Companies, LLC
1 Wamsutta Street - New Bedford, MA 02740
REV03 - December 1, 2009*

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Engineering Analysis/Feasibility Review
for
The South Terminal Marine Infrastructure Park Development
for
The Port of New Bedford,
New Bedford, Massachusetts
(Rev03: 12-01-2009)

Executive Summary

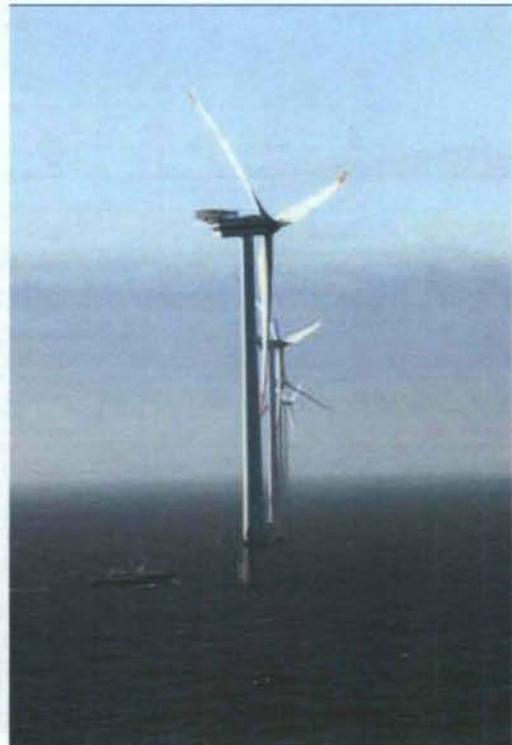
An engineering evaluation, commissioned by the New Bedford Harbor Development Commission (HDC), was completed in the Port of New Bedford for the purpose of evaluating the use of New Bedford's South Terminal as a Marine Park and Support Center for the Maritime Trade and Construction Industries, including the Alternative Energy and Offshore Wind Power Industries. Two principle scenarios were evaluated: 1) the development of South Terminal into a state-of-the-art facility to support the Marine Industry with a time-line of 18-months; and 2) a Rapid Response Plan that would allow the Port to use existing infrastructure and begin supporting the off-shore wind industry over a shortened time frame of 0-6 months.

South Terminal Marine Infrastructure Park

The South Terminal Marine Infrastructure Park Development will provide the Port of New Bedford with infrastructure capacity to support off-shore wind developments and maritime operations into the future. The South Terminal is ideally suited to support the alternative energy/marine industry: it has direct access to the deep-water federal channel and is located directly behind the New Bedford Harbor Hurricane Barrier in a marine industrial area that enjoys all the benefits of a fully operational working Port, including a highly skilled specialized labor pool.

After review of all available options, three potential build-out scenarios were selected that will maximize the utility of the South Terminal for the off-shore wind power and alternative energy industries:

1. ***Preferred Alternative Overall:*** Extend South Terminal as a solid-fill bulkhead to increase land area to 19.95 acres (expandable to 22.72 acres), offering 1,000 lineal feet of bulkhead with 30-feet of water for on/off-loading. Cost: \$19.235M; Timeframe: 12-18 months;
2. ***Alternative to Minimize Resource Impact:*** Extend South Terminal as a pile-supported structure (over-water) and solid-fill structure (over land) to increase overall useable land/pier to 19.95 acres (expandable to 22.72 acres), offering 1,000 lineal feet of pier with 30-feet of water for on/off-loading. Cost: \$21.989M; Timeframe: 18 months;



3. Lower Cost Alternative: Expand South Terminal utility by dredging to 30-feet to accommodate large ships in front of existing bulkhead and beyond existing bulkhead to the south. Install dolphins south of the Terminal to allow for berthing of larger ships that extend beyond the end of the existing Terminal. Land area available would be 11.99 acres (expandable to 14.76 acres); Cost: \$8.500M; Timeframe: 12-18 months.

Rapid Response Alternatives

Seven separate Alternatives within the Port were evaluated that would facilitate immediate or short timeframe support of the off-shore wind/alternative energy industry. Again, South Terminal represents the most attractive short-term option, with 11.99 acres (expandable to 14.76 acres) and a solid bulkhead spanning 180-feet and a draft of 20-feet. Deeper draft vessels could be accommodated via transfer from one of the deeper-draft facilities within the Port. Additional Lay-down/Storage Area could be made available at the Rail Yard in the City. A summary of the seven Rapid Response alternatives is presented in the table below.

Table 3.8: Summary of Analysis of Rapid Response

Rank	Location	Improvements Necessary (Exclusive of Cranes)	Time to Implement	Cost
1	South Terminal (Non-build out scenario)	Clear and fill upland area. Barge rental (3) for trans-shipment.	3-6 Months	\$862,300.
2	US EPA Facility/ Rail Site	Paving of Rail Yard lay-down area. Barge rental (3) for trans-shipment.	3-5 Months	\$1,085,000.
3	New Bedford State Pier	Paving of Rail Yard lay-down area for additional storage.	2-4 Months	\$914,760.
4	Packer Marine	Dredging to expand access. Paving of Rail Yard lay-down area. Barge rental (3) for trans-shipment.	6-10 Months	\$1,329,700.
5	Bridge Terminal	Bulkhead rehabilitation. Paving of Rail Yard lay-down area. Barge rental (3) for trans-shipment.	8-18 months	\$1,114,500
6	Fisherman's Wharf (Co-Op Wharf)	New Location for displaced fishermen. Barge rental (3) for trans-shipment. Paving of Rail Yard lay-down area.	8-18 Months	\$1,094,800
7	NSTAR Facility	Paving of area, dredging and bulkhead. Paving of Rail Yard lay-down area. Barge rental (3) for trans-shipment.	12-18 Months	\$3,861,760

Introduction

An engineering evaluation was completed in the Port of New Bedford for the purpose of evaluating the use of New Bedford's South Terminal as a Marine Park and Support Center for the Maritime Trade and Construction Industries, including the Alternative Energy and Offshore Wind Power Industries. An additional evaluation/feasibility review was conducted of additional facilities within the Port of New Bedford to assess Rapid Response options that would allow the Port to begin servicing the industry immediately. The document is presented in three parts:

- Section 1.0 discusses industry-based assumptions made when considering the engineering associated with developing a facility to support off-shore wind development;
- Section 2.0 includes an overview of the South Terminal Marine Infrastructure Park Development that would represent a turn-key state-of-the-art facility to support trans-shipment, maintenance operations, warehousing, and office space for off-shore wind developments. The facility can be implemented in three separate ways, which are described in this section; and
- Section 3.0 includes a Rapid Response Plan, which assesses how off-shore wind developments can be supported immediately in New Bedford Harbor utilizing existing infrastructure within the Port, with minimal modifications.



1.0 Industry Based Assumptions

The following is an outline of assumptions made within this document, based upon the current assumed direction of the off-shore wind industry.

1.1 Wind Turbine Technical Information

Offshore wind developments will involve the shipment, staging, and assembly of wind turbines. Wind turbines will generally be broken down into several base component parts for shipment: Wind Blades, Nacelle, Tower Section, and Hub. Generally, each wind turbine will have three wind blades, one nacelle, one hub, and several tower sections (most probably three sections for each tower associated with typical off-shore projects such as the "Cape Wind" Project). Although the exact makes and models of wind turbines that might be shipped through the Port was not available for this analysis, information on the Cape Wind website indicates that the manufacturer of the wind turbines will likely be Vestas Wind Systems A/S, and it is assumed that this type of system will be typical for other potential projects. The website also indicates that each wind turbine will generate up to approximately 3.0-3.2 mega-watts of power. The type

system utilized for this analysis therefore, was the Vestas V112-3.0MW, a likely system for use in the Cape Wind project and similar to other systems that may be used for other off-shore wind power projects in the region. The following is a summary of important information associated with the portions of this wind turbine:

Part	Length	Width/Diameter	Number/Turbine
Wind Blade	180 feet	13 feet	3
Nacelle	46 feet	13 feet	1
Hub	13 feet	11 feet	1
Tower Length	107 feet	14 feet	3

The entire wind turbine weighs approximately 77 tons, although it is currently unclear how this weight will be distributed between the portions of the wind turbine. It is currently anticipated that parts for approximately ten wind turbines will be included in each shipment, and space will be necessary for temporary storage of these units. For this analysis, the minimum amount of storage space was assumed to be equal to the area of each part (length times width) times the number of parts required for each turbine, times ten turbines (an average batch size that may be sequenced). This value is 122,550 square feet, or approximately 2.8 acres. It is currently unclear whether any of the items can be stacked, thus, for the purposes of this analysis, it is assumed that they cannot be stacked. Additional space will be required in order to allow space for machinery (mobile cranes) to operate within the storage area and sort and move the parts, as well as space to load and unload the parts onto trucks, trains or marine vessels, and to allow for space between the parts to prevent damage. It is likely that the additional space will equal approximately 50% of the space requirements (50% X 2.8 acres = 1.4 acres), meaning that for this analysis a total of (2.8 acres + 1.4 acres = 4.2 acres) will be required at the loading/unloading location in New Bedford Harbor for lay-down space.



1.2 Vessel Requirements

A variety of vessels may be utilized in off-shore wind development shipping of components, including barges, standard cargo vessels, and specialized cargo ships adopted to carry components such as wind blades and nacelles. Dimensions and draft of a range of vessels likely utilized by shippers of the various components required by the industry are presented below.

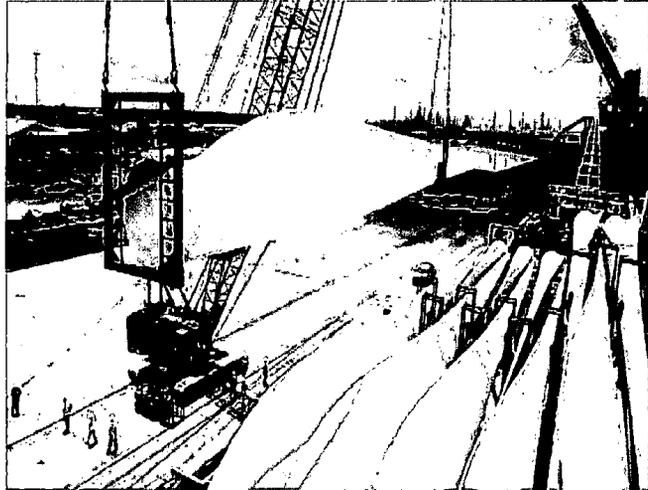
Vessel	Length Range	Width Range	Draft Range
Barges	150' – 350'	40' - 75'	10' - 17'
Cargo Vessels	200' – 450'	45' – 85'	18' – 28'
Specialized Vessels	250' – 450'	50' – 90'	20' – 30'*

*Note: It is generally expected that vessels will not be loaded to maximum gross tonnage, and that the draft of vessels will likely not exceed 28-feet.

For the purposes of comparative analysis, it can generally be assumed that the draft required by vessels in this service sector will be 28-feet or less. As such, facility depths of -29 feet MLLW to -30 feet MLLW can be considered acceptable without the need for dredging. For this analysis, facilities with adjacent water depths of less than 29 feet were assumed to require some dredging.

Note that dredging in New Bedford is conducted under the State Enhanced Remedy regulatory process (which does not require the standard permitting timeframes), and project regulatory approvals can generally be obtained (from start to finish) within an approximately 1-3 month time frame.

A site with good vessel access will have berthing access long enough to accommodate vessels containing wind turbine parts. Additionally, good vessel access will not be restricted by natural or engineered potential barriers to navigation. For example, the Route 6 Bridge has a maximum width of 90 feet. Vessels wider than 90 feet would have restricted access to locations north of the Route 6 bridge. It was assumed that site proximity to the Federal Navigational Channel would provide vessels with good access to a site.

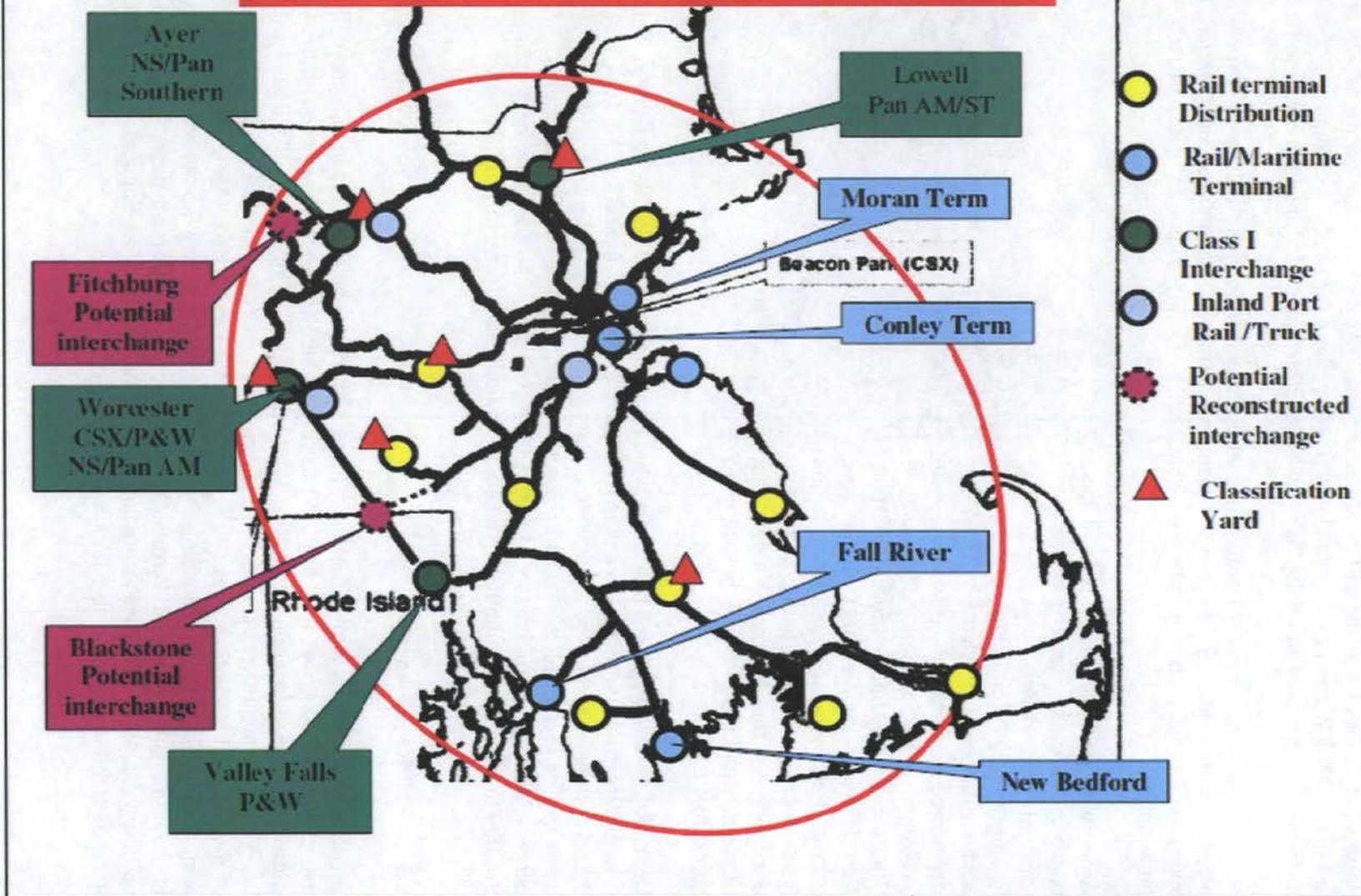


Deck barges can be utilized to transfer wind turbine parts from facility to facility. Particularly in a Rapid Response situation (see Rapid Response Options in Section 3), deck barges may be useful to transfer parts from an unloading facility to a storage facility. A 130 foot X 30 foot deck barge can be leased for use when necessary at approximately \$4,500 per month. A new deck barge would cost approximately \$1,000,000. A 200 foot X 50 foot deck barge can be leased for \$12,000 to \$14,000 per month plus a \$40,000 mobilization/demobilization charge.

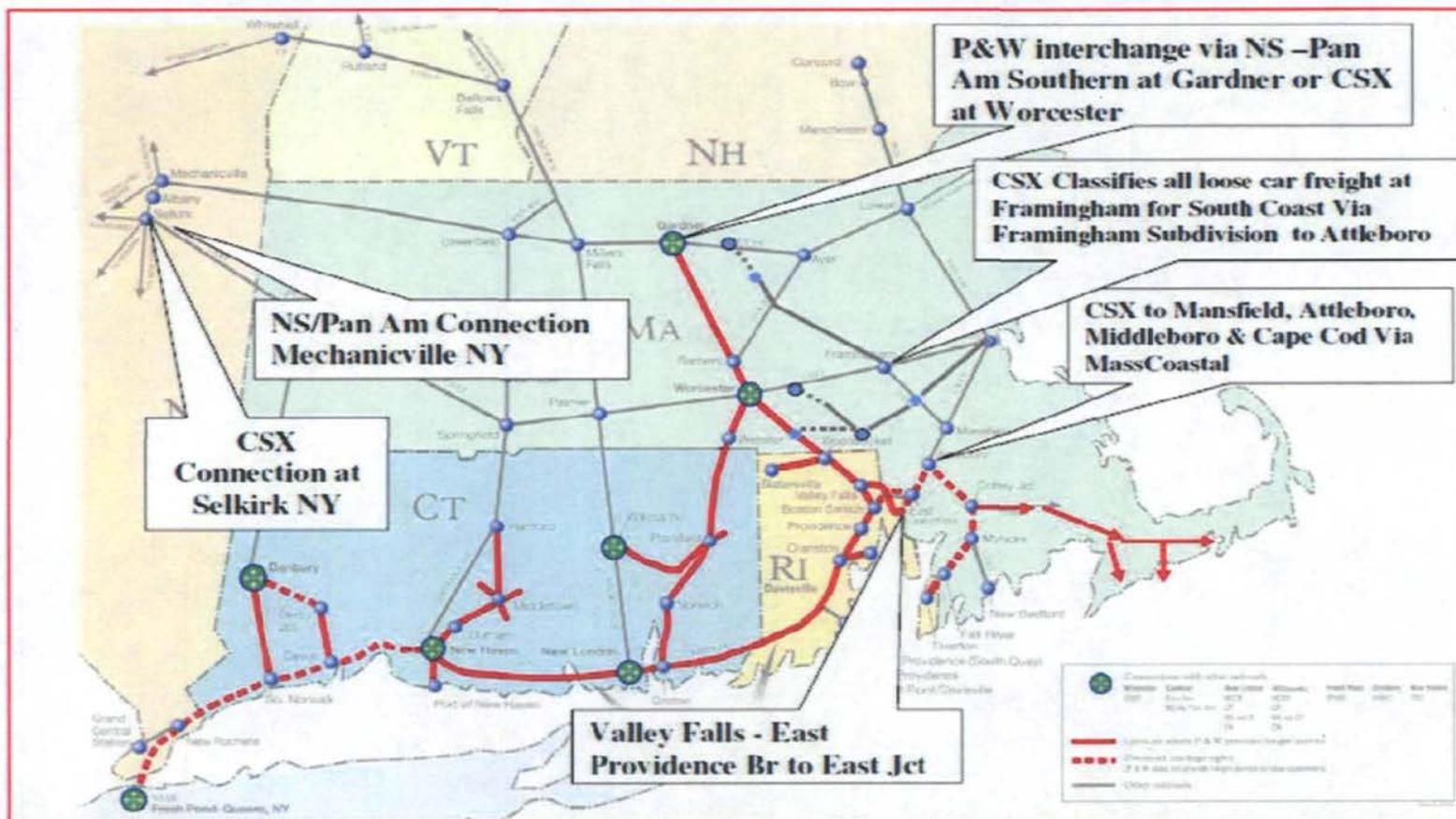
1.3 Rail Requirements

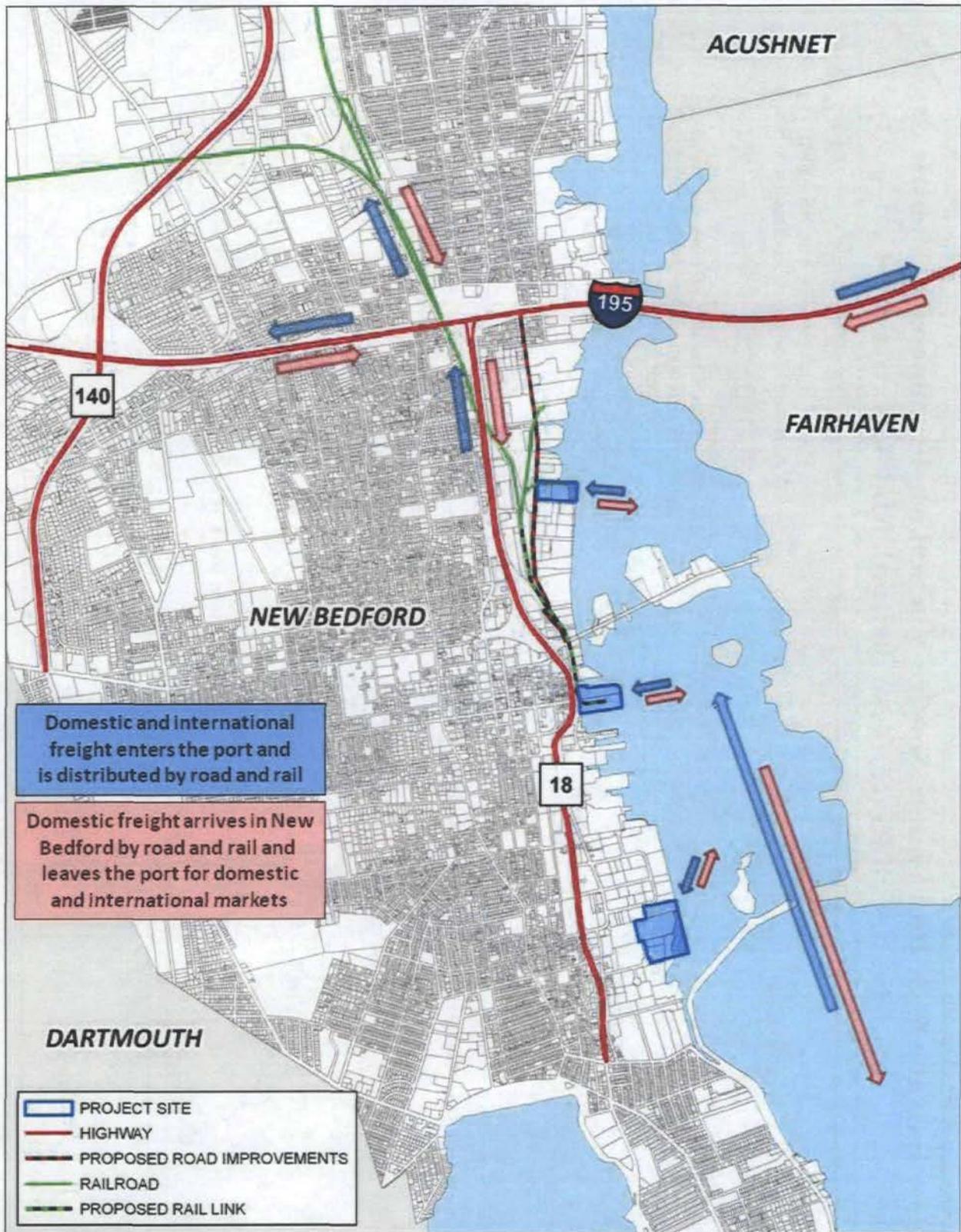
A site with rail access allows for the shipping of parts to the location via rail, and will also allow materials to be shipped away from the facility, if additional storage is needed elsewhere. One additional storage location is the Rail Yard adjacent to Herman Melville Boulevard. The area has a significant storage capacity, and is capable of receiving material by rail from one or more of the potential unloading areas (New Bedford State Pier or USEPA Dewatering/CSX Rail). In turn, these rail-accessible unloading facilities have connections with the other reviewed facilities in the Port (such as South Terminal) via barge. The following pages contain three figures outlining the rail connections throughout Massachusetts and New England, and the integration of the freight rail connections into the City of New Bedford.

Eastern Massachusetts Freight Rail System



Existing CSX Rail Freight Service Via Selkirk, Framingham, Mansfield, Attleboro, Fall River, New Bedford, Middleboro, Cape Cod





1.4 Unloading Infrastructure (Cranes)

In most locations, a mobile crane will be needed to move parts around the proposed lay-down and staging area. In locations where the bulkhead is in good condition, it is possible that the mobile crane can load or unload vessels as well. However, a larger crane will likely be necessary in order to load and unload vessels for locations in which the bulkhead or pier is not in prime condition. A larger crane can either be a fixed crane, that requires a foundation in order to secure the crane in place on the property or could also be a crawler-mounted crane that has a long reach or a barge-mounted crane that can move from location to location via water to service vessels. The following are estimated costs for crane usage:

- A 200 ton crane mounted on a barge: \$40,000 mobilization/demobilization cost plus \$25,000 per month.
- It is unlikely that a mobile crane could be leased. A 100 ton mobile (tire mounted crane) can be purchased new (\$1.2 to \$1.5 million dollars) or used (\$700K-\$800K). A 300 ton mobile "crawler" crane could be purchased used (\$2.8 million) or new (\$3.5 million).
- A 600 ton crawler mounted crane can be leased for \$100,000 per month with a \$200,000 mobilization/demobilization fee.

1.5 State Enhanced Remedy

The State Enhanced Remedy (SER) is the regulatory process under which dredging and certain other waterfront development activities occur in New Bedford Harbor. The SER is a MADEP requested regulatory process that receives its authority from the USEPA's 1998 Record of Decision (ROD) for the New Bedford Superfund Site. It is intended to extend the cleanup of PCB and metals contaminated sediments in areas of the Harbor that are outside USEPA's remedy. The SER provides an expedited regulatory process that allows for projects (including maintenance and improvement dredge projects) to receive regulatory approval without having to submit the normal permit applications (instead a series of Performance Standards must be met).

The process is overseen by a committee of regulators (representing the spectrum of environmental and resource agencies, with MADEP as the project manager) which meets once per month to review projects in the Harbor. The process allows for regulatory approval of projects in approximately 30-90 days, as opposed to the usual 6-18 months that the normal regulatory permit approval process can take. All of the Port areas assessed as part of this study fall under the SER regulatory process for dredging, including the South Terminal expansion. By January 2010, MADEP desires to extend the SER program to include certain filled bulkhead structures known as Waterfront Development Shoreline Facilities (WDSFs), which will allow for an increase in the pace at which contaminated sediment will be removed from contact with the Harbor environment. The South Terminal Expansion area is one such WDSF that is expected to fall under the SER regulatory process starting early in 2010, once the USEPA's Superfund Project "Explanation of Significant Difference" (ESD) process (through which MADAP will promulgate its request) is complete.

2.0 SOUTH TERMINAL MARINE INDUSTRIAL PARK DEVELOPMENT

The South Terminal Marine Industrial Park Development involves creation of functional berthing area associated with a sufficiently large lay-down area that will allow staging and storage of wind turbine parts, assembly of the parts (if necessary), and accommodation of all sizes of vessels that may be necessary to transport parts to and from the facility. The primary purpose of the facility will be to support off-shore wind development. The funds for expansion of this facility were requested under an American Recovery and Reinvestment Act TIGER Grant Application for Surface Transportation. The facility can be constructed in one of three ways, depending upon available budget project and environmental concerns, and the following sections summarize these options:



Section 2.1: Bulkhead Extension

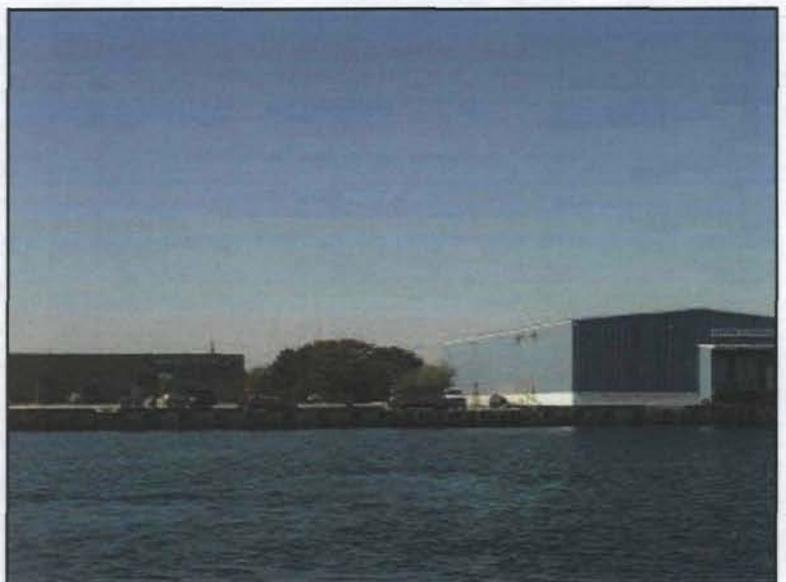
Section 2.2: Pile Supported Pier Extension

Section 2.3: Expansion of Dredge Footprint with Guiding Dolphins

2.1 Bulkhead Extension

This alternative involves the extension of the existing South Terminal bulkhead to the south for approximately 800 linear feet, which would create a 19.95 acre (expandable to 22.72 acres) **Marine Industrial Park** facility with 1,000 linear feet of bulkhead space that could support vessels drafting up to 30 feet.

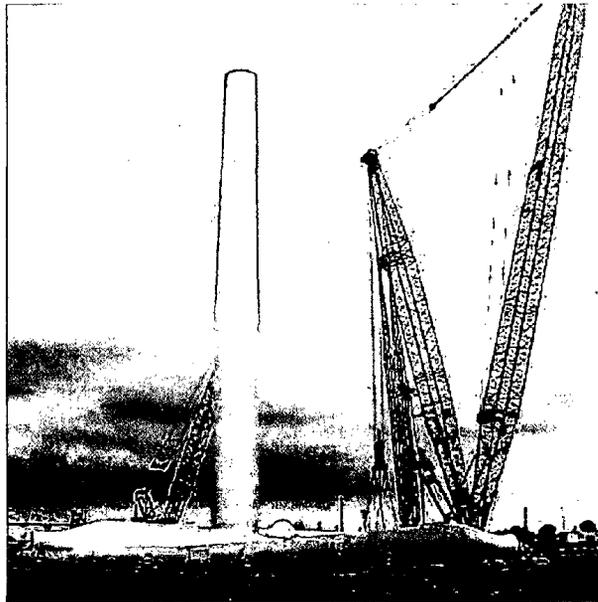
The existing footprint includes the utilization of the existing "Shuster Corporation" property (the southernmost property at South Terminal), located at 4 Wright Street. The



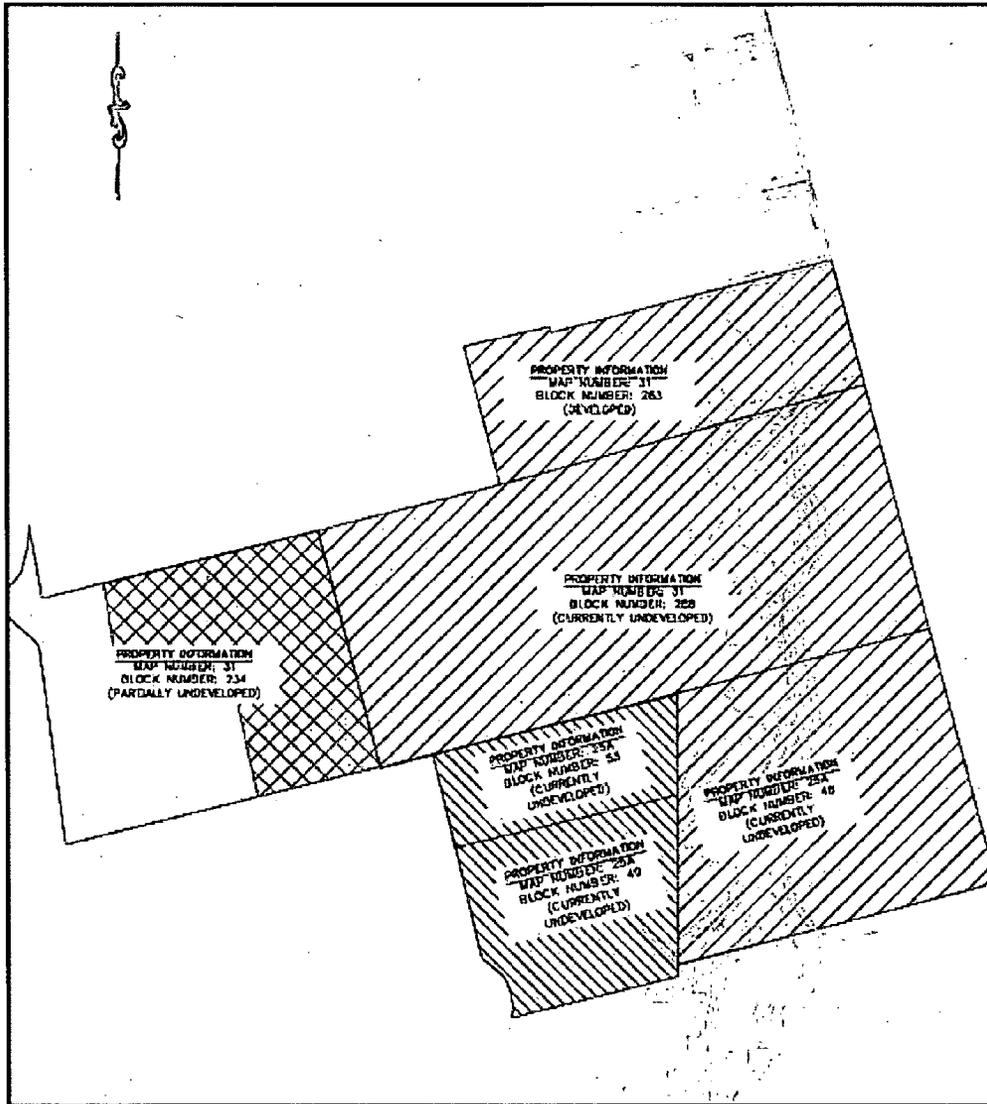
assessor's information for this property is (map 31, lot 263). The build-out scenario also includes the property, (map 31, lot 288), located immediately to the south of the Shuster Corporation property. Another property, located along the coastline of New Bedford Harbor immediately to the south (map 25A, lot 48) and two properties immediately inland (map 25A, lot 53 and map 25A lot 49) would also be included in the new facility. Once built-out, the total estimated area of the combined properties (plus the new land created via the bulkhead extension) would total approximately 19.95 acres. This area could also potentially be increased by expanding the facility into undeveloped portions of adjacent properties. The following property lies adjacent to the proposed facility. Portions of the property are unimproved and could potentially be leased and improved to allow for expansion of the facility:

Map	Lot	Area/Unused Area
31	234	2.77 Acres

Therefore, up to 2.77 additional acres of usable area are available adjacent to the proposed facility, which could allow for expansion, should it be required. This would allow for a facility that ranges in size from approximately 19.95 acres to 22.72 acres.



A layout of the properties proposed to be included (as well as properties available for potential expansion), an engineering diagram of the build-out, and a rendering of the (base) proposed facility utilized for the bulkhead extension scenario are included on the following pages.

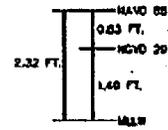


FLOOD
E/B

- NOTES**
1. OUTLINES SHOWN ON PLANS TAKEN FROM NEW BEDFORD ARMY'S MAPS.
 2. BASE PLAN FOR THIS PLANS OBTAINED FROM U.S. ARMY CORPS OF ENGINEERS. EXISTING CONDITIONS SHALL BE FIELD VERIFIED BY THE CONTRACTOR.

-  BUILD OUT SCENARIO #1: PLOTS OF LAND TO BE INCLUDED WITHIN SOUTH TERMINAL MARINE INFRASTRUCTURE PARK DEVELOPMENT
-  LANDWARD PORTION OF BUILD-OUT SCENARIO #1: PLOTS TO BE INCLUDED WITHIN PROPOSED SOUTH TERMINAL MARINE INFRASTRUCTURE PARK DEVELOPMENT
-  PLOTS OF LAND WITH POTENTIAL TO BE INCLUDED WITHIN PROPOSED SOUTH TERMINAL MARINE INFRASTRUCTURE PARK DEVELOPMENT

GRAPHIC DEPICTION OF DATUM SEPARATIONS FOR NEW BEDFORD HARBOR



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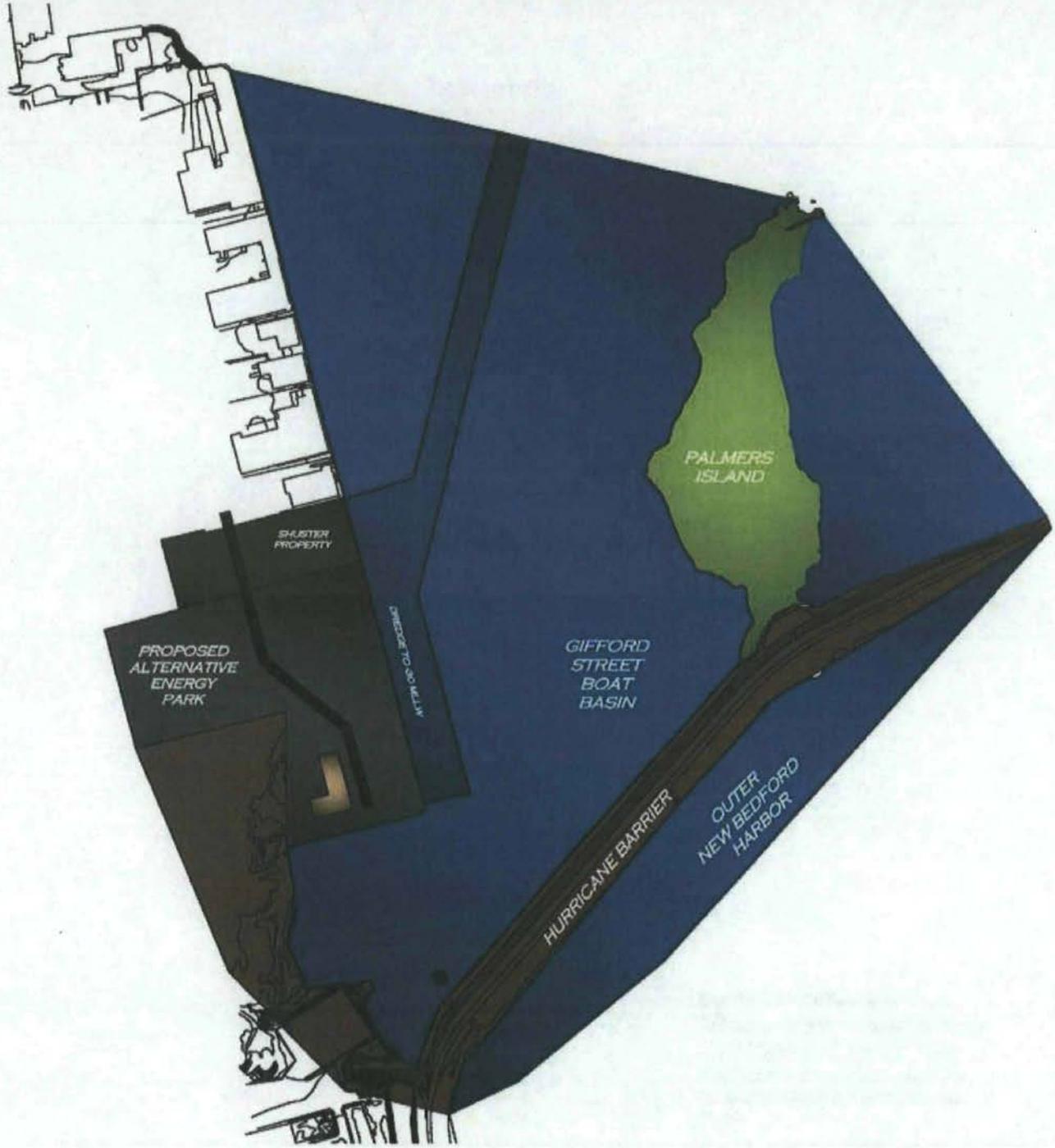
PROJECT TITLE
SOUTH TERMINAL MARINE INFRASTRUCTURE PARK

PREPARED FOR
THE NEW BEDFORD HARBOR DEVELOPMENT COMMISSION

DRAWING TITLE
CONCEPTUAL DESIGN OF ACCESSIBLE BARRIER SEASIDE PARK

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DATE: 08/14/13
SHEET NO. 1 OF 1



2.1.1 Engineering Requirements

The following steps will be required in order to complete the extension as envisioned:

- A bulkhead extension will need to be installed along the existing bulkhead line of South Terminal for approximately 800 linear feet.
- The bulkhead will turn 90 degrees and head to shore along the extension of the property line. A rip-rap slope could be utilized on this side in order to reduce cost, if necessary.
- Organic material located behind the bulkhead wall will be dredged and disposed of within a CAD Cell located in New Bedford Harbor.
- A mudslab would be installed within submerged areas to be filled.
- The area in front of the bulkhead would be dredged to -30 MLLW. A channel from the new bulkhead area would be installed, extending to the existing federal channel.
- Material generated from dredging from creation of a CAD Cell (or from depending on timing and suitability) would be placed behind the bulkhead to fill the area to grade.
- The material behind the bulkhead would be compacted and/or allowed to drain and settle in order to create a surface with sufficient support.
- Tiebacks and whales, if necessary, would be installed to support the new bulkhead wall.
- Currently forested area on the remainder of the facility would be cleared and graded to meet the top of the bulkhead grade to create a relatively flat facility.
- Drainage structures would be installed.
- The surface of the new facility would be paved or a slab-on-grade would be installed.

2.1.2 Logistics, Timeline, and Budget

Logistics

The facility would be able to accept and unload all types of vessels necessary for receiving and sending of wind turbine parts as necessary for off-shore wind farm development. Wind turbine parts sent or received via rail, would be sent or received at the New Bedford Rail terminal, and could be staged there, if necessary, or transported by truck to and from the South Terminal Marine Industrial Park Development.

Cost

Summary of Total Project Costs

		Project Costs
Bulkhead Extension	Engineering Cost:	\$1,000,000.00
	Dredging Cost:	\$3,150,000.00
	Pier Improvements:	\$1,500,000.00
	Pier Expansion:	\$13,585,000.00
TOTAL PROJECT COST		\$19,235,000.00

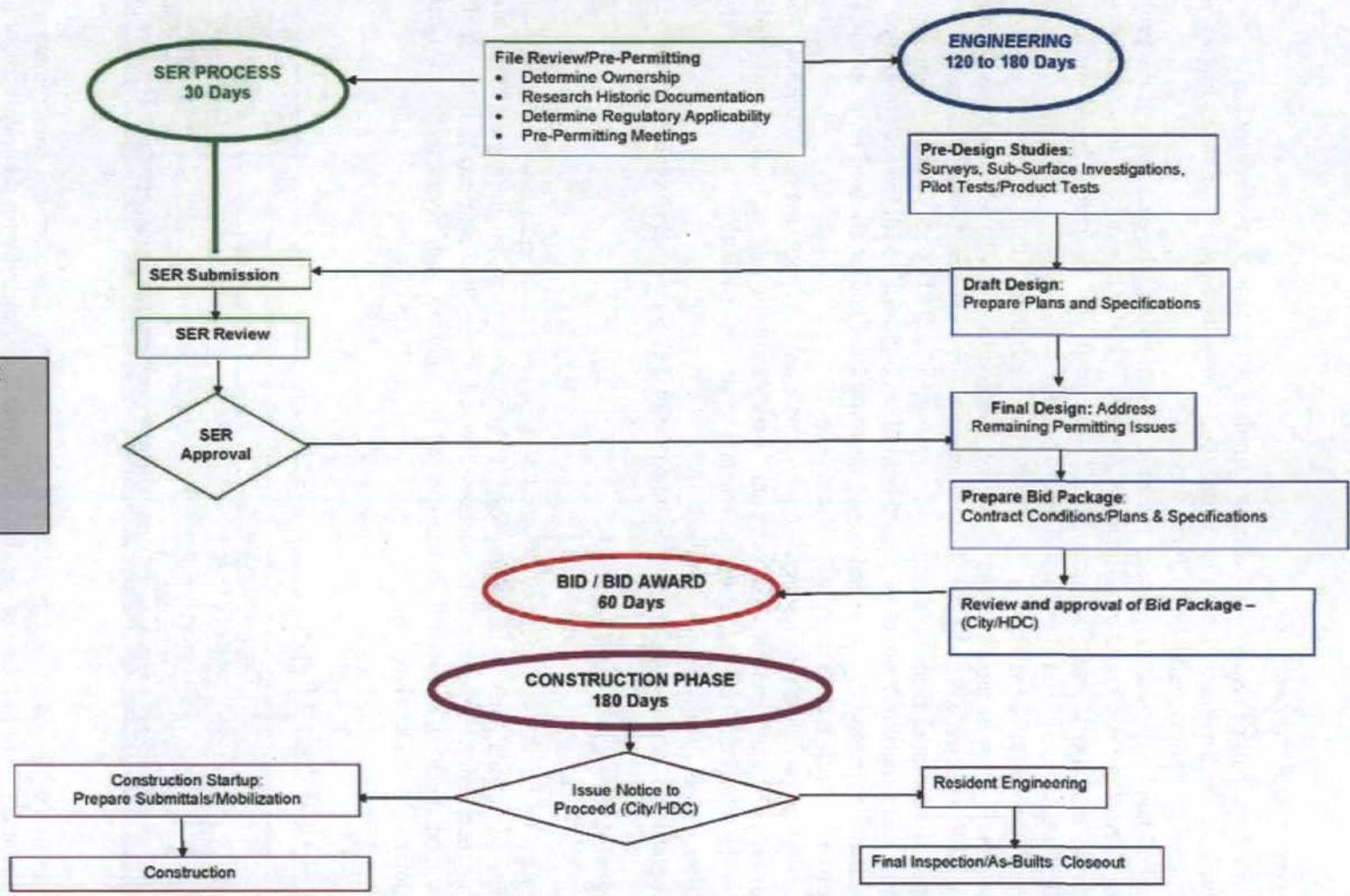
Timeline

The timeline of facility construction expected is 18 months. Accelerated construction of the facility is possible due to the pace of regulatory approvals associated with the involvement of the project in the State Enhanced Remedy (SER), which would be made possible through the use of CAD Cell material (or other benefit the facility may have associated with the Harbor sediment cleanup) in the construction of the WDSF facility. The following is a process flowchart that depicts the expected project time-line:

FLOWCHART OF PROCESS & TIME TABLE FOR PROPOSED ALTERNATIVE ENERGY HUB (SER PATHWAY)

FLOWCHART APPLICABILITY

1. Bulkhead Expansion
2. Dredging
3. Obstruction Removal



2.2 Pile Supported Pier Extension

This alternative involves utilization of a pile-supported pier instead of a bulkhead extension for the portion of the pier that would be over-water, and filling of the adjacent upland area to match grade. This option would also create a 19.95 acre (expandable to 22.72 acres) Marine Industrial Park facility with 1,000 linear feet of bulkhead space that could support vessels drafting up to 30 feet. This alternative is presented as an alternative that would minimize resource impacts. An engineering diagram of this option for the facility is included on the next page.

2.2.1 Engineering Requirements

The following steps will be required in order to complete the extension as envisioned:

- A pile supported pier will be installed along the existing bulkhead line to the south of South Terminal for approximately 800 linear feet. A bulkhead line will run along the existing shoreline where the pile-supported pier meets the upland area.
- The area in front of the pier would be dredged to -30 MLLW. A channel from the new bulkhead area would be installed, extending to the existing federal channel.
- Currently forested area on the remainder of the facility would be cleared and graded to meet the top of the bulkhead grade to create a relatively flat facility.
- Material generated from dredging from creation of a CAD Cell (or from depending on timing and suitability) would be used to fill the upland area.
- Drainage structures would be installed.
- The surface of the upland area would be paved or a slab-on-grade would be installed.

2.1.2 Logistics, Timeline, and Budget

Logistics

The facility would be able to accept and unload all types of vessels necessary for receiving and sending of wind turbine parts as necessary for off-shore wind farm development. Wind turbine parts sent or received via rail, would be sent or received at the New Bedford Rail terminal, and could be staged there, if necessary, or transported by truck to and from the South Terminal Marine Industrial Park Development.

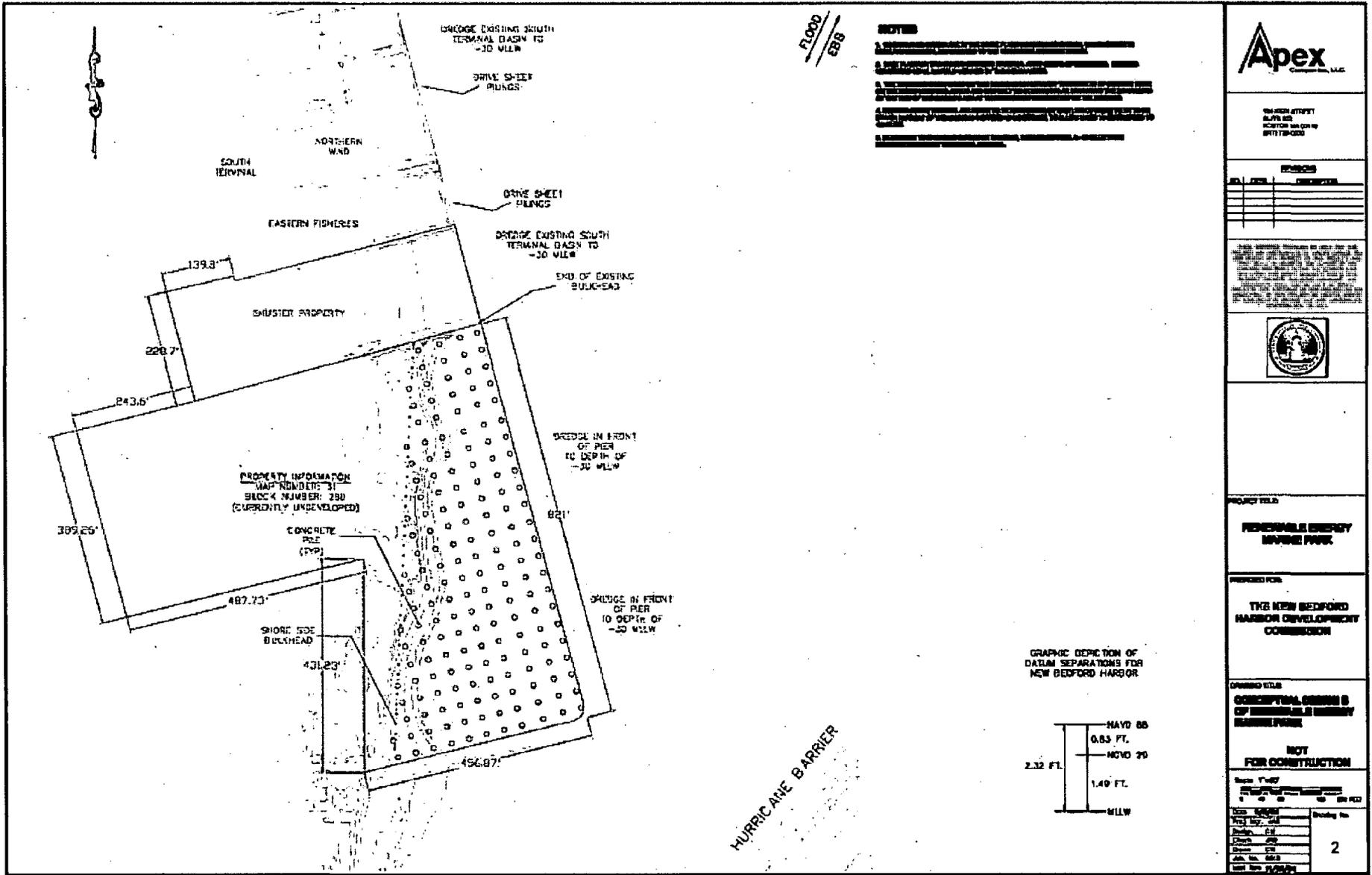
Cost

Summary of Total Project Costs

		Project Costs
Pile Supported Pier Extension	Engineering Cost:	\$1,000,000.00
	Dredging Cost:	\$3,150,000.00
	Pier Improvements:	\$1,500,000.00
	Pier Expansion:	\$16,339,000.00
TOTAL PROJECT COST		\$21,989,000.00

Timeline

The timeline of facility construction expected is also 18 months. Accelerated construction of the facility is possible due to the pace of regulatory approvals associated with the involvement of the project in the State Enhanced Remedy (SER), which would be made possible through the use of CAD Cell material (or other benefit the facility may have associated with the Harbor sediment cleanup) in the upland construction of a WDSF facility. The process flowchart outlined in Section 2.1.2 would still be applicable for this project.



Flood
EBB

NOTES

1. [REDACTED]
2. [REDACTED]
3. [REDACTED]
4. [REDACTED]
5. [REDACTED]



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PROJECT TITLE
FENWICK ENERGY MARINE PARK

PREPARED FOR
THE NEW BEDFORD HARBOR DEVELOPMENT COMMISSION

CONCEPT TITLE
CONCEPTUAL DESIGN B OF FENWICK ENERGY MARINE PARK

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Scale: 1"=40'
DATE: 11/11/2011
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Sheet No. **2**

2.3 Expansion of Dredge Footprint with Guiding Dolphins

This scenario involves some minor improvements to the existing facility, without build-out of an extension of a bulkhead or pier. Dredging would be completed to allow access for vessels up to 30 feet in draft to extend past the end of existing South Terminal to allow berthing of vessels up to 300 feet in length; however, direct dock access would be available for only approximately 180 feet of that vessel. Dolphins would be installed to guide the end of longer vessels, allow for tie-ups and keep the vessels from drifting. Approximately 11.99 acres (expandable to 14.76 acres) would be available for use as lay-down or assembly areas. A figure showing the layout of the work is shown on the following page as Figure 1.

2.2.1 Engineering Requirements

The following steps will be required in order to complete the extension as envisioned:

- Improvements to the existing pier will be implemented, including repair or restoration of the existing sheet pile bulkhead.
- Dredging will be completed to increase the draft in this area to 30 feet for the footprint of a 300 foot long vessel.
- Dolphins will be installed to guide the end of a vessel longer than 180 feet.

2.1.2 Logistics, Timeline, and Budget

Logistics

The facility would be able to accept and unload all types of vessels necessary for receiving and sending of wind turbine parts as necessary for off-shore wind farm development. The limitations of less storage and lay-down area and less direct bulkhead space could be alleviated through the use of an inventory process similar to Just-in-Time to avoid overcrowding of the facility. Additional storage and lay-down area could be made available within the Port (i.e., at the Rail Yard site). Wind turbine parts sent or received via rail, would be sent or received at the New Bedford Rail terminal, and could be staged there, if necessary, or transported by truck to and from the South Terminal Marine Industrial Park Development.

Cost

Summary of Total Project Costs

		Project Costs
Expansion of Dredge Footprint and Guiding Dolphins	Engineering Cost:	\$750,000.00
	Dredging Cost:	\$3,150,000.00
	Pier Improvements:	\$2,500,000.00
	Dolphins:	\$2,100,000.00
TOTAL PROJECT COST		\$8,500,000.00

Timeline

The timeline of facility construction is expected to be 12-18 months. Conventional permitting for this work could be utilized, as no CAD Cell material would be used, and therefore the project would not necessarily fall under the SER (unless upland filling were included and then the SER process could potentially be utilized if the upland fill area was beneficial to the removal of contaminated sediments from the Harbor). The process flowchart for this work is outlined on the following pages (after the figure showing the engineering layout):



PREPARED FOR: NEW BEDFORD HARBOR DEVELOPMENT COMMISSION
 PREPARED BY: APEX COMPANIES LLC.

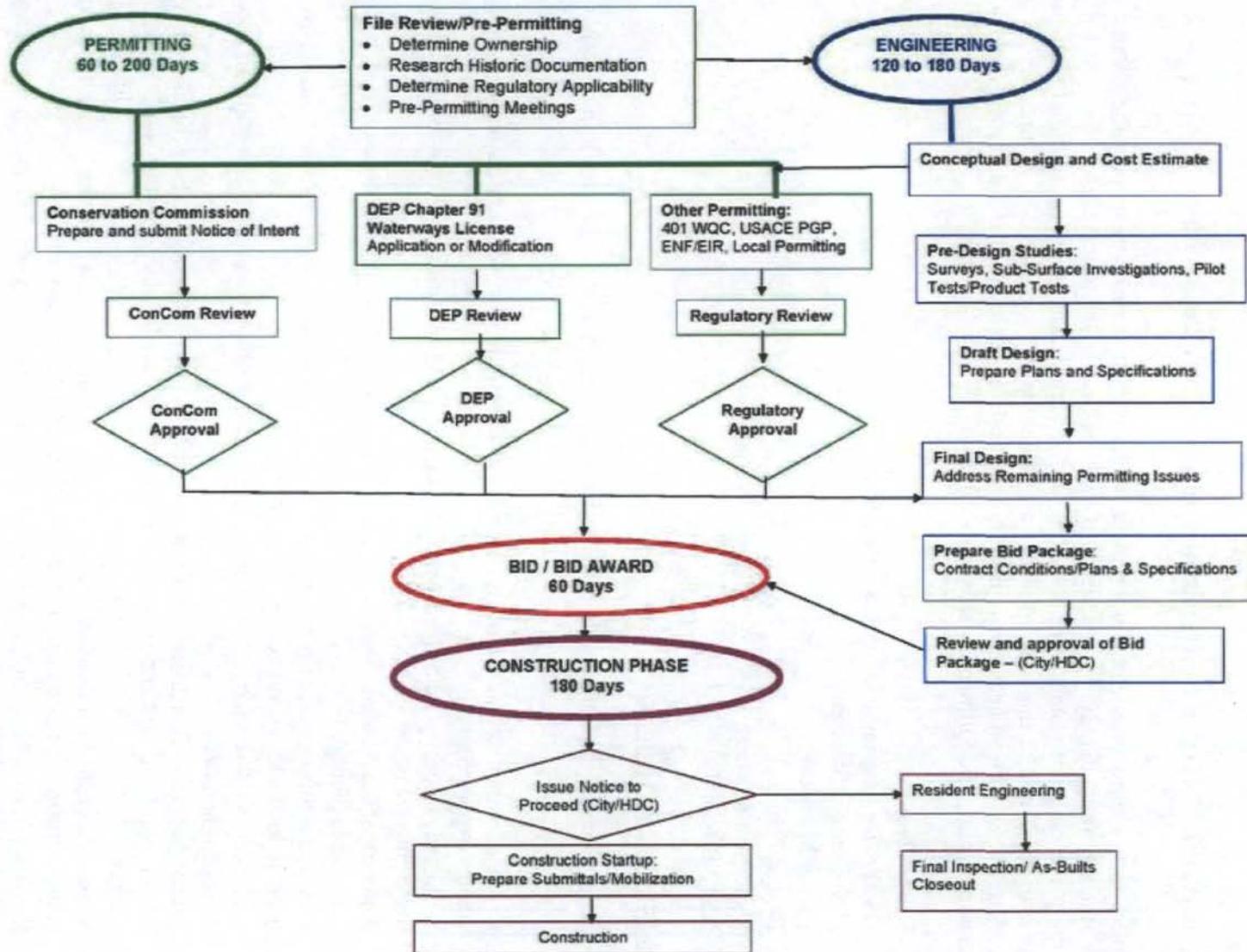
FIGURE 1
PROPOSED DREDGING SCENARIO 1
ADJACENT TO SOUTH TERMINAL
ALTERNATIVE ENERGY FACILITY

MARCH 27, 2009

Scale: 1"=80'



FLOWCHART OF PROCESS & TIME TABLE FOR NON-SER RELATED MARINE INFRASTRUCTURE PROJECTS



- FLOWCHART APPLICABILITY**
1. Dolphin Installation
 2. Bulkhead Repairs
 3. Piling Repairs
 4. Rail Line Rehabilitation
 5. Roadway Improvements

3.0 RAPID RESPONSE PLAN (Existing Infrastructure Capabilities)

The following sections provide an assessment of the Port's potential to support the alternative energy industry immediately. Assessment of all Port assets was undertaken, with the goal of identifying the range of potential options for supporting operations with a minimal start time (one year or less), and at minimal up-front cost. Each option considered is summarized in the sub-sections below with an accompanying summary table of positive attributes, issues, costs, and time to implement. The following sites were evaluated:

- South Terminal
- USEPA Dewatering Facility/CSX Rail Site
- New Bedford State Pier
- Packer Marine
- Bridge Terminal
- Fisherman's Wharf
- NSTAR Facility

Evaluation Process Criteria

There are multiple factors that come in to play in evaluating potential sites for Rapid Response logistics support:

- Depth of water at the facility bulkhead (is it sufficient to accommodate the types of vessels expected);
- Bulkhead Capacity and load-bearing capacity and condition of the bulkhead and unloading areas;
- Amount of Lay-down Area (is it sufficient to allow for the stock associated with a reasonable number of units).
- Unloading Infrastructure (Cranes)– What types and number of cranes will be required in order to load and unload vessels/rail cars/trucks.
- Rail Access – Does the site have rail access? Can coordination with a site with rail access be accommodated?
- Truck Access – Can trucks easily access the facility? Are there sharp turns that will hinder access in and out of the site? Are there restrictions to travel, such as nearby bridges?
- Vessel Access – Can vessels of all length and draft access the site? Are there any restrictions to access the site due to natural or engineered obstructions?
- Logistics – Are there multiples users at the Site? Would users (such as fishing or cargo vessels) be displaced? Would timeshare options need to be negotiated?

3.1 South Terminal (Non-build-out Scenario)

Although multiple scenarios were outlined in Section 2.0 regarding the full build-out of South Terminal, the facility can also be used immediately, with minimal investment.

3.1.A Existing Infrastructure

With the existing infrastructure, the following can be accomplished:

- An 11.99 acre (expandable to 14.76 acres) facility can be made available at South Terminal.
- 7 additional acres of space can be made available at the New Bedford Rail Yard.
- A 30,000 square foot building is present at the site.
- 180 linear feet of bulkhead space can be made available for unloading of barges that draft 20 feet or less.
- The bulkhead capacity at the facility is sufficient to support loading and unloading of equipment.
- Truck access is good.
- Vessel access is slightly restricted, due to potential vessel draft (20 foot maximum).
- For deeper draft vessel shipments and rail shipments, see "Intermodal Logistics" below.

3.1.B Investment Required to Make Project Ideal

- For unloading of deep draft vessels at State Pier, or transferring rail shipments to barges at North Terminal, and barging to South Terminal, two to three barges would be required.
- A small investment into clearing and paving the non-wetland areas of the site would be needed to meet this requirement.
- The estimated costs for the improvements at this site (excluding cranes) are \$862,300 (including paving at the nearby Rail Yard and rental of barges for trans-shipment).
Note: this cost does not include property purchase (estimated at \$1.5 MM for unexpanded facility), if property purchase is desired, this estimate should be included.
- Mobile, fixed, or barge-mounted cranes will also be required for loading and unloading vessels, barges, or rail cars (note that all options will require lease or procurement of cranes unless contractor hired to install offshore wind energy equipment supplies the needed cranes):
- Multiple other potential investments to increase the available lay-down area and berthing quantity are listed in Section 2.0 of this document.

3.1.C Intermodal Logistics

- The New Bedford Rail Yard can be a temporary staging facility to receive wind parts by rail, to be staged at the Rail Yard, or transferred by truck to South Terminal.
- The North Terminal facility can be used to transfer rail shipments of wind parts to barge, which can be transported to South Terminal.
- Larger vessels can be unloaded at State Pier, with parts being transferred by barge to South Terminal, where they can be unloaded and stored.

Table 3.1: South Terminal (Non-Build-Out Scenario) Rapid Response Attributes Summary Table

<i>Attribute</i>	<i>Useable As Is</i>	<i>Issues</i>	<i>Comments</i>
Lay-down Area	√		11.99-14.76 acres available in present state. 7 acres available at Rail Yard. Sufficient for immediate needs.
Depth of Water	√	Current depth of 20-feet.	Large vessels can be unloaded at State Pier (or Bridge Terminal), cargo transferred to smaller barges, which can be unloaded at South Terminal.
Bulkhead Capacity	√	180 feet of bulkhead available.	Large vessels can be unloaded at State Pier (or Bridge Terminal), cargo transferred to smaller barges, which can be unloaded at South Terminal.
Unloading Infrastructure		Cranes rental/purchase necessary for loading/unloading.	Cranes necessary for all locations.
Vessel Access	√		Location is close to Hurricane Barrier for easy access to facility.
Truck Access	√	Truck access is good.	Access to Route 18 and Route 195.
Rail Access		No direct rail access.	Rail can be unloaded at the New Bedford Rail Yard and transported by truck to facility. Rail can also be unloaded at North Terminal and barged to facility.
Logistics	√		Use is consistent with current uses.
Financial Considerations:			
1). Fixed crane or floating crane will need to be rented or purchased for offloading ship to shore.			
2). Dredging would be required to accommodate all types of vessels anticipated. Work-around for short term is receipt of deep draft vessels at State Pier or Bridge Terminal and trans-shipment by barge to South Terminal.			
Logistical Considerations:			
1). For shipments via rail cargo vessel, parts would need to be offloaded at either the rail yard or North Terminal (for rail shipments) or at State Pier (cargo vessel shipments) and reloaded onto truck or barge to reach South Terminal.			
Summary:			
1). South Terminal would require coordination with at least one other location within the harbor (South Terminal, Rail Yard or North Terminal). However, this location has a large amount of lay-down area, access for barges and sufficient bulkhead capacity, water depth, and access to allow sufficient ease of use.			
2). Timeframe: 3-6 Months to implement.			



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NEW BEDFORD, MA
02740

DRAWING TITLE:

SOUTH TERMINAL
MATERIAL LAY-DOWN
AREAS

Scale: 1"=150'



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3.2 USEPA Dewatering Facility / CSX Rail Site

The North Terminal USEPA Dewatering Facility/CSX Rail Site can also be used immediately, with minimal investment.

3.2.A Existing Infrastructure

With the existing infrastructure, the following can be accomplished:

- The USEPA Facility Site includes approximately 68,000 square feet (1.5 acres) of open space that could be used as staging or lay-down areas.
- An additional 305,000 square feet (7 acres) is available at the Rail Yard site across the street for additional storage and lay-down.
- 300 linear feet of bulkhead is available.
- An existing draft of 15 feet is available for vessels at the bulkhead.
- The bulkhead capacity at the facility is sufficient to support loading and unloading of equipment.
- Truck access is good.
- Rail access is present at the facility – traversing all the way to the bulkhead at the waters edge, connecting directly to the Rail Yard across the street.
- Direct load-out rail to ship is possible at this facility.
- Vessel access is slightly restricted, due to potential vessel draft (15 foot maximum), and due to a width restriction at the Route 6 bridge (maximum 90 feet).
- Shipments could be unloaded directly onto rail cars, and transported to the storage area at the rail facility.
- For deeper draft vessel shipments and rail shipments, see “Intermodal Logistics” below.

3.2.B Investment Required to Make Project Ideal

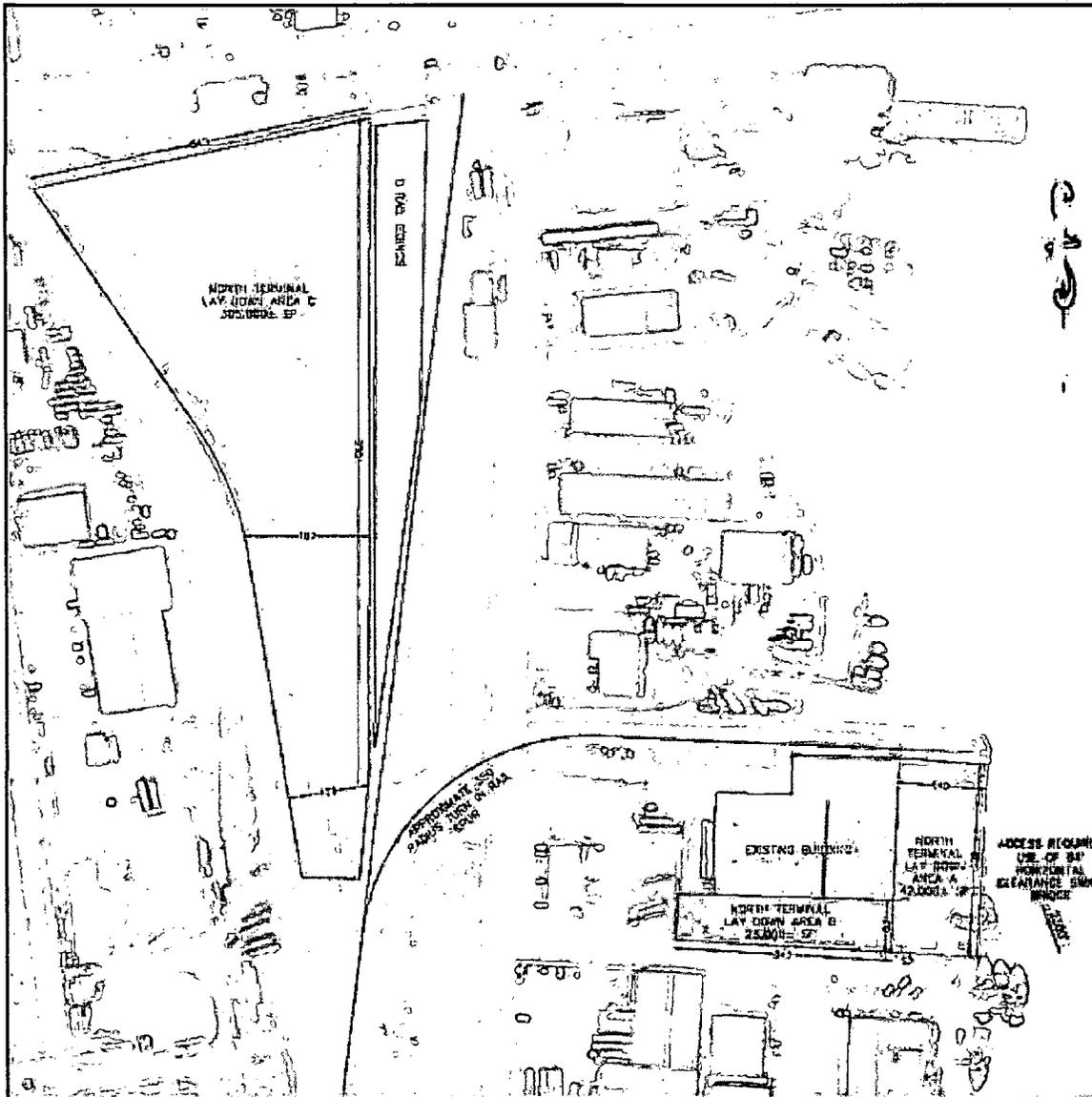
- For unloading deeper draft vessels at State Pier or transferring rail shipments to barges at North Terminal, two to three barges would be required (see Intermodal Logistics below).
- An investment in paving the Rail Yard site would enhance the utility of this option.
- The estimated costs for the improvements at this site (excluding cranes) are \$1,085,000 (including paving at the nearby Rail Yard and rental of barges for trans-shipment).
- Modification of (or lease of specialized) rail cars to allow for rail transport between the receiving area at the bulkhead and the Rail Yard (estimated at an additional \$750,000).
- The bulkhead is designed to be dredged for vessels of a draft of 30 feet. Due to the ability of the SER to facilitate dredging projects, the dredging at this facility could be completed quickly and relatively inexpensively (\$3.15M), if this were the chosen location.
- Mobile, fixed, or barge-mounted cranes will also be required for loading and unloading vessels, barges, or rail cars (note that all options will require lease or procurement of cranes unless contractor hired to install offshore wind energy equipment supplies the needed cranes).

3.2.C Intermodal Logistics

- The New Bedford Rail Yard (located across the street) can be utilized as a staging facility for wind parts received by rail, and also parts received by vessel delivery to North Terminal EPA Facility (and then transferred to the Rail Yard via the rail line between the two sites or by truck).
- Larger vessels can be unloaded at State Pier, with parts being transferred by barge to the North Terminal USEPA Facility, where they can be unloaded and stored or moved to the adjacent Rail Yard storage area.

Table 3.2: USEPA Dewatering Facility/CSX Rail Site Rapid Response Attributes Summary

<i>Attribute</i>	<i>Useable As Is</i>	<i>Issues</i>	<i>Comments/Benefits</i>
Lay-down Area	√		1.5 acres available with additional 7 acres across the street. Capacity sufficient for anticipated needs.
Depth of Water		Dredging required to meet deep-draft vessel depths.	Dredging can be completed quickly.
Bulkhead Capacity	√	Bulkhead is brand-new and is designed for 30 foot draft vessel.	Crane use can be implemented to load/unload rail cars and/or trucks.
Unloading Infrastructure		Cranes necessary for loading/unloading.	Cranes necessary for all locations.
Vessel Access	√	Route 6 Bridge restricts vessel widths to 90 feet.	15 foot water depth at present, expandable to 30-feet with dredging (can be conducted under SER). Good access to Federal Channel. 300-foot berthing area.
Truck Access	√		Good access to Route 18 and Route 195.
Rail Access	√		Existing rail line services facility - in excellent condition.
Logistics		Existing user at Site (USEPA): negotiated use-sharing would be necessary.	North Terminal is HDC-owned.
Financial Considerations:			
1). Fixed crane or floating crane will need to be rented or purchased for offloading ship to shore.			
2). Mobile crane will need to be rented or purchased for movement of material around the site.			
Logistical Considerations:			
1). Multiple Users: USEPA utilizes facility, and agreement will need to be worked out for use of facility with USEPA.			
2). Heavy equipment would need to be moved from vessel to rail cars or trucks and transferred to the Rail Yard.			
Summary:			
1). USEPA dewatering facility requires dredging for full implementation. Crane acquisition will be necessary.			
2). Minor dredging investment necessary to make utility ideal.			
3). Timeframe: 3-5 Months to implement.			

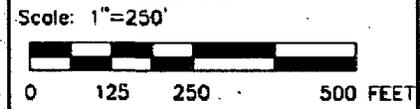


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DRAWING TITLE:
 NORTH TERMINAL
 MATERIAL LAY-DOWN
 AREAS



3.3 New Bedford State Pier

The New Bedford State Pier Site can also be used immediately, with minimal investment.

3.3.A Existing Infrastructure

With the existing infrastructure, the following can be accomplished:

- Approximately 171,000 square feet (3.9 acres) of open space that can be used for staging and/or lay-down areas.
- Additional storage space is available at the 7 acre Rail Yard site approximately 1/3 mile away.
- Can currently accommodate vessels with a draft of up to 30 feet on both the south and east sides of the pier.
- The south side of State Pier has over 700 feet of berthing space.
- The east side of State Pier has over 400 feet of berthing.
- The existing apron of pile-supported concrete decks surrounds the outermost 40-feet of the edge of the pier limits the ability of a mobile crane to assist in loading and unloading of wind turbine vessels, as the crane would need to be positioned adjacent to the vessel during unloading.
- However, the majority of State Pier is earthen-filled and can support the foundation required for a larger fixed crane. (the fixed crane would need to have to be of sufficient length to reach across the 40-foot wide pile supported apron around the edge of the pier to unload vessels).
- A floating crane, secured to a barge, could also be utilized to unload vessels directly on to the central, filled portion of the pier for storage and transportation.

3.3.B Investment Required to Make Project Ideal

- If additional space is required, an existing rail line connects State Pier to a large storage area (305,000 square feet or 7 acres) at the New Bedford Rail Yard located approximately ½ mile to the north. With rehabilitation, this rail line could transport material to the rail yard for unloading and storage (note there is a height restriction for rail transport under the Route 6 Bridge abutment).
- The estimated costs for the improvements at this site (excluding cranes) are \$914,760 (including paving at the nearby Rail Yard and rental of barges for trans-shipment).
- Mobile, fixed, or barge-mounted cranes will also be required for loading/unloading vessels, barges, or rail cars (note that all options will require lease or procurement of cranes unless contractor hired to install offshore wind energy equipment supplies the needed cranes).

3.3.C Intermodal Logistics

- The New Bedford Rail Yard (½ mile to the north) can be utilized as a staging facility for wind parts received by rail, and can be transferred by truck (or rail if upgrade of the rail line is undertaken) to State Pier.

Table 3.3: New Bedford State Pier Rapid Response Attributes Summary

<i>Attribute</i>	<i>Useable As Is</i>	<i>Issues</i>	<i>Comments/Benefits</i>
Lay-down Area	√		3.9 acres available.
Depth of Water	√		Can accommodate 30 foot draft vessel.
Bulkhead Capacity	√	Apron around outside of pier cannot support heavy loads.	Crane can load/unload over pile supported sides of pier.
Unloading Infrastructure		Cranes necessary for loading/unloading.	Cranes necessary for all locations.
Vessel Access	√		Excellent access to Federal Channel. No bridges. Long berthing area.
Truck Access	√		Good access to Route 18 and Route 195.
Rail Access		Rail line is in degraded condition; however, only minor effort needed to rehabilitate.	Existing rail line services facility.
Logistics		Existing users at Site (various): negotiated use-sharing would be necessary.	
Financial Considerations:			
1). Fixed crane or floating crane will need to be rented or purchased for offloading ship to shore.			
2). Mobile crane will need to be rented or purchased for movement of material around the site.			
Logistical Considerations:			
1). Multiple Users: Other users of State Pier could be accommodated at other locations within New Bedford Harbor.			
2). Heavy equipment would need to be moved from vessel directly to filled portion of pier.			
Summary:			
1). New Bedford State Pier is in ready-to-use condition for the primary attributes considered. Crane acquisition will be necessary. Rehabilitation of rail would increase flexibility of the use of the facility.			
2). Small investment needed for immediate implementation (plus the cost of cranes). Additional investment (rail) for full utility.			
3). Bulkhead rehabilitation would be ideal, but not necessary for use of the facility.			
4). Timeframe: 2-4 Months to implement.			

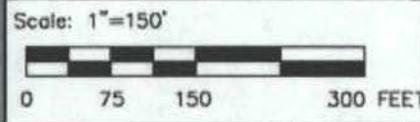


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DRAWING TITLE:
 STATE PIER
 MATERIAL LAY-DOWN
 AREAS



3.4 Packer Marine

The Packer Marine Terminal in New Bedford can also be used immediately, with minimal investment.

3.4.A Existing Infrastructure

With the existing infrastructure, the following can be accomplished:

- Packer Marine is located to the north of the USEPA dewatering facility and is across from the Rail Yard.
- The facility has approximately 90,000 square feet (2 acres) of open space that could be used as staging or lay-down areas for wind turbine shipments.
- Packer Marine can accommodate vessels with a draft of up to 18 feet.
- The facility has approximately 200 feet of berthing space along the east face of the property.
- The waters-edge portion of the property is a rip-rap slope – offloading would require a long-reach crane unless a new bulkhead were installed.
- The property is currently unpaved; paving would be required to make this site functional.
- An existing Ro/Ro ramp could be utilized.
- Additional storage is available at the Rail Yard located across the street from the facility.

3.4.B Investment Required to Make Project Ideal

- If additional space is required, a large storage area (305,000 square feet or 7 acres) exists at the New Bedford Rail Yard located directly across the street from the Site.
- Trans-shipment of materials from other terminals is anticipated (particularly if deep-draft vessels are required).
- The estimated costs for the improvements at this site (excluding cranes) are \$1,329,700 (including paving at the nearby Rail Yard and rental of barges for trans-shipment).
- Mobile, fixed, or barge-mounted cranes will also be required for loading/unloading vessels, barges, or rail cars (note that all options will require lease or procurement of cranes unless contractor hired to install offshore wind energy equipment supplies the needed cranes).
- Additional rehabilitation of the shoreline via installation of a bulkhead and dredging to -20-feet would enhance the utility of this site (potential additional estimated costs: \$1.2M)
- Addition of a rail spur to the Packer Marine site would allow for trans-shipment rail-to-vessel. Rail exists across the street from the site. Modification of the rail line to access the is possible (potential additional estimated cost: \$3M).

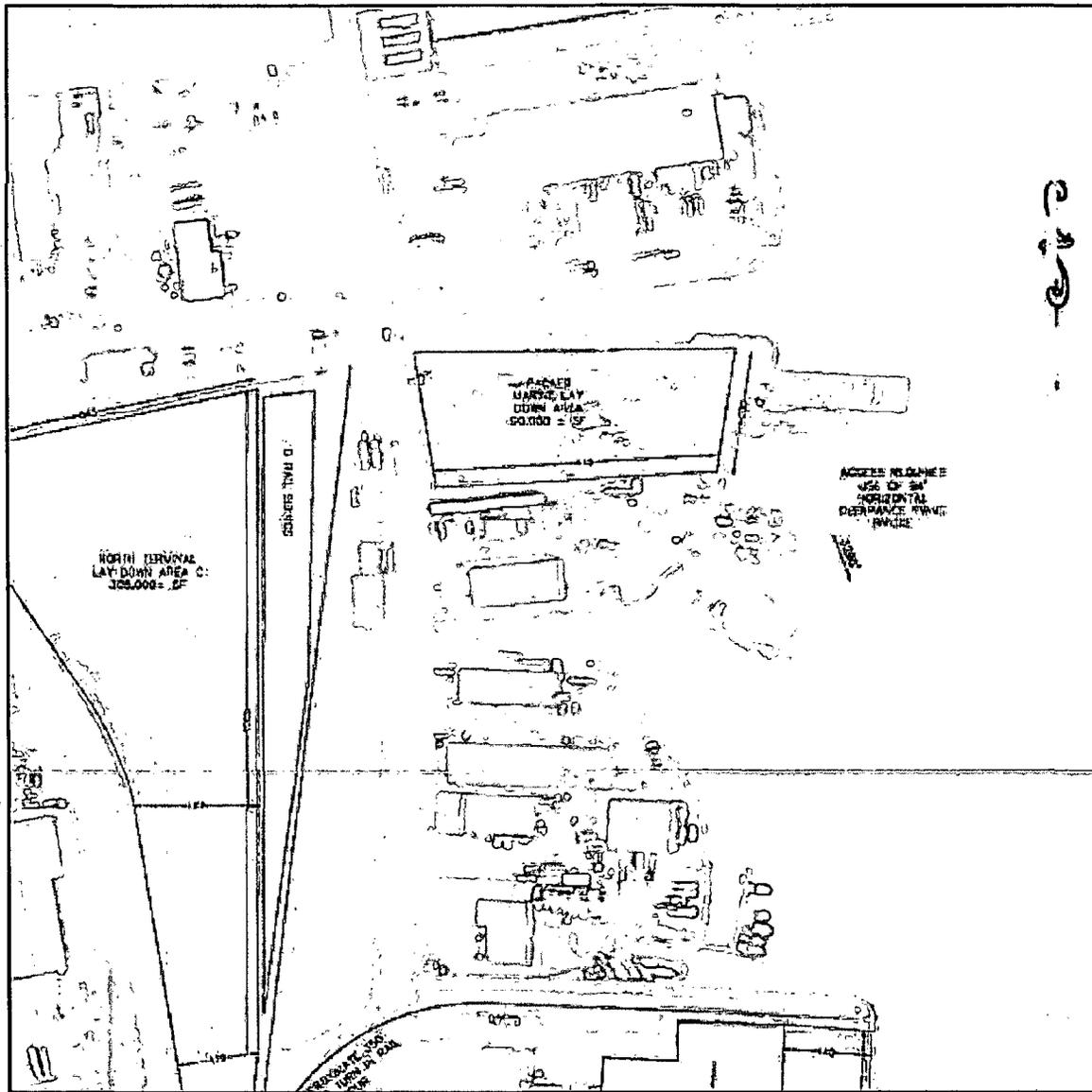
3.4.C Intermodal Logistics

- If additional space is required, trucks or barges could be used to transport materials received at the Packer Marine to the large storage area (305,000 square feet or 7 acres) at the New Bedford Rail Yard located across the street.

- Larger vessels can be unloaded at State Pier or Bridge Terminal, with parts being transferred by barge to the Packer Marine, where they can be unloaded and stored or moved by truck (or rail if a spur is installed) to the nearby Rail Yard storage area.

Table 3.4: Packer Marine Facility Rapid Response Attributes Summary

<i>Attribute</i>	<i>Useable As Is</i>	<i>Issues</i>	<i>Comments/Benefits</i>
Lay-down Area	√		2 acres available with 7 acres available at Rail Yard.
Depth of Water		Dredging required to meet ideal depths.	Current depth is only 18-feet. Dredging could be accomplished under the SER.
Bulkhead Capacity		Bulkhead would need to be installed. Improvements to surface necessary.	Crane use can be implemented to load/unload barges.
Unloading Infrastructure		Cranes necessary for loading/unloading.	Cranes necessary for all locations.
Vessel Access	√	Dredging required to meet desired depths.	Federal Channel access requires passage through the Rt. 6 Bridge.
Truck Access	√		Good access to Route 18 and Route 195. Ro/Ro ramp useable.
Rail Access			Rail access could be made available if a spur from the adjacent Rail Yard were extended to the site.
Logistics		Existing user at Site (Packer Marine): negotiated use-sharing would be necessary.	
Financial Considerations:			
1). Long-reach fixed crane or floating crane will need to be rented or purchased for offloading ship to shore.			
2). Mobile crane will need to be rented or purchased for movement of material around the site.			
3). Bulkhead will need to be installed to make site ideal. Dredging should be completed. Paving of site required.			
Logistical Considerations:			
1). Existing shipping facility already exists at the Site. Improvements for bulkhead repair will not require extensive permitting.			
Summary:			
1). Packer Facility is useable as is, but will require significant investment to be ideal, and has less-than-ideal lay-down area, requiring storage at adjacent Rail Yard.			
2). Timeframe: 6-10 Months to implement.			

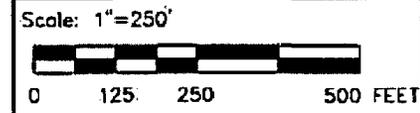


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DRAWING TITLE:
 PACKER MARINE
 MATERIAL LAY-DOWN
 AREAS



3.5 Bridge Terminal

The Bridge Terminal on Fish Island in New Bedford can also be used immediately, with minimal investment.

3.5.A Existing Infrastructure

With the existing infrastructure, the following can be accomplished:

- Bridge Terminal is located on the north side of Fish Island, immediately north of the Route 6 Bridge.
- The facility has approximately 58,000 square feet (1.3 acres) of open space that could be used as staging or lay-down areas for wind turbine shipments.
- The north side of the facility has approximately 250 linear feet of berthing space.
- Vessel draft of 23 feet can be accommodated.
- To utilize this facility, vessels would need to pass through the Route 6 Bridge, which has a width restriction of approximately 90 feet.
- Rail does not service this property and truck access must be via the Route 6 Bridge.
- The Bridge Terminal is owned and operated by a private entity, and use of the facility would require negotiation and time-sharing.

3.5.B Investment Required to Make Project Ideal

- Limited lay-down and storage area at the facility necessitates storage of materials, once received, at other locations in the Port. The near-by Rail Yard Site is a potential additional storage area.
- The estimated costs for the improvements at this site (excluding cranes) are \$1,114,500 (including paving at the nearby Rail Yard and rental of barges for trans-shipment).
- Mobile, fixed, or barge-mounted cranes will also be required for loading/unloading vessels, barges, or rail cars (note that all options will require lease or procurement of cranes unless contractor hired to install offshore wind energy equipment supplies the needed cranes).

3.5.C Intermodal Logistics

- If additional space is required, trucks or barges could be used to transport materials received at the Bridge Terminal to a large storage area (305,000 square feet or 7 acres) at the New Bedford Rail Yard located approximately ½ mile away.
- Larger vessels can be unloaded at State Pier, with parts being transferred by barge to the Bridge Terminal, where they can be unloaded and stored or moved by truck to the nearby Rail Yard storage area.

Table 3.5: Bridge Terminal Rapid Response Attributes Summary

<i>Attribute</i>	<i>Useable As Is</i>	<i>Issues</i>	<i>Comments</i>
Lay-down Area		Only 1-2 acres available.	Minimal on-site storage area available – components would need to be unloaded and trucked to other areas in Port for storage.
Depth of Water	√		Capacity sufficient for anticipated needs.
Bulkhead Capacity	√	North face of bulkhead useable, east face damaged and in need of repair.	Crane use can be implemented.
Unloading Infrastructure		Cranes rental/purchase necessary for loading/unloading.	Cranes necessary for all locations.
Vessel Access	√	Rt. 6 Swing Bridge limits vessel width. Short berthing area.	Access to Federal Channel through swing bridge between facility and Federal Channel.
Truck Access	√	Trucks must pass over portions of the Rt. 6 Bridge – access can be limited when Bridge is open.	Access to Route 18 and Route 195.
Rail Access		No rail access possible.	Island location – no rail access to island.
Logistics		Existing users at Site (Maritime Int./Norpel): negotiated use-sharing would be necessary.	
<p>Financial Considerations:</p> <ol style="list-style-type: none"> 1). Fixed crane or floating crane will need to be rented or purchased for offloading ship to shore. 2). Components would need to be moved by road to other location in the Port for storage until needed. South Terminal is potential storage area. 3) No costs for immediate utility. 			
<p>Logistical Considerations:</p> <ol style="list-style-type: none"> 1). Multiple Users: Coordination with existing user would be necessary. Sporadic nature of current shipments through this facility could accommodate schedule interface. 2). Truck access to facility is less than optimal. All materials received at this location would need to be trans-shipped to another location in the Port for storage. South Terminal is a possible temporary storage area. 			
<p>Summary:</p> <ol style="list-style-type: none"> 1). Bridge Terminal is in ready-to-use condition for the primary attributes considered, however it has limited lay-down area which would require trans-shipment to other areas of the Port for storage of components and truck traffic logistical issues are less-than-ideal. Crane acquisition will be necessary. 2). Costs for trans-shipment of components would need to be included in operational costs – other costs for immediate implementation include paving of Rail Yard storage area. 3). Bulkhead rehabilitation would be necessary (east face) if use of the full facility is desired. 4). Timeframe: 8-18 Months to implement. 			



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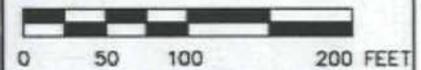
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DRAWING TITLE:

BRIDGE TERMINAL
 MATERIAL LAY-DOWN
 AREAS

Scale: 1"=100'



3.6 Fisherman's Wharf (Co-Op Wharf)

Fisherman's Wharf (Co-Op Wharf) in New Bedford can also be used immediately, with minimal investment.

3.6.A Existing Infrastructure

With the existing infrastructure, the following can be accomplished:

- Fisherman's Wharf is located immediately to the north of the New Bedford State Pier.
- The facility has approximately 70,000 square feet (1.6 acres) of open space that could be used as staging or lay-down areas for wind turbine shipments.
- Fisherman's Wharf can accommodate vessels with a draft of up to 20 feet.
- The Wharf has approximately 340 feet of berthing space along the east face of the pier.

3.6.B Investment Required to Make Project Ideal

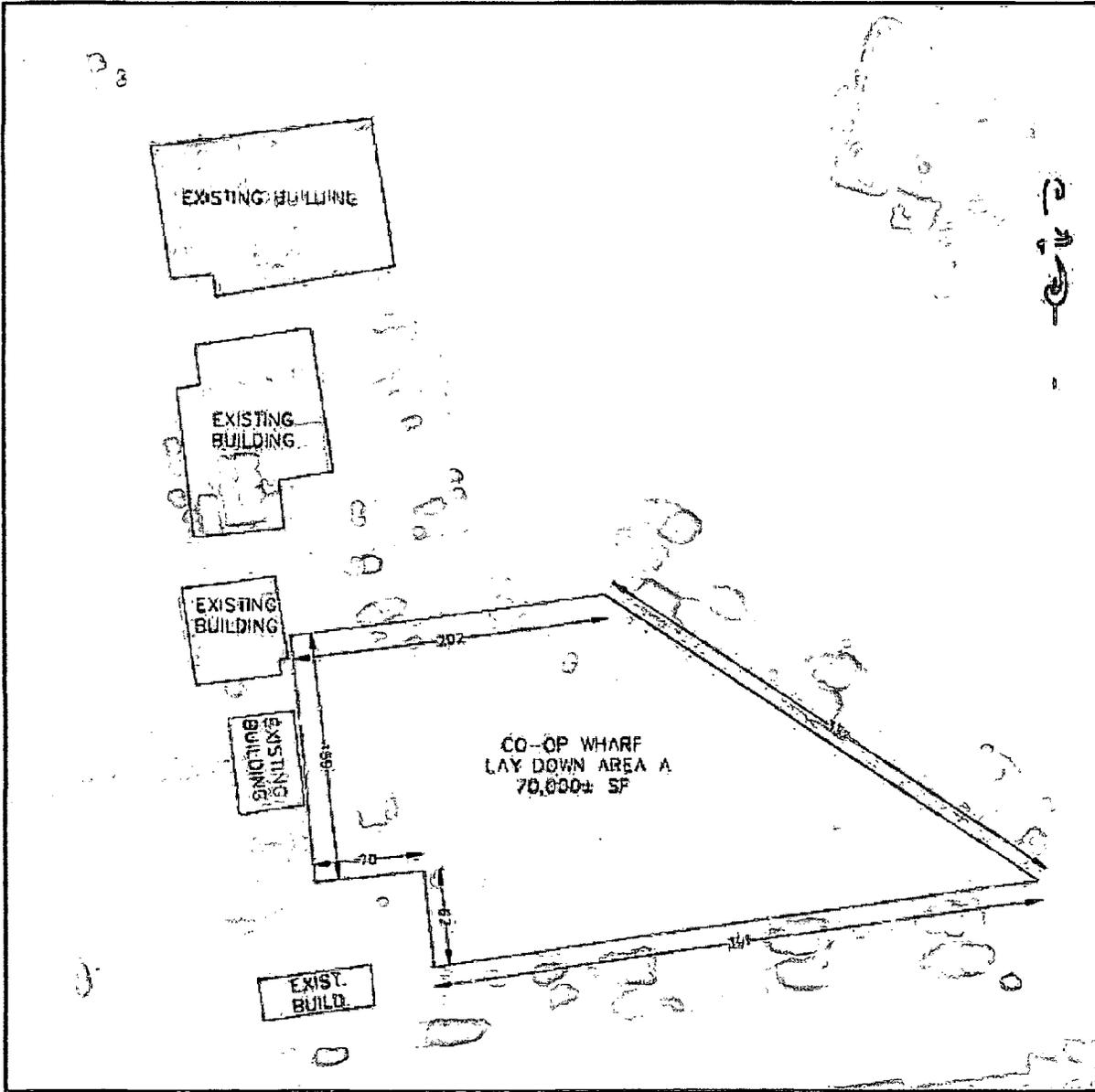
- The near-by Rail Yard Site is a potential additional storage area. Trans-shipment of materials from other terminals is anticipated (particularly if deep-draft vessels are required).
- The estimated costs for the improvements at this site (excluding cranes) are \$1,094,800 (including paving at the nearby Rail Yard and rental of barges for trans-shipment).
- Mobile, fixed, or barge-mounted cranes will also be required for loading/unloading vessels, barges, or rail cars (note that all options will require lease or procurement of cranes unless contractor hired to install offshore wind energy equipment supplies the needed cranes).
- Addition of a rail spur to the Wharf would allow for trans-shipment rail-to-vessel. An inactive rail line exists in front of the pier. Modification of the rail line to access the Wharf would necessitate the removal of several structures adjacent to the road fronting the property (potential additional estimated cost: \$3.5M).

3.6.C Intermodal Logistics

- If additional space is required, trucks or barges could be used to transport materials received at the Fisherman's Wharf to a large storage area (305,000 square feet or 7 acres) at the New Bedford Rail Yard located approximately ½ mile away.
- Larger vessels can be unloaded at State Pier, with parts being transferred by barge to the adjacent Fisherman's Wharf, where they can be unloaded and stored or moved by truck to the nearby Rail Yard storage area.

Table 3.6: Fisherman's (Co-Op) Wharf Rapid Response Attributes Summary

<i>Attribute</i>	<i>Useable As Is</i>	<i>Issues</i>	<i>Comments</i>
Lay-down Area	√	Only 1-2 acres available.	Relatively small on-site storage area available – additional storage at State Pier or Rail yard, some components would likely need to be moved to those facilities unless a just-in-time component inventory approach were utilized.
Depth of Water	√	Some minor dredging required.	Minor dredging required to make capacity sufficient for anticipated needs.
Bulkhead Capacity	√	Some minor bulkhead repair may be necessary.	Crane use can be implemented. Operations would displace existing fishing vessels that currently berth at facility.
Unloading Infrastructure		Cranes rental/purchase necessary for loading/unloading.	Cranes necessary for all locations.
Vessel Access	√		Direct access to Federal Channel.
Truck Access	√	Trucks would need to negotiate sharp turn into facility and would be turning directly in front of and adjacent to the City's Information and Welcome Center – pedestrian traffic a potential issue.	Access to Route 18 and Route 195, though several sharp turns required.
Rail Access		Installation of spur would be required from line in front of pier. Demolition of existing structures would be required for required rail spur installation to allow for rail turning radius.	Rail line passes in front of pier, in order for rail spur to be extended onto pier, several structures (including walkway over Rt. 18) would need to be demolished for turning radius requirements.
Logistics		Existing users at Site (various): negotiated use-sharing would be necessary. Action would displace up to 20 Fishing Vessels.	
<p>Financial Considerations:</p> <p>1). Fixed crane or floating crane will need to be rented or purchased for offloading ship to shore.</p> <p>2). Smaller than optimal lay-down area. Components would need to be moved by road to other location in the Port for storage until needed. State Pier and Rail Yard are potential storage areas. Also trans-shipment to South Terminal by road or barge possible. South Terminal could be utilized for storage and then components could be transferred to barges for transport to offshore project site.</p>			
<p>Logistical Considerations:</p> <p>1). Multiple Users: Multiple fishing vessels berth at this facility. Coordination with existing user would be necessary.</p> <p>2). Truck access to facility is less than optimal. Unless just-in-time strategy is utilized for component assembly, some materials received at this location would need to be trans-shipped to another location in the Port for storage. It is estimated that the components of between 3 and 5 wind towers could be stored at this location at one time. State Pier, the Rail Yard, and South Terminal are possible temporary storage areas.</p>			
<p>Summary:</p> <p>1). Fishermans (Co-Op) Wharf would require some dredging in order to accommodate all potential vessels. Small lay-down area would necessitate trans-shipment of components to other locations in the Port for storage unless JIT inventory practices utilized. Crane acquisition will be necessary.</p> <p>2). Cost for immediate implementation include paving of nearby Rail Yard for additional storage. Cost for trans-shipment of materials within Port would need to be included in operational costs unless JIT inventory practices used.</p> <p>3). Timeframe: 8-18 Months to implement.</p>			

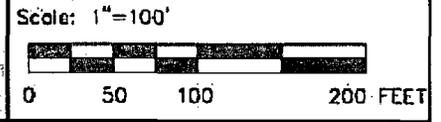


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DRAWING TITLE:
CO-OP WHARF
MATERIAL LAY-DOWN
AREAS



3.7 NSTAR Facility

The NSTAR Facility on New Bedford's waterfront can also be used in a short timeframe, with minimal investment.

3.7.A Existing Infrastructure

With the existing infrastructure, the following can be accomplished:

- The NSTAR facility is located immediately north of South Terminal in New Bedford Harbor.
- The facility currently has a 109,000 square foot (2.5 acre) filled pier that extends eastward into New Bedford Harbor.
- The filled pier can be finished with an asphalt or concrete coat and will provide a staging or lay-down area for wind turbine shipments.
- A rehabilitation of the bulkhead can be accomplished through the installation of new bulkhead sheeting on the north shore of the facility, which can extend for approximately 395 linear feet.
- Dredging can be completed in front of the (rehabilitated) bulkhead to accommodate vessels that can draft up to 30 feet.

3.7.B Investment Required to Make Project Ideal

- Bulkhead improvements, pavement of the lay-down area, and dredging would be required to make this site ideal. Additional lay-down area is available at the nearby Rail Yard.
- The estimated costs for the improvements at this site (excluding cranes) are \$3,861,760 (including paving at the nearby Rail Yard and rental of barges for trans-shipment).
- Mobile, fixed, or barge-mounted cranes will also be required for loading/unloading vessels, barges, or rail cars (note that all options will require lease or procurement of cranes unless contractor hired to install offshore wind energy equipment supplies the needed cranes).

3.7.C Intermodal Logistics

- If additional space is required, trucks or barges could be used to transport materials received at the NSTAR Facility to a large storage area (305,000 square feet or 7 acres) at the New Bedford Rail Yard located approximately 1 mile away.
- Larger vessels can be unloaded at State Pier, with parts being transferred by barge to the NSTAR Facility, where they can be unloaded and stored or moved by truck to the nearby Rail Yard storage area.

Table 3.7: NSTAR Facility Rapid Response Attributes Summary

<i>Attribute</i>	<i>Useable As Is</i>	<i>Issues</i>	<i>Comments/Benefits</i>
Lay-down Area			2.5 acres available with 7 acres available at railyard. Capacity insufficient for anticipated needs.
Depth of Water		Dredging required to meet minimum depths.	
Bulkhead Capacity		Bulkhead would need to be installed. Improvements to surface necessary.	Crane use can be implemented to load/unload rail cars.
Unloading Infrastructure		Cranes necessary for loading/unloading.	Cranes necessary for all locations.
Vessel Access	√	Dredging required to meet minimum depths.	Excellent access to Federal Channel. Long berthing area.
Truck Access	√		Good access to Route 18 and Route 195.
Rail Access			No rail access.
Logistics		Existing users at Site (NSTAR/Sprague Energy): negotiated use-sharing would be necessary.	
Financial Considerations:			
<ol style="list-style-type: none"> 1). Fixed crane or floating crane will need to be rented or purchased for offloading ship to shore. 2). Mobile crane will need to be rented or purchased for movement of material around the site. 3). Bulkhead will need to be installed. Dredging completed. Paving of site required. 			
Logistical Considerations:			
<ol style="list-style-type: none"> 1). Existing filled pier is already in existence. Improvements for pier will not require extensive permitting. 			
Summary:			
<ol style="list-style-type: none"> 1). NSTAR facility requires significant investment to be ideal. Movement of materials to the Rail Yard for storage is likely, as the facility would likely not provide sufficient lay-down area for full implementation. 2). Timeframe: 12-18 Months to implement. 			



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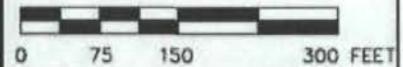
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DRAWING TITLE:

N-STAR FACILITY
 MATERIAL LAY-DOWN
 AREAS

Scale: 1"=150'



3.8 Comparative Analysis of Rapid Response Options

The following is a summary table comparing the various Rapid Response option locations. The South Terminal location is ranked the highest location (even in the short-term). Note that none of the costs reported include crane purchase or rental. (Note: It is assumed that the contractor that is selected to assemble and install the wind energy towers will supply the cranes that will be used to unload the raw materials and move those materials around on the site. Based upon similar site crane utilization, 250-metric-ton crawler cranes would likely represent ideal equipment for the sites that do not require long-reach. Industry estimates of the cost of such cranes at the time of this assessment range from \$2.8M - \$3.4M; it is anticipated that two such cranes will be required (one for unloading and one to move material on the site – resulting in a potential crane investment of approximately \$5.6M).

Table 3.8: Summary of Analysis of Rapid Response

Rank	Location	Attributes	Improvements Necessary (Exclusive of Cranes)	Time to Implement	Cost
1	South Terminal (Non-build out scenario)	Bulkhead sufficient. 180 feet of berthing space. Sufficient lay-down area. Trans-shipment from other areas (North Terminal for rail, State Pier for deep draft vessels) needed for large vessels.	Clear and fill upland area. Barge rental (3) for trans-shipment.	3-6 Months	\$862,300.
2	US EPA Facility/ Rail Site	Bulkhead sufficient. Small lay-down area. Dredging needed for full use. Rail available. Access Rail Yard required.	Paving of Rail Yard lay-down area. Barge rental (3) for trans-shipment.	3-5 Months	\$1,085,000.
3	New Bedford State Pier	Aprons not structurally sound. Water depth sufficient as is. Multiple high-value users would be displaced.	Paving of Rail Yard lay-down area for additional storage.	2-4 Months	\$914,760.
4	Packer Marine	Bridge vessel restriction. Insufficient draft. Insufficient lay-down area. No rail.	Dredging to expand access. Paving of Rail Yard lay-down area. Barge rental (3) for trans-shipment.	6-10 Months	\$1,329,700.
5	Bridge Terminal	Bridge vessel restriction. Poor condition of east bulkhead. Insufficient lay-down area. Poor truck access. No rail.	Bulkhead rehabilitation. Paving of Rail Yard lay-down area. Barge rental (3) for trans-shipment.	8-18 months	\$1,114,500
6	Fisherman's Wharf (Co-Op Wharf)	Good channel access. Sufficient bulkhead. Spot dredging needed. Lay-down area small. No rail. Would displace fishing vessels.	New Location for displaced fishermen. Barge rental (3) for trans-shipment. Paving of Rail Yard lay-down area.	8-18 Months	\$1,094,800
7	NSTAR Facility	Open area sufficient for 1.5 acres of lay-down area available (less optimal). Paving of lay-down area required. Bulkhead improvement and dredging required. No rail.	Paving of area, dredging and bulkhead. Paving of Rail Yard lay-down area. Barge rental (3) for trans-shipment.	12-18 Months	\$3,861,760