RETURN TO SER AR INDEX

Responses to USEPA's 6/26/12 Questions

1. **Question:** Please provide a detailed description of the newly proposed project revisions, including engineering plans and elevations (cross sections) showing the revised project design, including the expanded deep draft quay-side areas, the new 50 foot expansion of the navigational channels, the resultant expansion of CAD cell #3, the reduced northern mooring area, the expanded winter flounder spawning habitat creation area, the expanded OU-3 capping mitigation area, and any other changes or revisions proposed for the project that are not reflected in the current plan sets and figures. Figures 2, 5, 10, 11 and similar figures representing the proposed project should be updated to include all revisions.

   Response: The revised plans for the project include engineering plans for the expansion of the winter flounder spawning habitat creation area, the expanded OU-3 capping mitigation area, and the reduction in the mooring mitigation dredge area. Updated plans outlining the potential expansions/reductions for these proposed work elements are attached as **Attachment A**. The channel expansion and deep-draft expansion items noted in the plans represent construction elements that are not part of the currently proposed facility plans and currently are not expected to be constructed, but could become contractual alternate add-ons in the future. Updated engineering plans outlining the potential expansions of the proposed work for the possible channel expansion and expansion of the deep-draft area have been created and are also attached in **Attachment A.** These attachments show the proposed outlines of the areas that the Commonwealth would anticipate impacting should the Commonwealth implement any of the optional items that were presented for EPA's consideration within the within the Commonwealth's June 18, 2012 submittal to EPA. The plans include:

   - Alternate plans P-2.1, P-2.2, P-2.3, P-2.5, and P-2.6 which show the draft plans for the Top of Dredge, Intermediate Dredge and Bottom of Dredge, should the Commonwealth decide to pursue both the expanded channel and expansion of the deep-draft area at the terminal to the north and south.
   - Plans P-2.8 and X-2.4, which outline the reduction in the size of the Northern Mooring Mitigation Area.
   - Replacement plans P-5.1, P-5.2 and X-5.1, which reflect the increased mitigation associated with the Winter Flounder Mitigation Area and the OU-3 Capping Mitigation Area, and should replace plans of the same name included within Attachment A of the Commonwealth's June 18, 2012 submission to EPA.
   - Alternate plans P-13, P-14, P-26, and X-4 which outline the largest anticipated configuration for CAD Cell #3. Please note that this largest configuration for CAD Cell #3 was the basis for the Commonwealth's determination that the resource area impacts for CAD Cell #3 would be 8.76 acres. The CAD Cell #3 design included within the Commonwealth's responses to EPA questions submitted on June 18, 2012 contained a smaller configuration for CAD Cell #3, one which did not include the potential increases in size to the channel or

SDMS Doc ID 523859

deep-draft berth, and whose impact is approximately 6.3 acres. Please see the answer to EPA's Question 5 below for additional explanation.

- Revised Figures: 2, 3, 6, 8, 10, and 11 from the Commonwealth's January 18, 2012 submittal to EPA.
- An updated General Site Plan previously included as Attachment H of the Commonwealth's June 18, 2012 submittal to EPA.

A revised Figure 5 is awaiting the results of wetland flagging which is currently being completed by the Commonwealth. The revised Figure 5 will accompany the Commonwealth's response to Question 4, which will be submitted as soon as they are complete.

2. **Question:** Please provide information that describes the impacts associated with disposal of dredged material into the CAD cells (referenced on page 14).

   Response: Disposal of dredged material into CAD Cell #2 and CAD Cell #3 involves the deposition, via split-hull scow, of material mechanically dredged into the CAD Cell via gravity. Minor re-suspension of sediment is anticipated to take place associated with disposal of sediment within the CAD Cell. For a detailed analysis of the environmental impacts of re-suspension of sediment due to dredging and disposal of sediment, please review Section 6.4.5.9, Impairment of Water Quality, of the Commonwealth's Essential Fish Habitat Assessment (pages 193 to 198 of the Commonwealth's January 18, 2012 submittal to EPA).

   The Commonwealth also conducted multiple studies associated with potential re-suspension and potential consequential environmental impacts in its Draft and Final Environmental Impact Assessment associated with the Dredge Materials Management Plan for New Bedford Harbor completed in 2003. Please see Appendices D through K of the Commonwealth's Final Environmental Impact Report for New Bedford and Fairhaven's Dredge Materials Management Plan. The link to that document is:

   http://www.mass.gov/czm/dredgereports/2003/feirnb-f.htm

   Finally, the U.S. Army Corps of Engineers document titled "Assessment of Contaminant Loss and Sizing for Proposed Lower Harbor Confined Aquatic Disposal Cell", dated May 2010 assessed re-suspension of sediment associated with a proposed 300,000 cubic yard Confined Aquatic Disposal Cell under design by USEPA. The Commonwealth anticipates that USACE's modeling would likely be similarly representative of the potential re-suspension that would be associated with the Commonwealth's proposed CAD Cell #3.

3. **Question:** The last two sentences of the response to Question 4A on page 21 are confusing. Please clarify whether the 0.18 acres of salt marsh is or is not included in the 1.94 acre calculation of intertidal area.

Response: The 0.18 acres of salt marsh are not included within the 1.94 acre calculation of intertidal area. These are considered two separate resource area impacts by the Commonwealth and the two numbers do not overlap.

4. **Question:** On page 22, the submission discusses two wetlands on the upland portion of the site. Based on the description and revised Figure 5 (Attachment N) these wetlands appear to be adjacent to (i.e., neighboring) a traditionally navigable water (New Bedford Harbor), rather than isolated, and therefore are likely subject to federal jurisdiction. Please identify the total acreage of these wetlands and provide any other currently available information, including a description of the vegetation, soils and hydrology present and any photographs that depict these areas.

   Response: Based on a prior assessment undertaken by Commonwealth and EPA staff last year, the Commonwealth questions whether the areas in question qualify as wetlands. Nevertheless, these areas are currently being re-delineated by the Commonwealth in order to provide the additional information that EPA is requesting. The results of this re-delineation will be submitted as soon as they are completed, as well as an updated Figure 5, which will reflect any changes in the outlines of the updated re-delineation of the wetland areas. In the meantime, the Commonwealth will continue to explore ways to confirm the conclusions reached last year.

5. **Question:** According to page 10, the size of the CAD cell is unchanged from the January 18, 2012 submittal. However, page 28 refers to "associated increases in the size of CAD cell #3 to accommodate additional impacted dredge spoils for disposal." Please describe how much larger the CAD cell will be, what additional impacts will result from its expansion, and what additional mitigation is proposed.

   Response: The 8.76 acre impact area associated with CAD Cell #3 listed on page 10 of the Commonwealth's June 18, 2012 submittal to EPA (8.76 acres) is based upon the anticipated largest CAD Cell that would potentially be constructed in association with the anticipated work. While this larger (8.76 acres) CAD Cell is not part of the current project plans, it is possible that the larger CAD Cell may be needed if other project alternatives become realities, and therefore the design for the larger CAD is being submitted for EPA's consideration. The design for that larger CAD Cell is attached to this document as **Attachment A**, which includes designs for Top of CAD #3, Bottom of CAD #3, Cross Sections, and a CAD #3 disposal plan for the largest CAD Cell anticipated by the Commonwealth, which, again, is correlated with the 8.76 acres of impact.

   The design forwarded to EPA as Attachment A to the Commonwealth's June 18, 2012 response to EPA Questions is a smaller CAD Cell, associated with the 600 foot deep-draft quay-side, 175 foot wide channel, and 100 foot wide tug channel (without dredging in the Federal Channel). That design of CAD Cell #3 correlates to a smaller area of impact (approximately 6.3 acres).

The current proposed mitigation associated with this project assumes that the larger (i.e. 8.76 acre) CAD Cell will be constructed, even though the Commonwealth currently anticipates that only the smaller (i.e. approximately 6.3 acre) CAD Cell will be constructed in association with this project. Therefore, the Commonwealth does not anticipate a larger CAD Cell impact than the 8.76 acres stated on page 10 of the Commonwealths June 18, 2012 submittal and therefore no additional mitigation is proposed.

6. **Question:** We have a number of questions related to the turbidity information provided in response to Question 5L, pages 34-36. First, the January 18, 2012 submission referenced the potential use of tackifiers and polymer emulsions to temporarily stabilize construction areas. EPA had asked for more details about their use (see Question 5L on page 34) but the response does not address the question. Please provide a response to this question, as it may have a bearing on potential contamination of stormwater. Second, please explain the basis (i.e., literature-based, water quality standards-based, etc.) for the criteria for permissible turbidity increases mentioned in the response to Question 5L (pages 34-36), and in particular whether these are sufficient to protect existing and designated uses. Third, please explain the basis for the proposed locations of turbidity monitoring stations at 200 feet up- and down-current from the dredging activity, mentioned in the response to Question 5L (page 34-36). Fourth, when silt curtains are used, the proposal is to locate the monitoring station outside and within 15 feet of the silt curtain. Please state how far from the activity the silt curtain will be placed.

Response: The Commonwealth has re-evaluated its statements regarding the use of tackifiers and polymer emulsions associated with application of straw mulch for soil stabilization that were contained within its January 18, 2012 submission to EPA. The Commonwealth is also revising the time periods for which the temporary stabilization measures should be implemented. The following temporary measures for stabilization of soil stockpiled onsite and for exposed areas are proposed:

- For Dredge Material to be Utilized Within the New Bedford Marine Commerce Terminal or the Former Dartmouth Finishing Site: Stockpiles and areas to be left bare for more than 15 days shall be treated with air dried wood chip mulch or seeded with perennial fescue-grass.
- For “Upper Existing Material”: Stockpiles and areas to be left bare for more than 7 days shall be treated with air dried wood chip mulch or seeded with perennial fescue-grass.

The use of tackifiers and polymer emulsions is hereby rescinded.

EPA’s second, third, and fourth points are associated with the State Enhanced Performance Standards, which were promulgated by MassDEP, and have been utilized within the context of the Navigational Dredging within New Bedford Harbor since 2004, in collaboration and under the oversight of EPA. MassDEP has provided

the following background information regarding the genesis of the SER Performance Standards:

- The provision related to turbidity is a subjective, not a quantitative standard in the Commonwealth of Massachusetts. The Commonwealth of Massachusetts' Surface Water Quality Standard: 314 CMR 4.05(2)(b)(6) provides that "waters shall be free from color and turbidity in concentrations that are aesthetically objectionable or would impair any use assigned to the Class."
- New Bedford Harbor is a Class B water, which requires consistently good aesthetic value.
- MassDEP typically applies a 50 NTU standard, taking background into consideration, as an upper limit for turbidity caused by dredging. If that level is detected in sampling, all dredging must stop until subsequent monitoring shows a level < 50 in the sampling area.
- MassDEP typically uses 25 NTUs as an action level to trigger that additional mitigation measures be introduced to reduce turbidity in order to avoid reaching the exceedance threshold.
- These levels have been historically approved/adopted by the ACOE in the dredging permits that MassDEP has been jointly involved in within the Commonwealth of Massachusetts.
- MassDEP have used its best professional judgment in setting these levels. The basis of the values has been a visual comparison of the relative opacity of water samples at different turbidity as measured via NTUs.
- The action levels proposed in the ARAR are significantly lower, and therefore arguably more protective, than the action levels typically conditioned in other dredge permits.

There is no evidence from the multiple dredging projects approved under the 50NTU level, or the more conservative ARAR level applied in the existing SER Performance Standards associated with prior Harbor navigational dredge projects, that indicates that these standards have resulted in impairment to aquatic life, particularly winter flounder spawning or the alewife fish run, or the impairment to the use of the water for recreational purposes.

7. **Question:** The response to Question 7D on page 40 acknowledges that the tern survey planned for Spring/Summer of 2012 has not been completed. Please state when it will be completed.

   Response: EPA's statement is correct. The Commonwealth has agreed to conduct the tern survey as mitigation for the impacts associated with its proposed project, and will proceed with the survey once the Commonwealth is assured that the project may move forward. As terns are migratory birds, the best time to conduct the survey will be in the Spring/Summer, after the project has been approved. At this time, and under the Commonwealth's anticipated schedule for approval of the project, the Commonwealth anticipates conducting the survey during the Spring/Summer of 2013.

8. **Question:** Regarding the flood storage loss issue, the response on page 42 to Question 7F describes the Marsh Island mitigation project and states that "the final volume of material to be removed from the flood storage band of +2 to +6 NGVD29 is unknown at this time...," but later states that the "project has been designed and is the process of being permitted." Please obtain and provide the information necessary to enable an evaluation to be made of the flood storage capacity between +2 and +6 that will result from this mitigation project, or if it is not yet available, state when it will be available. Also please identify when the mitigation work will occur.

   Response: Plans of the Marsh Island mitigation project design have been collected by the Commonwealth and are included in **Attachment B**. The Commonwealth has analyzed the pre-construction elevations, and compared them to the post-construction planned elevations in NGVD 29. Based on the information contained within the plans, the volume of material to be removed from the elevations of +2 to +6 NGVD 29 in association with the Marsh Island mitigation project is approximately 64,000 cubic yards. The increase in flood storage capacity within New Bedford Harbor between +2 and +6 NGVD 29 that will result from this mitigation is 39.67 acre feet. The Marsh Island mitigation project has a projected start date of the Spring of 2014. The construction is proposed to be completed one year from ground breaking.

9. Q**uestion:** Two additional items need further explanation so that we may evaluate the extent of impacts. First, please identify the size of the intertidal salt marsh at the site that would remain after 0.18 acres of it are filled for the project, and provide a description of any secondary impacts likely to occur to the remaining salt marsh due to erosion or sedimentation from altered wave action, tidal currents, prop wash, etc., from the construction and operation of the facility. Second, please provide an estimate of the volume of water that the international vessels will take in from the harbor for ballast for their return trip. This question is relevant to the potential entrainment of eggs and larvae and associated impacts to aquatic species.

   Response: The total area of the salt marsh is 0.95 acres; 0.18 acres will be filled, leaving 0.77 acres remaining. The salt marsh will have protection from wave action, and tidal currents in much the same manner as pre-project state. The New Bedford Hurricane Barrier currently protects the salt marsh from significant wave action and associated erosional forces from the south of New Bedford. Similarly, the existing sand bar that exists immediately to the east of the salt marsh protects the wetland from waves and currents generated within New Bedford Harbor. The existing sand bar will remain intact. The connection to New Bedford Harbor that allows the ebb and flood of water to nourish the wetland is located on the southern end of the wetland, and the new facility should not interrupt the flow of water into and out of the wetland from New Bedford Harbor on the south.

   It is currently anticipated that prop wash from the new facility will not impact areas to the south of the New Bedford Marine Commerce Terminal due to its geometry. Vessels will be located to the east of the facility and the forces from prop wash will

be directed in either a northern or southern direction. The wetland is located to the south of the facility, significantly to the west of the line of the anticipated prop-wash forces. The wetland will be sheltered from forces coming directly from the east by the structure of the facility itself.

The southern face of the New Bedford Marine Commerce Terminal will be covered with rip-rap, which is intended to protect the southern face from erosion that could impact the salt marsh. Additionally, southern face of the terminal is graded away from the edge, toward a stormwater collection interceptor trench which also is designed to collect stormwater that flows toward the south. As a result, stormwater will be collected prior to it being able to discharge off of the southern end of the facility (and will also be re-directed away from that face), which will also protect the salt marsh area from impact associated with operation of the facility.

As stated within the Commonwealth's January 18, 2012 submittal to EPA, the New Bedford Marine Commerce Terminal anticipates that, for the first user of the facility, approximately 26 international vessels will arrive at port for unloading of offshore renewable energy components within a one-year period, which would mean that a vessel would be arriving approximately every two weeks. It is the Commonwealth's understanding that large vessels similar to the size of those anticipated to arrive at the New Bedford Marine Commerce Terminal can take on as much as a million gallon of water depending on their hull design and return transit conditions; however, typical procedure is to utilize less volume (200,000 to 300,000 gallons) when setting out, and adding more volume as needed during transit.

For comparison purposes, the volume of water within which the deep-draft berth and adjacent channel will occupy in front of the New Bedford Marine Commerce Terminal (i.e. the volume of water along the length of the deep-draft section of the bulkhead, extending 275 feet from the eastern edge of the bulkhead, and extending from the water surface to -30 MLLW, which represents the water immediately surrounding a vessel that could be taking on ballast) is approximately 55.5 million gallons. Thus the ballast water utilized by a vessel in port (200,000-300,000 gallons) will represent approximately 0.36%-0.54% of the total deep-draft water adjacent to the terminal (55.5 million gallons).

It is currently the Commonwealth's understanding, based upon discussion held between MassDEP, EPA, and resource agencies over the last year, that the dredged channel areas immediately adjacent to the New Bedford Marine Commerce Terminal will not provide good spawning habitat for aquatic species; and as a result, the Commonwealth is providing mitigation for impacts to winter flounder spawning habitat in this very area on the assumption that the creation of the deep-draft berthing area and the adjacent channel as part of the project will cause those areas to no longer be viable winter flounder spawning habitat due to its post-construction depth. Other species may be more likely to spawn in the deeper water where the vessels will be berthed while collecting ballast; however, it seems likely that this area will have a lower level of spawning activity due to the deeper water and the human activity.

Thus, it is anticipated that the removal of a relatively small quantity (0.36%-0.54%) of water from this area adjacent to the bulkhead that will be deepened will not result in a significant impact associated with entrainment of eggs and larvae.

10. Q**uestion:** P. 11 of (the Commonwealth's June 18, 2012 response to EPA questions) states that navigational "blasting may be required if necessary channel depths cannot be achieved through conventional means." Although the review discusses the potential impacts of blasting on water quality, it does not discuss potential impacts on paleosols or other historic properties. This omission should be addressed.

    Response: The Commonwealth has compared the scope of its previous cultural resource investigations with the changes proposed within the Commonwealth's June 18, 2012 submittal and has determined that the actions will take place within areas that have previously been investigated and are significantly far from the existing delineated subtidal and/or intertidal paleosol areas that have been delineated as a result of investigations completed to date, and therefore will not adversely effect the subtidal or intertidal paleosol areas.

    The potential expansion of the deep draft area to the north and south, the potential blasting, and the potential expanded width of the navigational channel are all located on the northern portion of the eastern face of the proposed bulkhead. The anticipated maximum radius of impact of blasting will be approximately 50 feet. The nearest paleosol area is located on the southern face of the proposed bulkhead, which is a considerable distance from the proposed additional work.

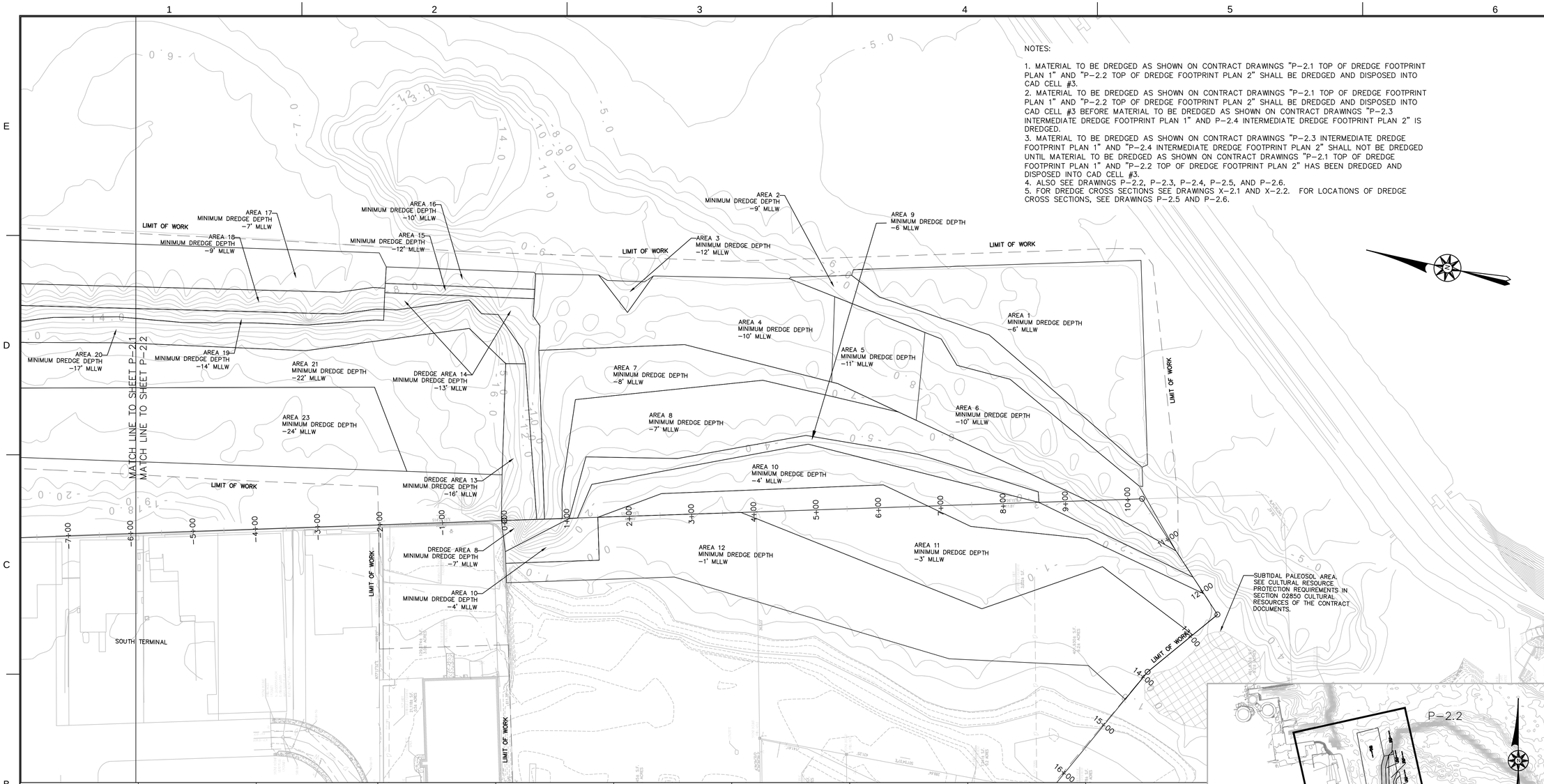
    The Commonwealth's Contractor will be required to demarcate areas of cultural resource area significance (such as the subtidal and intertidal paleosol areas) prior to the start of construction. No equipment will be allowed within or floating above a paleosol area.

    No dredging or other work activities will take place within 100 feet of a paleosol area without the implementation of Temporary Excavation Support (anticipated to be in the form of sheet piling to support the Paleosol area), which will ensure that that the Cultural Resource will not be disturbed during dredging or other work activities.

    Should unanticipated finds or human remains be discovered during the course of the work, the Commonwealth has included the following procedures within its specifications: "Policy Guidance on the Discovery of Unanticipated Human Remains" and/or "Policy Guidance for the Discovery of Unanticipated Underwater Archaeological Resources", promulgated by the Commonwealth of Massachusetts Board of Underwater Archaeological Resources, Office of Coastal Zone Management. These are attached as **Attachment C**.

NOTES:

1. MATERIAL TO BE DREDGED AS SHOWN ON CONTRACT DRAWINGS "P-2.1 TOP OF DREDGE FOOTPRINT PLAN 1" AND "P-2.2 TOP OF DREDGE FOOTPRINT PLAN 2" SHALL BE DREDGED AND DISPOSED INTO CAD CELL #3.
2. MATERIAL TO BE DREDGED AS SHOWN ON CONTRACT DRAWINGS "P-2.1 TOP OF DREDGE FOOTPRINT PLAN 1" AND "P-2.2 TOP OF DREDGE FOOTPRINT PLAN 2" SHALL BE DREDGED AND DISPOSED INTO CAD CELL #3 BEFORE MATERIAL TO BE DREDGED AS SHOWN ON CONTRACT DRAWINGS "P-2.3 INTERMEDIATE DREDGE FOOTPRINT PLAN 1" AND P-2.4 INTERMEDIATE DREDGE FOOTPRINT PLAN 2" IS DREDGED.
3. MATERIAL TO BE DREDGED AS SHOWN ON CONTRACT DRAWINGS "P-2.3 INTERMEDIATE DREDGE FOOTPRINT PLAN 1" AND "P-2.4 INTERMEDIATE DREDGE FOOTPRINT PLAN 2" SHALL NOT BE DREDGED UNTIL MATERIAL TO BE DREDGED AS SHOWN ON CONTRACT DRAWINGS "P-2.1 TOP OF DREDGE FOOTPRINT PLAN 1" AND "P-2.2 TOP OF DREDGE FOOTPRINT PLAN 2" HAS BEEN DREDGED AND DISPOSED INTO CAD CELL #3.
4. ALSO SEE DRAWINGS P-2.2, P-2.3, P-2.4, P-2.5, AND P-2.6.
5. FOR DREDGE CROSS SECTIONS SEE DRAWINGS X-2.1 AND X-2.2. FOR LOCATIONS OF DREDGE CROSS SECTIONS, SEE DRAWINGS P-2.5 AND P-2.6.



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X=816564.2935	Y=2687567.573	X=816695.6083	Y=2687926.6370	X=816497.5278	Y=2688105.0489	X=816297.0544	Y=2688402.4275	X=816512.3113	Y=2688569.0594	X=816615.8688	Y=2688820.6403	X=816526.0265	Y=2688876.2850	X=816456.6735	Y=2688917.8271	X=816258.8791	Y=2689712.6784
X=816718.6368	Y=2687853.021	X=816659.8265	Y=2687892.8305	X=816417.0225	Y=2688297.4863	X=816356.2986	Y=2688310.8518	X=816272.6086	Y=2688497.3791	X=816619.0435	Y=2688836.5257	X=816472.7920	Y=2689150.9116			X=816251.9276	Y=2690001.2153
X=816739.9621	Y=2688037.7404	X=816656.3573	Y=2687804.7782	AREA 9		X=816446.9807	Y=2687966.5007	AREA 14		X=816423.5131	Y=2689897.9714	X=816419.5575	Y=2689425.5381			X=816278.4639	Y=2690094.2845
AREA 3		X=816533.9658	Y=2687565.5312	X=816285.2639	Y=2688446.6668	X=816412.1869	Y=2687815.2495	X=816551.7643	Y=2688790.4976	X=816423.5131	Y=2689897.9714	X=816373.7548	Y=2689527.1136			AREA 23	
X=816676.8886	Y=2688485.4051	X=816445.0594	Y=2687485.3716	X=816387.5954	Y=2688441.9398	X=816433.6500	Y=2687628.8726	X=816592.6879	Y=2688679.4939	X=816405.9401	Y=2689866.4097	X=816406.2710	Y=2689654.8578			X=816123.2940	Y=2689691.1469
X=816671.4083	Y=2688469.4631	X=816493.3405	Y=2687642.6433	X=816416.8466	Y=2688297.9067	X=816387.5508	Y=2687426.6966	X=816575.4427	Y=2688655.0499	X=816398.2017	Y=2689836.6597	X=816372.6105	Y=2689837.5853			X=816302.8296	Y=2688717.3519
X=816682.2063	Y=2688410.8454	X=816559.5231	Y=2687937.6865	X=816497.5278	Y=2688105.0489	X=816359.5399	Y=2687398.1583	X=816580.0114	Y=2688628.9156	X=816431.8497	Y=2689653.9996					X=816423.4126	Y=2688797.2060
X=816694.3779	Y=2688399.2312	AREA 7		X=816507.0269	Y=2687922.9533	X=816319.2693	Y=2687429.7574	X=816533.7748	Y=2688578.7996	X=816400.139	Y=2689529.4198					X=816219.4483	Y=2689706.4166
X=816628.1936	Y=2688427.0031	X=816566.2663	Y=2687967.7480	X=816489.7040	Y=2687721.5676	X=816394.9282	Y=2687594.9245	X=816512.3113	Y=2688569.0594	X=816453.1413	Y=2689436.2051					AREA 24	
AREA 4		X=816589.8083	Y=2688072.6987	X=816473.5399	Y=2687716.9275	X=816287.1494	Y=2687769.2422	X=816272.6087	Y=2688497.3788	X=816559.8409	Y=2688885.7625					X=816369.1368	Y=2690150.1320
X=816724.8298	Y=2688108.0709	X=816597.7420	Y=2688326.4731	X=816484.7068	Y=2688098.3319	X=816354.3658	Y=2688179.8199	X=816275.7469	Y=2688485.1896	X=816579.0737	Y=2688833.8913					X=816324.6259	Y=2690102.8711
X=816737.3331	Y=2688185.7028	X=816538.1003	Y=2688552.7339	X=816346.4784	Y=2688423.2605			X=816538.0204	Y=2688552.7133	X=816581.9836	Y=2688815.1037					X=816375.5426	Y=2690114.7433

APEX

ROCKVILLE, MD
SOUTH WINDSOR, CT - BOSTON, MA - NEW BEDFORD, MA - HOLYOKE, MA

184 HIGH STREET, SUITE 502
BOSTON, MA 02210

58H CONNECTICUT AVENUE
SOUTH WINDSOR, CT

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PROJECT
NEW BEDFORD MARINE COMMERCE TERMINAL

OWNER
MASSACHUSETTS CLEAN ENERGY CENTER
55 SUMMER STREET, 9TH FLOOR
BOSTON, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY
1.	12-23-11	FOR CONSTRUCTION	CHM

PROJECT NO.	6690
CADD FILE	B_I_DREDGE
DESIGNED BY	GCD
DRAWN BY	CWM
CHECKED BY	CHM
DATE	8/30/11
DRAWING SCALE	1"=80'

GRAPHIC SCALE
SCALE: 1"=80'
0 40 80 160

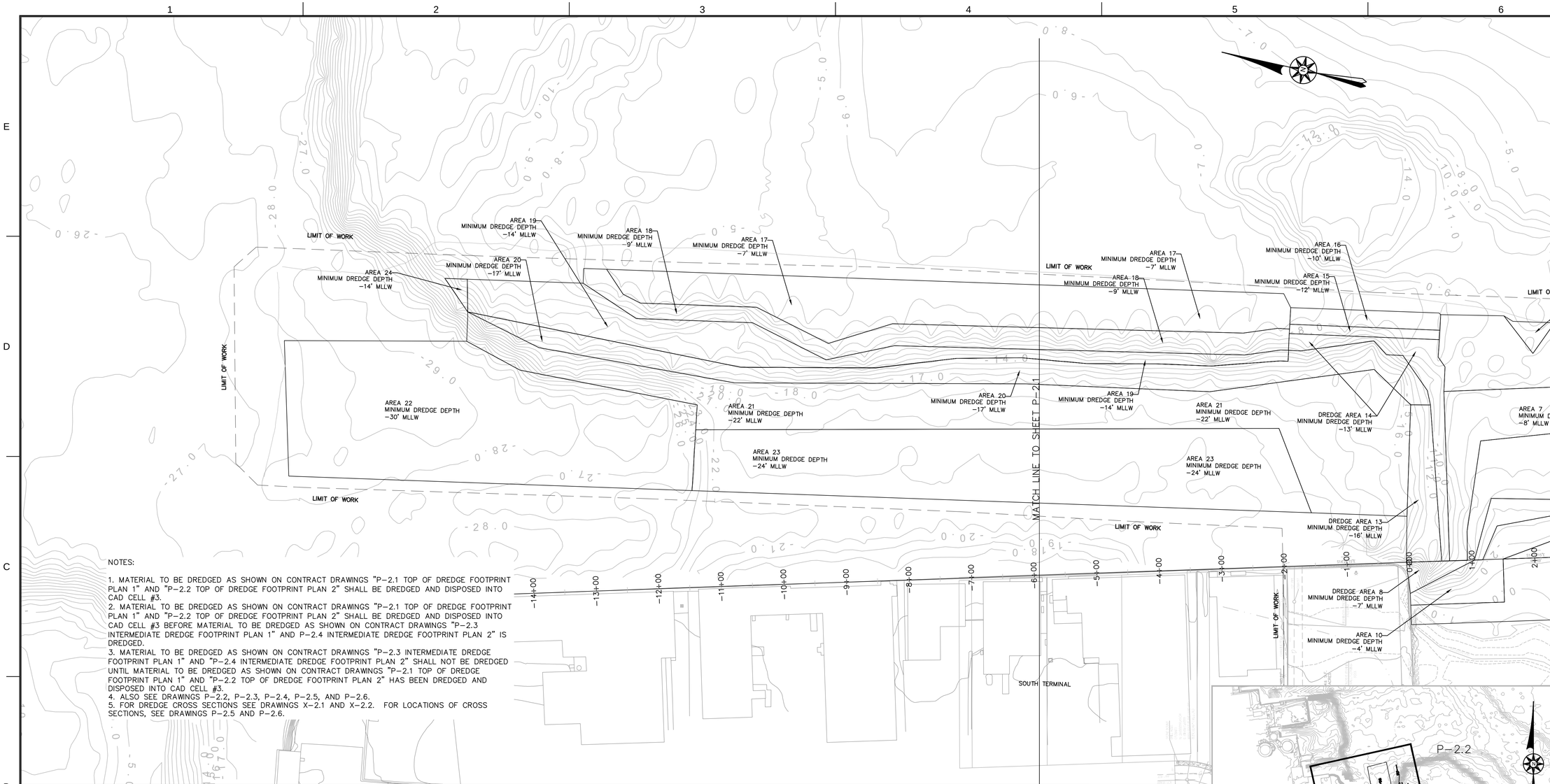
SHEET TITLE

TOP OF DREDGE FOOTPRINT PLAN 1 EXPANDED

DRAWING NO.

P-2.1

P:\Jobs\6690 NBH_ Phase IV\PLANS\FINAL_PLANS\100% Submittal\EPA_EXPANSION_DRAWINGS\P-2.1-P-2.2_TOP_OF_DREDGE_FOOTPRINT_EXPANSION.dwg



NOTES:

1. MATERIAL TO BE DREDGED AS SHOWN ON CONTRACT DRAWINGS "P-2.1 TOP OF DREDGE FOOTPRINT PLAN 1" AND "P-2.2 TOP OF DREDGE FOOTPRINT PLAN 2" SHALL BE DREDGED AND DISPOSED INTO CAD CELL #3.
2. MATERIAL TO BE DREDGED AS SHOWN ON CONTRACT DRAWINGS "P-2.1 TOP OF DREDGE FOOTPRINT PLAN 1" AND "P-2.2 TOP OF DREDGE FOOTPRINT PLAN 2" SHALL BE DREDGED AND DISPOSED INTO CAD CELL #3 BEFORE MATERIAL TO BE DREDGED AS SHOWN ON CONTRACT DRAWINGS "P-2.3 INTERMEDIATE DREDGE FOOTPRINT PLAN 1" AND P-2.4 INTERMEDIATE DREDGE FOOTPRINT PLAN 2" IS DREDGED.
3. MATERIAL TO BE DREDGED AS SHOWN ON CONTRACT DRAWINGS "P-2.3 INTERMEDIATE DREDGE FOOTPRINT PLAN 1" AND "P-2.4 INTERMEDIATE DREDGE FOOTPRINT PLAN 2" SHALL NOT BE DREDGED UNTIL MATERIAL TO BE DREDGED AS SHOWN ON CONTRACT DRAWINGS "P-2.1 TOP OF DREDGE FOOTPRINT PLAN 1" AND "P-2.2 TOP OF DREDGE FOOTPRINT PLAN 2" HAS BEEN DREDGED AND DISPOSED INTO CAD CELL #3.
4. ALSO SEE DRAWINGS P-2.2, P-2.3, P-2.4, P-2.5, AND P-2.6.
5. FOR DREDGE CROSS SECTIONS SEE DRAWINGS X-2.1 AND X-2.2. FOR LOCATIONS OF CROSS SECTIONS, SEE DRAWINGS P-2.5 AND P-2.6.

AREA 1	
X=816773.7442	Y=2688088.1407
X=816888.0645	Y=2687641.1172
X=816570.3589	Y=2687559.8682
X=816564.2935	Y=2687567.573
X=816718.6368	Y=2687853.021
X=816739.9621	Y=2688037.7404
X=816764.2209	Y=2688089.0541
AREA 2	
X=816764.2209	Y=2688089.0541
X=816740.0365	Y=2688183.6216
X=816737.3331	Y=2688185.7028
X=816695.6083	Y=2687926.637
X=816659.8265	Y=2687892.8305
X=816656.3573	Y=2687804.7782
X=816533.9658	Y=2687565.5312
X=816534.4138	Y=2687559.8197
X=816534.4138	Y=2687559.8197
X=816564.2935	Y=2687567.573
X=816718.6368	Y=2687853.021
X=816739.9621	Y=2688037.7404
AREA 3	
X=816676.8886	Y=2688485.4051
X=816671.4083	Y=2688469.4631
X=816682.2063	Y=2688410.8454
X=816694.3779	Y=2688399.2312
X=816628.1936	Y=2688427.0031
AREA 4	
X=816724.8298	Y=2688108.0709
X=816737.3331	Y=2688185.7028

AREA 4 (CONT.)	
X=816694.3779	Y=2688399.2312
X=816628.1936	Y=2688427.0031
X=816676.8886	Y=2688485.4051
X=816656.8168	Y=2688584.3035
X=816589.7098	Y=2688573.4388
X=816576.7701	Y=2688559.4657
X=816538.1020	Y=2688552.7275
X=816597.7420	Y=2688326.4731
X=816590.1344	Y=2688083.1296
AREA 5	
X=816724.8298	Y=2688108.0709
X=816590.1344	Y=2688083.1296
X=816589.8083	Y=2688072.6987
X=816559.5231	Y=2687937.6865
X=816700.0718	Y=2687954.3507
AREA 6	
X=816700.0718	Y=2687954.3507
X=816695.6083	Y=2687926.6370
X=816659.8265	Y=2687892.8305
X=816656.3573	Y=2687804.7782
AREA 7	
X=816659.8265	Y=2687892.8305
X=816695.6083	Y=2687926.6370
X=816589.8083	Y=2688072.6987
X=816597.7420	Y=2688326.4731
X=816538.1003	Y=2688552.7339

AREA 7 (CONT.)	
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X=816282.4750	Y=2688457.5426
X=816327.8275	Y=2688468.1350
X=816473.5958	Y=2688478.4339
X=816568.9019	Y=2688191.7202
AREA 8	
X=816282.4750	Y=2688457.5426
X=816327.8275	Y=2688468.1350
X=816473.5958	Y=2688478.4339
X=816568.9019	Y=2688191.7202
X=816566.2663	Y=2687967.7480
X=816493.3405	Y=2687642.6433
X=816445.0594	Y=2687485.3716
X=816409.8311	Y=2687449.4289
X=816473.5399	Y=2687716.9270
AREA 9	
X=816409.8311	Y=2687449.4289
X=816473.5958	Y=2687478.4339
X=816497.5278	Y=2688105.0489
X=816497.5278	Y=2688511.9398
X=816416.8466	Y=2688297.9067
X=816387.5954	Y=2688441.9398
X=816493.3405	Y=2687642.6433
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X=816484.7068	Y=2688098.3319
X=816346.4784	Y=2688423.2605

AREA 9 (CONT.)	
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AREA 10	
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X=816288.7434	Y=2688433.9722
X=816346.4784	Y=2688423.2605
X=816484.7068	Y=2688098.3319
X=816473.5373	Y=2687716.9369
X=816409.8311	Y=2687449.4289
X=816387.5508	Y=2687426.6966
X=816433.6500	Y=2687628.8726
X=816412.1869	Y=2687815.2495
X=816446.9807	Y=2687966.5007
X=816356.2986	Y=2688310.8518
X=816297.0544	Y=2688402.4275
X=816230.2207	Y=2688385.3352
AREA 11	
X=816297.0544	Y=2688402.4275
X=816356.2986	Y=2688310.8518
AREA 9	
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X=816446.9807	Y=2687966.5007
X=816387.5508	Y=2687426.6966
X=816359.5399	Y=2687398.1583
X=816319.2693	Y=2687429.7574
X=816394.9282	Y=2687594.9245
X=816287.1494	Y=2687769.2422
X=816354.3658	Y=2688179.8199
X=816346.4784	Y=2688423.2605

AREA 12	
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X=816245.3437	Y=2687487.7646
X=816194.9543	Y=2687513.2873
X=816235.0670	Y=2687582.9300
X=816197.3778	Y=2687803.0498
X=816229.9883	Y=2688261.8401
X=816162.8146	Y=2688522.7544
X=816192.9784	Y=2688530.5202
X=816230.2207	Y=2688385.3352
X=816297.0544	Y=2688402.4275
X=816354.3658	Y=2688179.8199
X=816394.9282	Y=2687594.9245
AREA 13	
X=816258.5030	Y=2688552.1678
X=816330.4094	Y=2688567.0557
X=816505.7240	Y=2688599.9336
X=816512.3113	Y=2688569.0594
X=816272.6086	Y=2688497.3791
AREA 14	
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X=816592.6879	Y=2688679.4939
X=816575.4427	Y=2688655.0499
X=816533.7748	Y=2688578.7996
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X=816272.6087	Y=2688497.3788
X=816275.7469	Y=2688485.1896
X=816538.0204	Y=2688552.7133

AREA 14 (CONT.)	
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X=816574.8861	Y=2688814.0044
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X=816589.7130	Y=2688816.3008
AREA 16	
X=816656.8168	Y=2688584.3035
X=816658.822	Y=2688587.4672
X=816615.8688	Y=2688820.6403
X=816589.713	Y=2688816.3008
X=816632.1899	Y=2688580.0183
AREA 17	
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X=816619.0435	Y=2688836.5257
X=816423.5131	Y=2689897.9714
X=816423.5131	Y=2689897.9714
X=816405.9401	Y=2689866.4097
X=816398.2017	Y=2689836.6597
X=816431.8497	Y=2689653.9996
X=816400.139	Y=2689529.4198
X=816453.1413	Y=2689436.2051
X=816559.8409	Y=2688885.7625
X=816579.0737	Y=2688833.8913
X=816581.9836	Y=2688815.1037

AREA 18	
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X=816439.2483	Y=2689900.8700
X=816398.2017	Y=2689836.6597
X=816431.8497	Y=2689653.9996
AREA 20	
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X=816559.8409	Y=2688885.7625
X=816579.0737	Y=2688833.8913
X=816581.9836	Y=2688815.1037
AREA 19	
X=816529.0830	Y=2688818.5483
X=816512.3113	Y=2688569.0594
X=816531.2877	Y=2688806.2124
X=816548.3108	Y=2688669.2648
X=816546.2569	Y=2688821.7235
X=816548.6020	Y=2688809.5863
X=816546.2569	Y=2688821.7235
X=816529.0830	Y=2688818.5483
X=816531.2877	Y=2688806.2124
X=816548.6802	Y=2688809.0964
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X=816548.6802	Y=2688809.0964
X=816526.0265	Y=2688876.2850
X=816472.7920	Y=2689150.9116
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X=816373.7548	Y=2689527.1136
X=816406.2710	Y=2689654.8578
X=816372.6105	Y=2689837.5853

AREA 19 (CONT.)	
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X=816324.6259	Y=2690102.8711
AREA 20	
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X=816551.7643	Y=2688790.4976
X=816592.6879	Y=2688679.4939
X=816575.4427	Y=2688655.0499
X=816580.0114	Y=2688628.9156
AREA 19	
X=816533.7748	Y=2688578.7996
AREA 22	
X=816512.3113	Y=2688569.0594
X=816505.7240	Y=2688599.9336
X=816548.3108	Y=2688669.2648
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AREA 21	
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X=816505.7240	Y=2688599.9336
X=816548.3108	Y=2688669.2648
X=816456.6735	Y=2688917.8271
X=816405.4663	Y=2689207.0160
X=816306.1663	Y=2689661.9534
X=816293.3016	Y=2689979.2904
X=816324.6259	Y=2690102.8711
X=816316.1189	Y=2690100.8876
X=816278.4639	Y=2690094.2845
X=816216.4751	Y=2690378.8234
X=816006.5722	Y=2690325.0388
X=816123.2940	Y=2689691.1469
X=816258.8791	Y=2689712.6784
X=816251.9276	Y=2690001.2153
X=816278.4639	Y=2690094.2845
AREA 23	
X=816123.2940	Y=2689691.1469
X=816302.8296	Y=2688717.3519
X=816423.4126	Y=2688797.2060
X=816219.4483	Y=2689706.4166
AREA 24	
X=816369.1368	Y=2690150.1320
X=816324.6259	Y=2690102.8711
X=816375.5426	Y=2690114.7433

APEX

ROCKVILLE, MD
SOUTH WINDSOR, CT - BOSTON, MA - NEW BEDFORD, MA - HOLYOKE, MA

184 HIGH STREET, SUITE 502
BOSTON, MA 02210

58H CONNECTICUT AVENUE
SOUTH WINDSOR, CT

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PROJECT
NEW BEDFORD
MARINE COMMERCE
TERMINAL

OWNER
MASSACHUSETTS CLEAN ENERGY CENTER
55 SUMMER STREET, 9TH FLOOR
BOSTON, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY
1.	12-23-11	FOR CONSTRUCTION	CHM

PROJECT NO.	6690
CADD FILE	B_I_DREDGE
DESIGNED BY	GCD
DRAWN BY	CWM
CHECKED BY	CHM
DATE	8/30/11
DRAWING SCALE	1"=80'

GRAPHIC SCALE
SCALE: 1"=80'
0 40 80 160

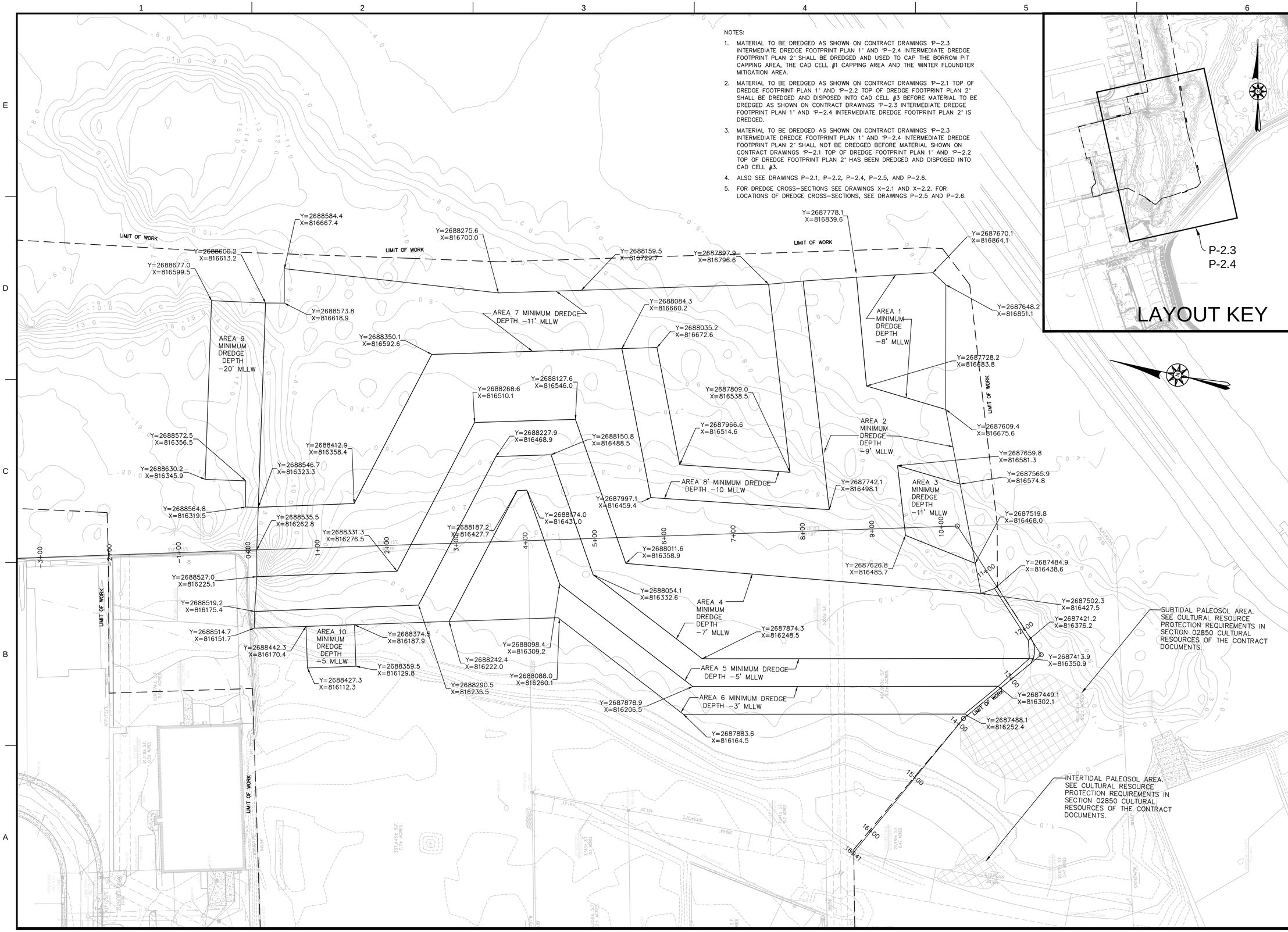
SHEET TITLE
TOP OF DREDGE FOOTPRINT PLAN 2 EXPANDED

DRAWING NO.
P-2.2

P:\Jobs\6690 NBH_ Phase IV\PLANS\FINAL_PLANS\100% Submittal\EPA_EXPANSION_DRAWINGS\P-2.1-P-2.2_TOP_OF_DREDGE_FOOTPRINT_EXPANSION.dwg

NOTES:

1. MATERIAL TO BE DREDGED AS SHOWN ON CONTRACT DRAWINGS "P-2.3 INTERMEDIATE DREDGE FOOTPRINT PLAN 1" AND "P-2.4 INTERMEDIATE DREDGE FOOTPRINT PLAN 2" SHALL BE DREDGED AND USED TO CAP THE BORROW PIT CAPPING AREA, THE CAD CELL #1 CAPPING AREA AND THE WINTER FLOUNDTER MITIGATION AREA.
2. MATERIAL TO BE DREDGED AS SHOWN ON CONTRACT DRAWINGS "P-2.1 TOP OF DREDGE FOOTPRINT PLAN 1" AND "P-2.2 TOP OF DREDGE FOOTPRINT PLAN 2" SHALL BE DREDGED AND DISPOSED INTO CAD CELL #3 BEFORE MATERIAL TO BE DREDGED AS SHOWN ON CONTRACT DRAWINGS "P-2.3 INTERMEDIATE DREDGE FOOTPRINT PLAN 1" AND "P-2.4 INTERMEDIATE DREDGE FOOTPRINT PLAN 2" IS DREDGED.
3. MATERIAL TO BE DREDGED AS SHOWN ON CONTRACT DRAWINGS "P-2.3 INTERMEDIATE DREDGE FOOTPRINT PLAN 1" AND "P-2.4 INTERMEDIATE DREDGE FOOTPRINT PLAN 2" SHALL NOT BE DREDGED BEFORE MATERIAL SHOWN ON CONTRACT DRAWINGS "P-2.1 TOP OF DREDGE FOOTPRINT PLAN 1" AND "P-2.2 TOP OF DREDGE FOOTPRINT PLAN 2" HAS BEEN DREDGED AND DISPOSED INTO CAD CELL #3.
4. ALSO SEE DRAWINGS P-2.1, P-2.2, P-2.4, P-2.5, AND P-2.6.
5. FOR DREDGE CROSS-SECTIONS SEE DRAWINGS X-2.1 AND X-2.2. FOR LOCATIONS OF DREDGE CROSS-SECTIONS, SEE DRAWINGS P-2.5 AND P-2.6.



APEX

ROCKVILLE, MD
SOUTH WINDSOR, CT - BOSTON, MA - NEW BEDFORD, MA - HOLYOKE, MA

184 HIGH STREET, SUITE 502
BOSTON, MA 02210

58H CONNECTICUT AVENUE
SOUTH WINDSOR, CT

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PROJECT
NEW BEDFORD MARINE COMMERCE TERMINAL

OWNER
MASSACHUSETTS CLEAN ENERGY CENTER
55 SUMMER STREET, 9TH FLOOR
BOSTON, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY
2.	6-28-12	L.O.W. UPDATE	CWM
1.	12-23-11	FOR CONSTRUCTION	CWM

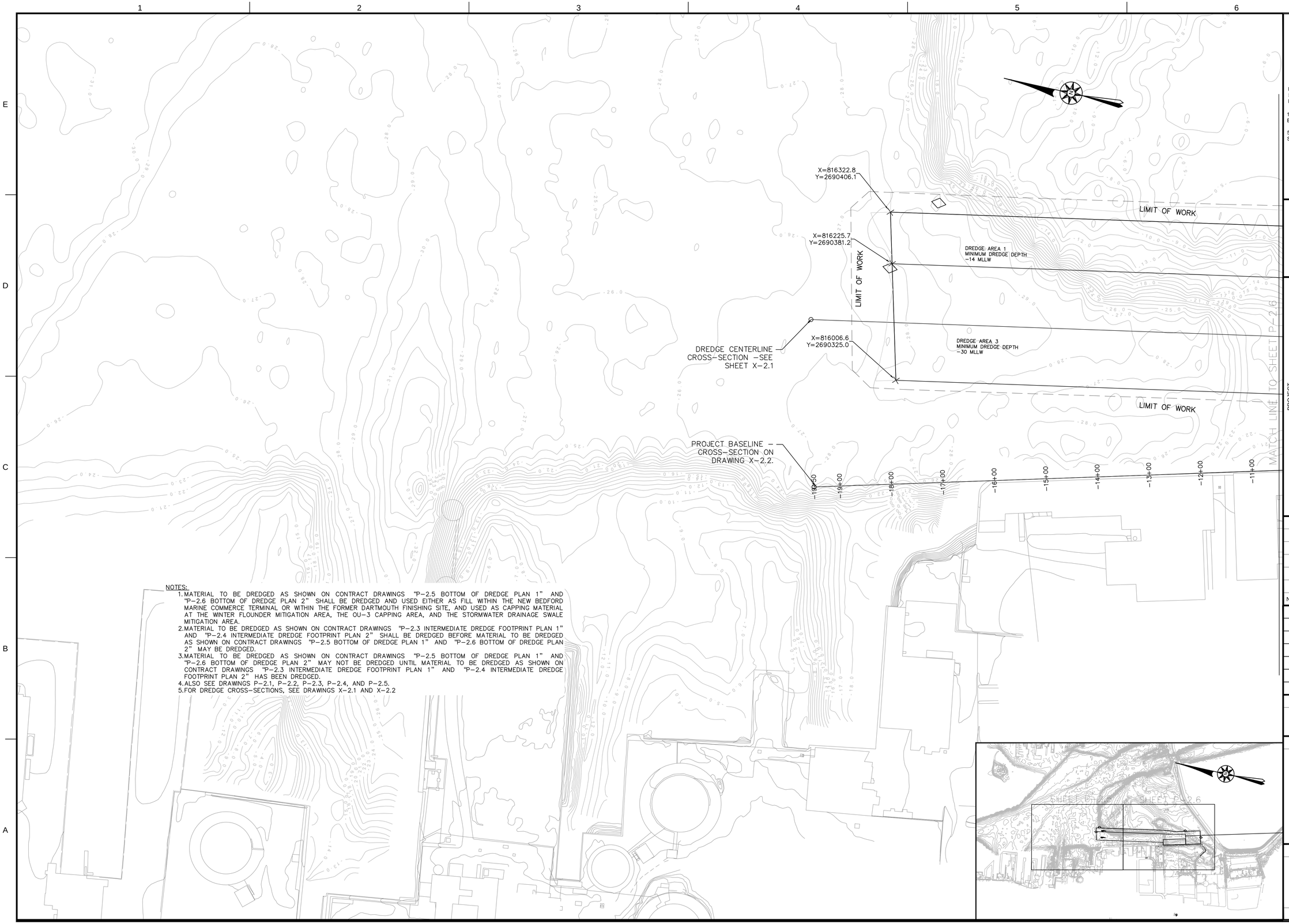
PROJECT NO.	6690
CADD FILE	B_I_DREDGE
DESIGNED BY	GCD
DRAWN BY	CWM
CHECKED BY	CHM
DATE	8/30/11
DRAWING SCALE	1"=60'

GRAPHIC SCALE
SCALE: 1"=60'
0 30 60 90 150 FEET

SHEET TITLE
INTERMEDIATE DREDGE FOOTPRINT PLAN 1 (EXPANDED)

DRAWING NO.
P-2.3

P:\Jobs\6690 NBH_ Phase IV\PLANS\FINAL_PLANS\100% Submittal\EPA_EXPANSION_DRAWINGS\P-2.3-P-2.4_INTER_BOTTOM_DREDGE_EXPANSION.dwg



NOTES:

1. MATERIAL TO BE DREDGED AS SHOWN ON CONTRACT DRAWINGS "P-2.5 BOTTOM OF DREDGE PLAN 1" AND "P-2.6 BOTTOM OF DREDGE PLAN 2" SHALL BE DREDGED AND USED EITHER AS FILL WITHIN THE NEW BEDFORD MARINE COMMERCE TERMINAL OR WITHIN THE FORMER DARTMOUTH FINISHING SITE, AND USED AS CAPPING MATERIAL AT THE WINTER FLOUNDER MITIGATION AREA, THE OU-3 CAPPING AREA, AND THE STORMWATER DRAINAGE SWALE MITIGATION AREA.
2. MATERIAL TO BE DREDGED AS SHOWN ON CONTRACT DRAWINGS "P-2.3 INTERMEDIATE DREDGE FOOTPRINT PLAN 1" AND "P-2.4 INTERMEDIATE DREDGE FOOTPRINT PLAN 2" SHALL BE DREDGED BEFORE MATERIAL TO BE DREDGED AS SHOWN ON CONTRACT DRAWINGS "P-2.5 BOTTOM OF DREDGE PLAN 1" AND "P-2.6 BOTTOM OF DREDGE PLAN 2" MAY BE DREDGED.
3. MATERIAL TO BE DREDGED AS SHOWN ON CONTRACT DRAWINGS "P-2.5 BOTTOM OF DREDGE PLAN 1" AND "P-2.6 BOTTOM OF DREDGE PLAN 2" MAY NOT BE DREDGED UNTIL MATERIAL TO BE DREDGED AS SHOWN ON CONTRACT DRAWINGS "P-2.3 INTERMEDIATE DREDGE FOOTPRINT PLAN 1" AND "P-2.4 INTERMEDIATE DREDGE FOOTPRINT PLAN 2" HAS BEEN DREDGED.
4. ALSO SEE DRAWINGS P-2.1, P-2.2, P-2.3, P-2.4, AND P-2.5.
5. FOR DREDGE CROSS-SECTIONS, SEE DRAWINGS X-2.1 AND X-2.2

APEX

ROCKVILLE, MD
SOUTH WINDSOR, CT - BOSTON, MA -
NEW BEDFORD, MA - HOLYOKE, MA

184 HIGH STREET, SUITE 502
BOSTON, MA 02210

58H CONNECTICUT AVENUE
SOUTH WINDSOR, CT

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PROJECT

NEW BEDFORD
MARINE COMMERCE
TERMINAL

OWNER

MASSACHUSETTS CLEAN ENERGY COUNCIL
55 SUMMER STREET, 9TH FLOOR
BOSTON, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY

PROJECT NO.	6690
CADD FILE	P_B_DREDGE_P9_10
DESIGNED BY	GCD
DRAWN BY	CWM
CHECKED BY	CHM
DATE	8/30/11
DRAWING SCALE	1"=80'

GRAPHIC SCALE

SCALE: 1"=80'

0 40 80 160

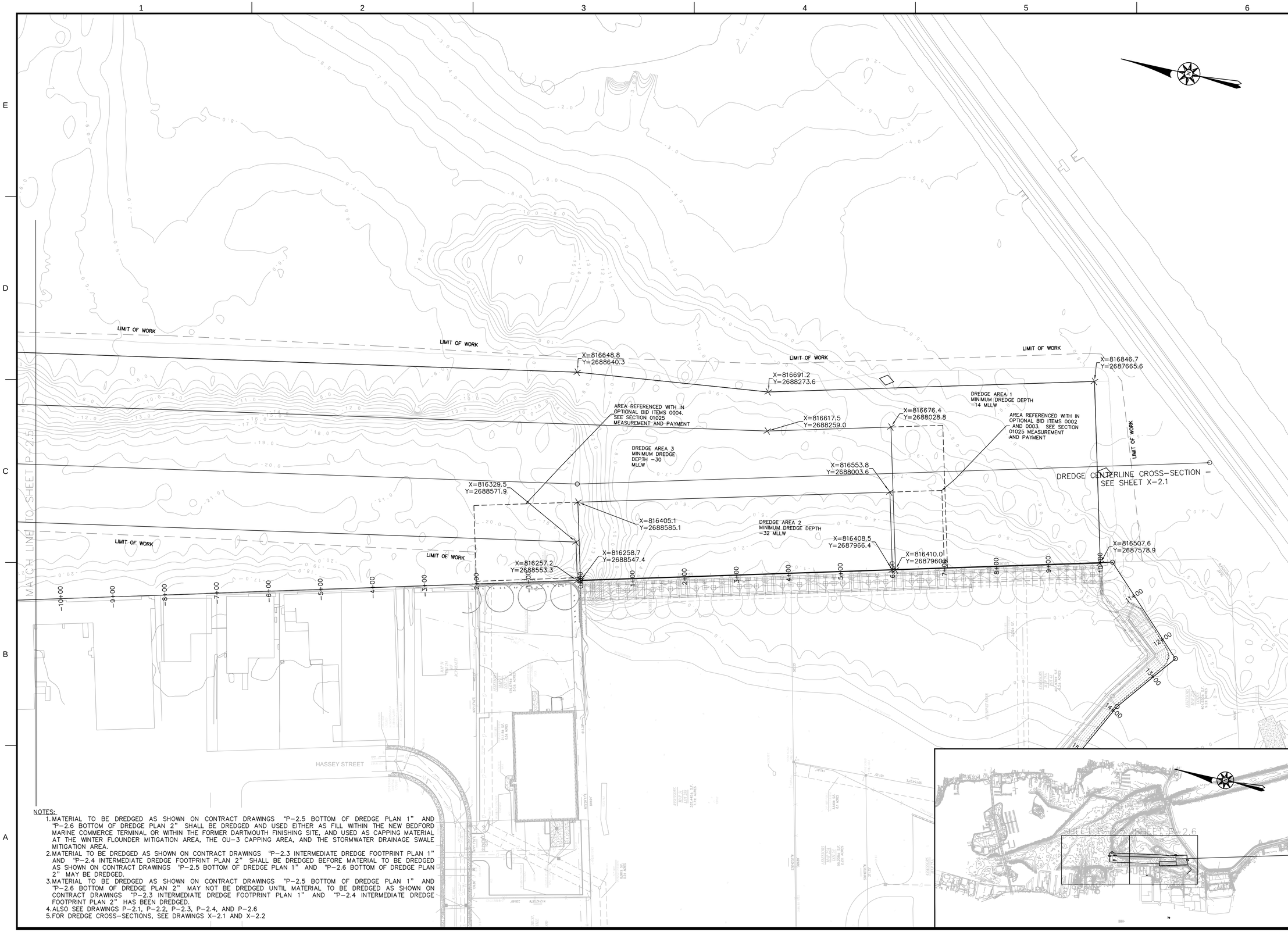
SHEET TITLE

BOTTOM OF
DREDGE
PLAN 1
(EXPANDED)

DRAWING NO.

P-2.5

P:\Jobs\6690 NBH_ Phase IV\PLANS\FINAL_PLANS\100% Submittal\EPA_EXPANSION_DRAWINGS\P-2.5-P-2.6_BOTTOM_DREDGE_EXPANSION.dwg



NOTES:

1. MATERIAL TO BE DREDGED AS SHOWN ON CONTRACT DRAWINGS "P-2.5 BOTTOM OF DREDGE PLAN 1" AND "P-2.6 BOTTOM OF DREDGE PLAN 2" SHALL BE DREDGED AND USED EITHER AS FILL WITHIN THE NEW BEDFORD MARINE COMMERCE TERMINAL OR WITHIN THE FORMER DARTMOUTH FINISHING SITE, AND USED AS CAPPING MATERIAL AT THE WINTER FLOUNDER MITIGATION AREA, THE OU-3 CAPPING AREA, AND THE STORMWATER DRAINAGE SWALE MITIGATION AREA.
2. MATERIAL TO BE DREDGED AS SHOWN ON CONTRACT DRAWINGS "P-2.3 INTERMEDIATE DREDGE FOOTPRINT PLAN 1" AND "P-2.4 INTERMEDIATE DREDGE FOOTPRINT PLAN 2" SHALL BE DREDGED BEFORE MATERIAL TO BE DREDGED AS SHOWN ON CONTRACT DRAWINGS "P-2.5 BOTTOM OF DREDGE PLAN 1" AND "P-2.6 BOTTOM OF DREDGE PLAN 2" MAY BE DREDGED.
3. MATERIAL TO BE DREDGED AS SHOWN ON CONTRACT DRAWINGS "P-2.5 BOTTOM OF DREDGE PLAN 1" AND "P-2.6 BOTTOM OF DREDGE PLAN 2" MAY NOT BE DREDGED UNTIL MATERIAL TO BE DREDGED AS SHOWN ON CONTRACT DRAWINGS "P-2.3 INTERMEDIATE DREDGE FOOTPRINT PLAN 1" AND "P-2.4 INTERMEDIATE DREDGE FOOTPRINT PLAN 2" HAS BEEN DREDGED.
4. ALSO SEE DRAWINGS P-2.1, P-2.2, P-2.3, P-2.4, AND P-2.6
5. FOR DREDGE CROSS-SECTIONS, SEE DRAWINGS X-2.1 AND X-2.2

APEX

ROCKVILLE, MD
SOUTH WINDSOR, CT - BOSTON, MA - NEW BEDFORD, MA - HOLYOKE, MA

184 HIGH STREET, SUITE 502
BOSTON, MA 02210

58H CONNECTICUT AVENUE
SOUTH WINDSOR, CT

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PROJECT
NEW BEDFORD MARINE COMMERCE TERMINAL

OWNER
MASSACHUSETTS CLEAN ENERGY COUNCIL
55 SUMMER STREET, 9TH FLOOR
BOSTON, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY

PROJECT NO.	6690
CADD FILE	B_I_DREDGE
DESIGNED BY	GCD
DRAWN BY	CWM
CHECKED BY	CHM
DATE	8/30/11
DRAWING SCALE	1"=80'

GRAPHIC SCALE
SCALE: 1"=80'
0 40 80 160

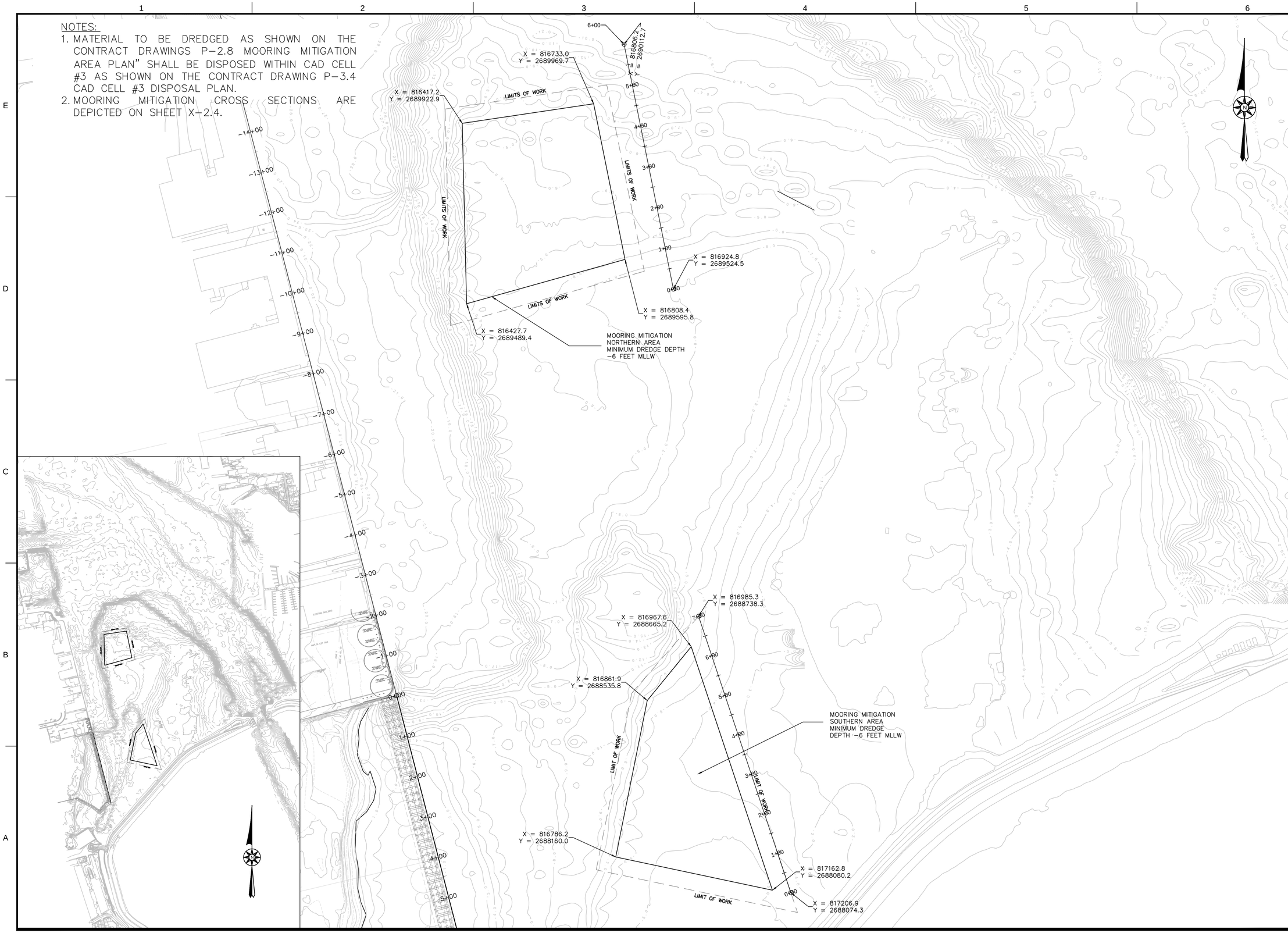
SHEET TITLE
BOTTOM OF DREDGE PLAN 2 (EXPANDED)

DRAWING NO.
P-2.6

P:\Jobs\6690 NBH_ Phase IV\PLANS\FINAL_PLANS\100% Submittal\EPA_EXPANSION_DRAWINGS\P-2.5-P-2.6_BOTTOM_DREDGE_EXPANSION.dwg

NOTES:

1. MATERIAL TO BE DREDGED AS SHOWN ON THE CONTRACT DRAWINGS P–2.8 MOORING MITIGATION AREA PLAN" SHALL BE DISPOSED WITHIN CAD CELL #3 AS SHOWN ON THE CONTRACT DRAWING P–3.4 CAD CELL #3 DISPOSAL PLAN.
2. MOORING MITIGATION CROSS SECTIONS ARE DEPICTED ON SHEET X–2.4.



APEX

ROCKVILLE, MD
SOUTH WINDSOR, CT - BOSTON, MA - NEW BEDFORD, MA - HOLYOKE, MA

184 HIGH STREET, SUITE 502
BOSTON, MA 02210

58H CONNECTICUT AVENUE
SOUTH WINDSOR, CT

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PROJECT
NEW BEDFORD MARINE COMMERCE TERMINAL

OWNER
MASSACHUSETTS CLEAN ENERGY CENTER
55 SUMMER STREET, 9TH FLOOR
BOSTON, MA

NO.	DATE	DESCRIPTION	BY
2.	6–8–12	NORTH AREA UPDATE	CWM
1.	12–23–11	FOR CONSTRUCTION	CHM

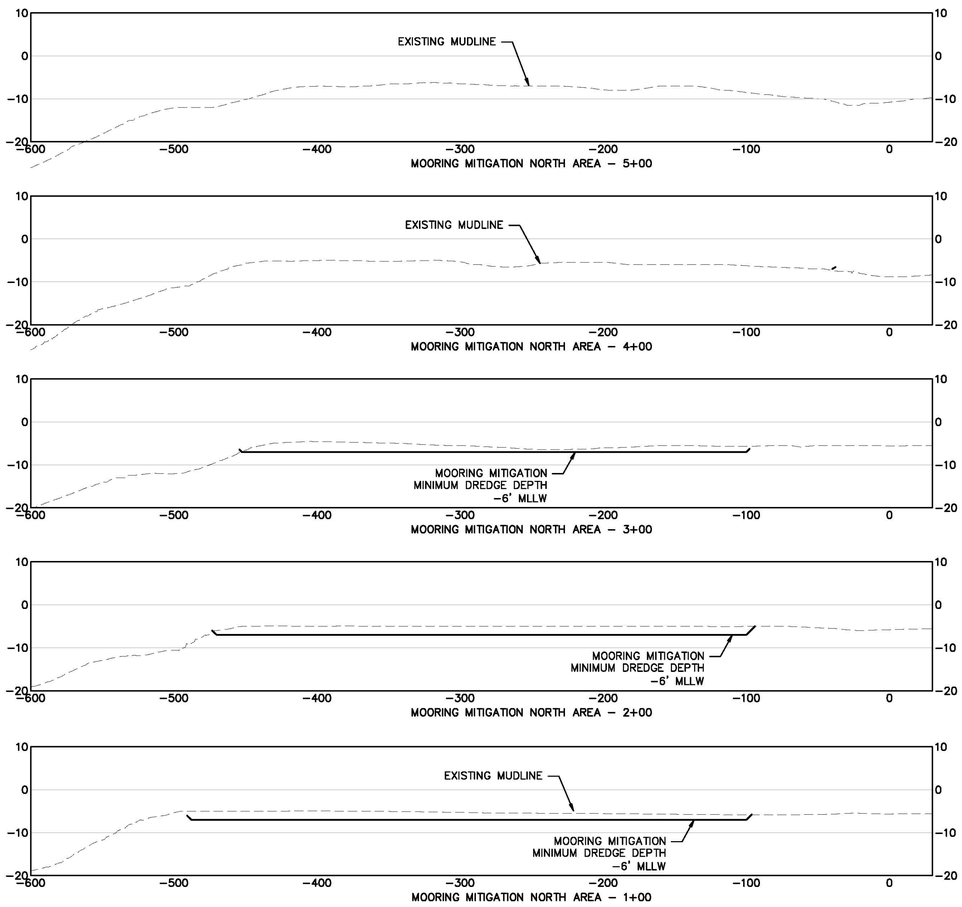
PROJECT NO.	6690
CADD FILE	MOORING_MIT
DESIGNED BY	CWM
DRAWN BY	CWM
CHECKED BY	CHM
DATE	8-26-11
DRAWING SCALE	1"=100'

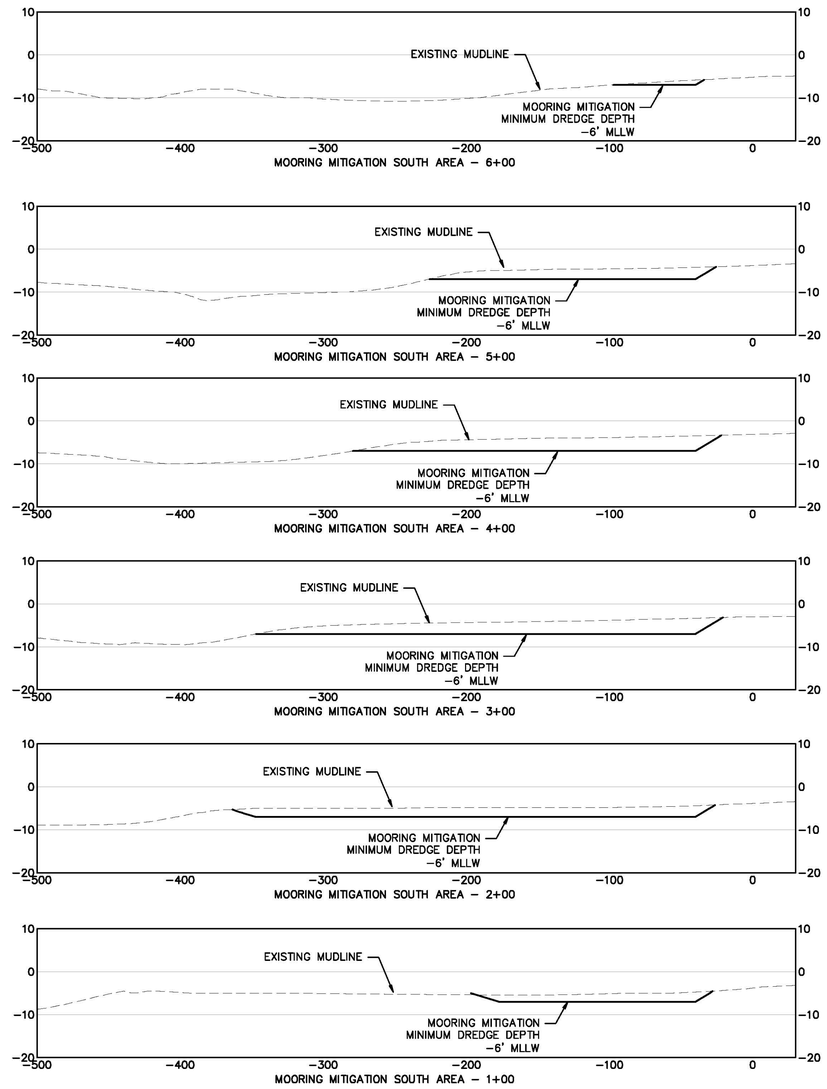
GRAPHIC SCALE
SCALE: 1"=100'
0 50 100 200

SHEET TITLE
MOORING MITIGATION AREA PLAN

DRAWING NO.
P-2.8
DRAFT

P:\Jobs\6690 NBH_ Phase IV\PLANS\FINAL_PLANS\100% Submittal\P-2.8-X-2.4_MOORING_MITIGATION.dwg





APEX

ROCKVILLE, MD
SOUTH WINDSOR, CT - BOSTON, MA -
NEW BEDFORD, MA - HOLYOKE, MA

184 HIGH STREET, SUITE 502
BOSTON, MA 02210

88H CONNECTICUT AVENUE
SOUTH WINDSOR, CT

[redacted]

PROJECT
NEW BEDFORD
MARINE COMMERCE
TERMINAL

OWNER
MASSACHUSETTS CLEAN ENERGY CENTER
55 SUMMER STREET, 9TH FLOOR
BOSTON, MA

NO.	DATE	DESCRIPTION	BY
2.	6–8–12	CROSS SECTION UPDATE	CWM
1.	12–23–11	FOR CONSTRUCTION	CHM

PROJECT NO.	6690
CADD FILE	MOORING_MIT
DESIGNED BY	CWM
DRAWN BY	CWM
CHECKED BY	CHM
DATE	8-26-11
DRAWING SCALE	1"=100'

GRAPHIC SCALE
SCALE: 1"=100'
0 50 100 200

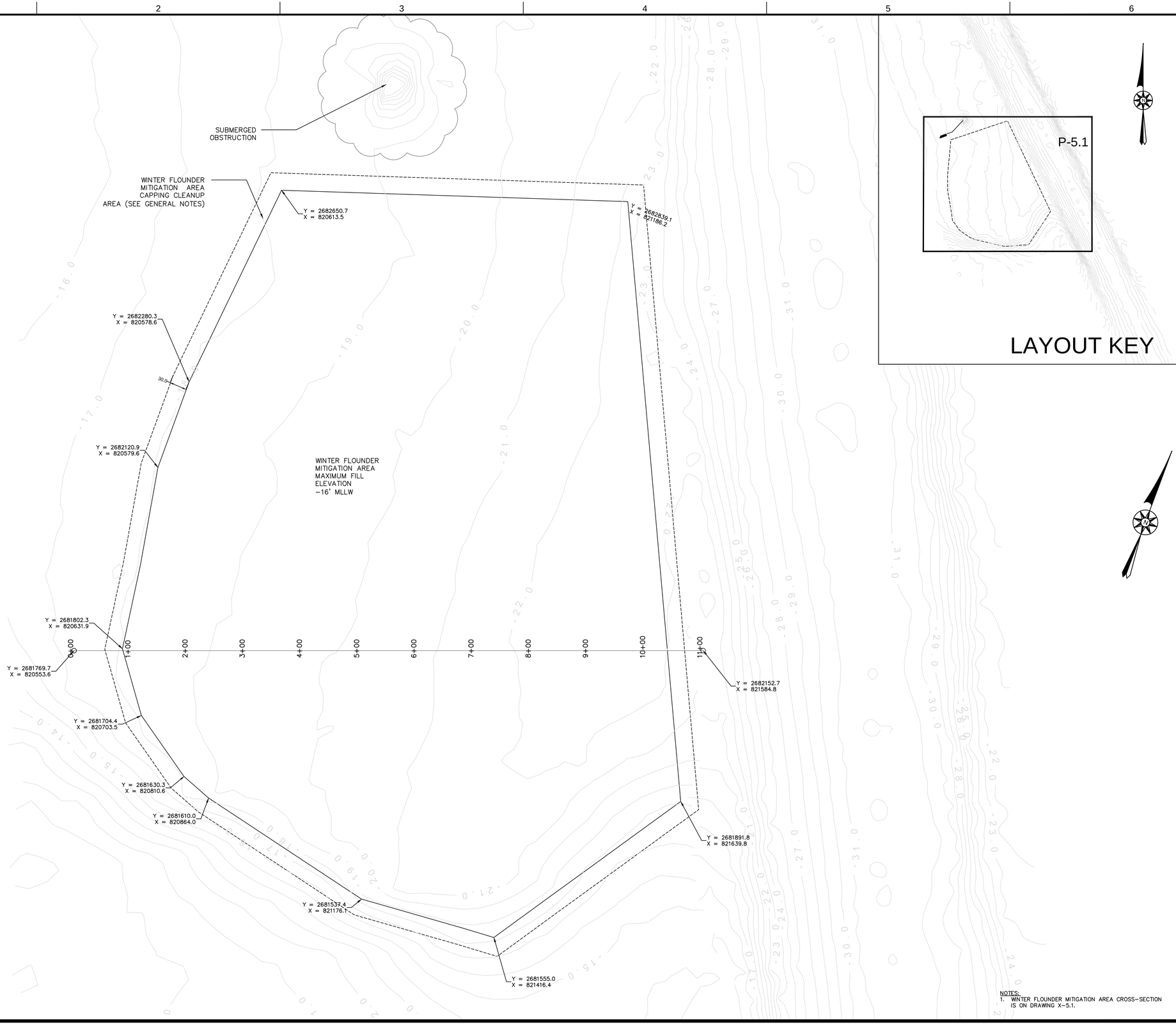
SHEET TITLE

MOORING MITIGATION AREA CROSS-SECTIONS

DRAWING NO.

X-2.4

DRAFT



NOTES:
1. WINTER FLOUNDER MITIGATION AREA CROSS-SECTION IS ON DRAWING X-5.1.

APEX

ROCKVILLE, MD
SOUTH WINDSOR, CT - BOSTON, MA - NEW BEDFORD, MA - HOLYOKE, MA

184 HIGH STREET, SUITE 502
BOSTON, MA 02210

58H CONNECTICUT AVENUE
SOUTH WINDSOR, CT

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PROJECT
NEW BEDFORD MARINE COMMERCE TERMINAL

OWNER
MASSACHUSETTS CLEAN ENERGY CENTER
55 SUMMER STREET, 9TH FLOOR
BOSTON, MA

NO.	DATE	DESCRIPTION	BY
2	6/15/12	AREA UPDATED	CWM
1	12/23/11	FOR CONSTRUCTION	CHM

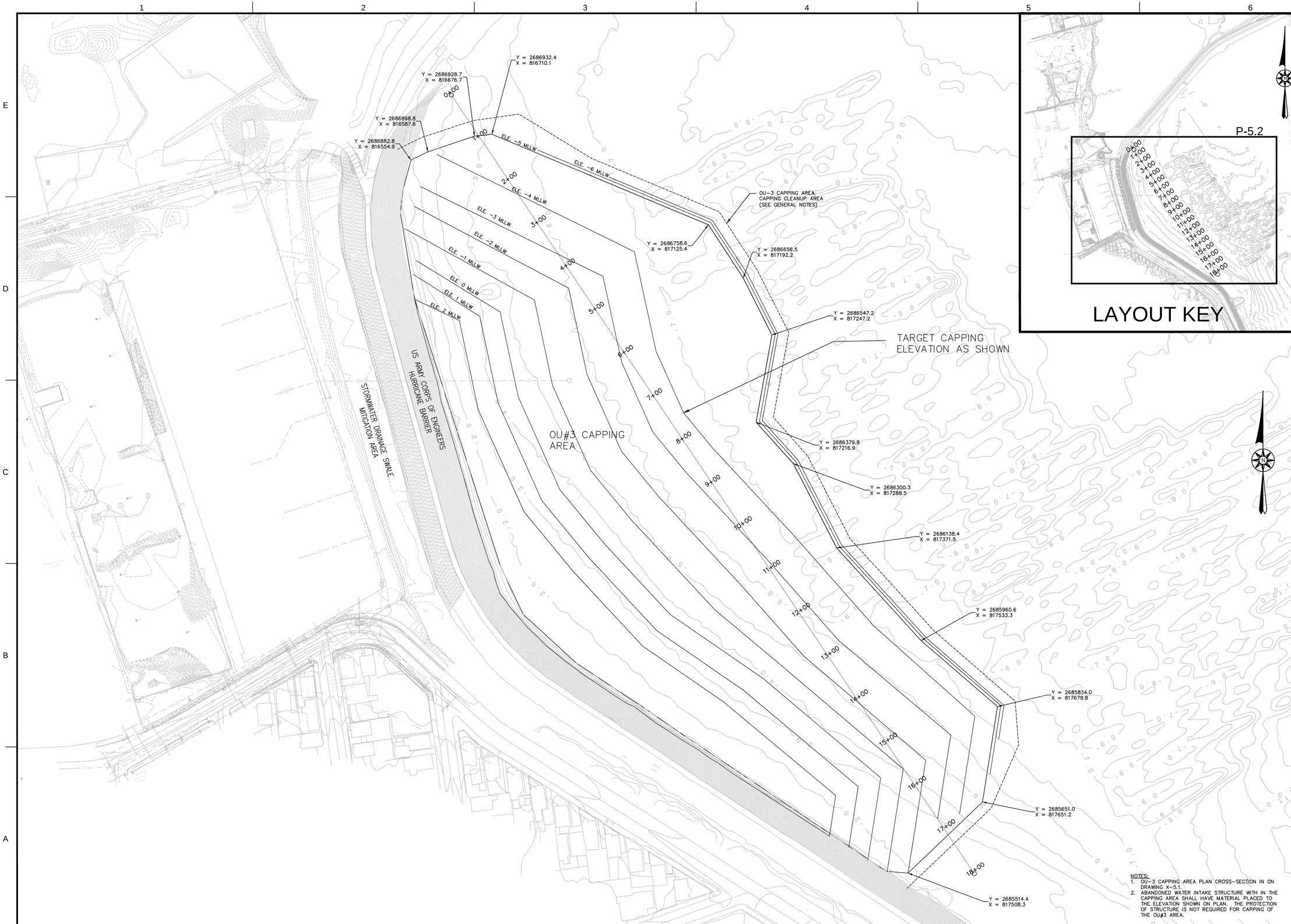
PROJECT NO.	6690
CADD FILE	MIT_OU3_FLNDR
DESIGNED BY	CWM
DRAWN BY	CWM
CHECKED BY	CHM
DATE	8-8-11
DRAWING SCALE	1"=80'

GRAPHIC SCALE
SCALE: 1"=80'
0 40 80 160

SHEET TITLE
WINTER FLOUNDER MITIGATION AREA PLAN

DRAWING NO.
P-5.1
DRAFT

P:\Jobs\6690 NBH_ Phase IV\PLANS\FINAL_PLANS\100% Submitta\P-5.1-P-5.2_MITIGATION_OU3_REV_FLOUNDER.dwg



NOTES:
1. OU-3 CAPPING AREA PLAN CROSS-SECTION IN ON DRAWING X-5.1.
2. ABANDONED WATER INTAKE STRUCTURE WITH IN THE CAPPING AREA SHALL HAVE MATERIAL PLACED TO THE ELEVATION SHOWN ON PLAN. THE PROTECTION OF STRUCTURE IS NOT REQUIRED FOR CAPPING OF THE OU#3 AREA.

APEX

ROCKVILLE, MD
SOUTH WINDSOR, CT - BOSTON, MA - NEW BEDFORD, MA - HOLYOKE, MA

184 HIGH STREET, SUITE 502
BOSTON, MA 02210

58H CONNECTICUT AVENUE
SOUTH WINDSOR, CT

THIS DRAWINGS PREPARED BY APEX FOR THIS PROJECT ARE INSTRUMENTS OF APEX'S SERVICE FOR USE SOLELY WITH RESPECT TO THIS PROJECT, AND APEX SHALL BE DEEMED THE AUTHOR OF THE DRAWING AND SHALL RETAIN ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS WITH RESPECT INDUDED, INCLUDING THE COPYRIGHT. THE DOCUMENTS SHALL NOT BE USED ON OTHER PROJECTS, FOR ADDITIONS TO THIS PROJECT OR FOR COMPLETION OF THIS PROJECT BY OTHERS, EXCEPT BY AGREEMENT IN WRITING AND WITH APPROPRIATE COMPENSATION TO APEX .

PROJECT
NEW BEDFORD
MARINE COMMERCE
TERMINAL

OWNER
MASSACHUSETTS CLEAN ENERGY CENTER
55 SUMMER STREET, 9TH FLOOR
BOSTON, MA

NO.	DATE	DESCRIPTION	BY
2	03/16/12	EX. COND. UPDATE	CWM
1	12/23/11	FOR CONSTRUCTION	CHM

PROJECT NO.	6690
CADD FILE	MIT_OU3_FLNDR
DESIGNED BY	CWM
DRAWN BY	CWM
CHECKED BY	CHM
DATE	8-8-11
DRAWING SCALE	1"=80'

GRAPHIC SCALE
SCALE: 1"=80'
0 40 80 160

SHEET TITLE
OU-3
CAPPING
AREA
PLAN

DRAWING NO.
P-5.2
DRAFT

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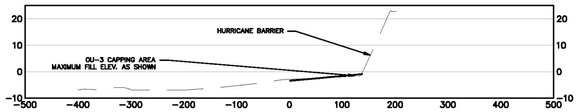
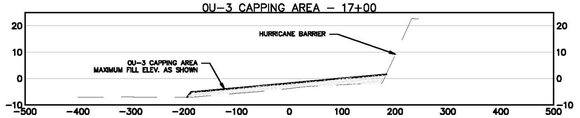


OU-3 CAPPING AREA – 17+00



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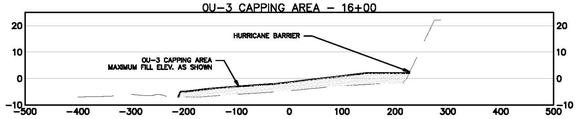

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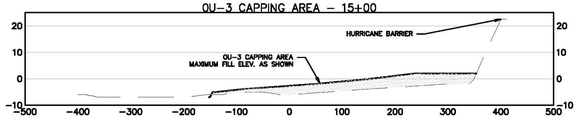

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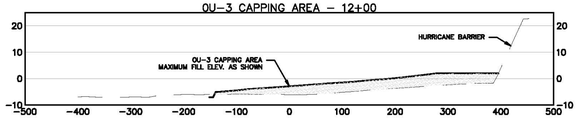

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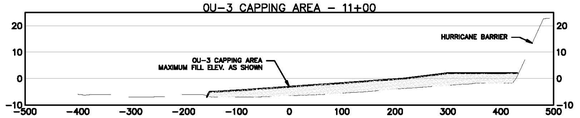

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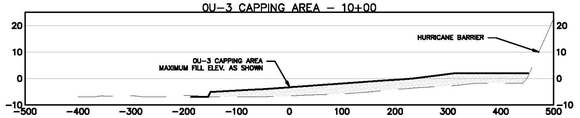
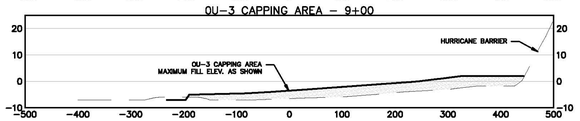


OU-3 CAPPING AREA – 9+00



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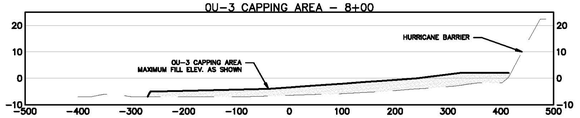

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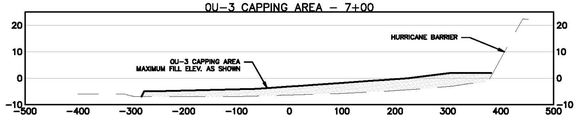
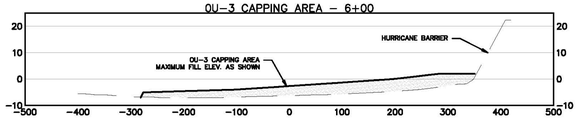
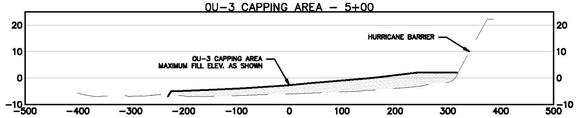


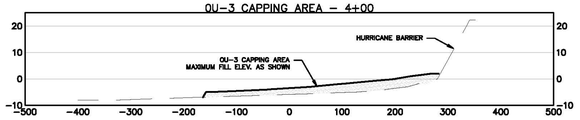
OU-3 CAPPING AREA – 6+00



OU-3 CAPPING AREA – 5+00

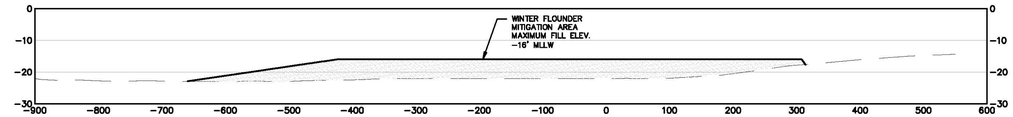


OU-3 CAPPING AREA – 4+00

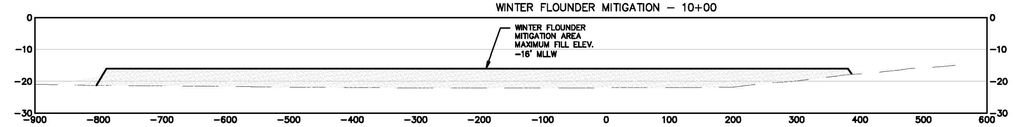


OU-3 CAPPING AREA – 3+00

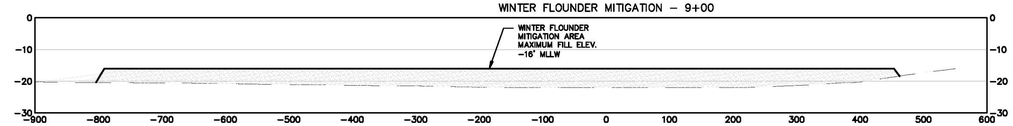
NOTE:
1. FOR LOCATION OF OU-3 CAPPING AREA CROSS-SECTION, SEE DRAWING P-5.2.



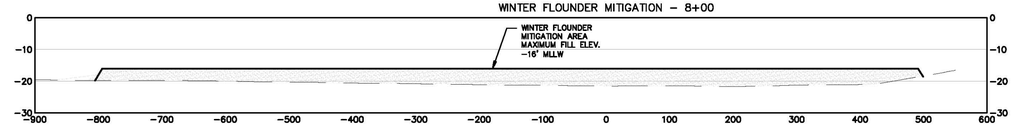
WINTER FLOUNDER MITIGATION – 10+00



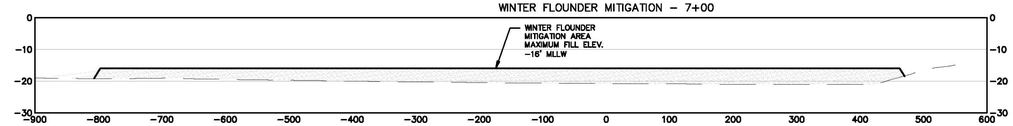
WINTER FLOUNDER MITIGATION – 9+00



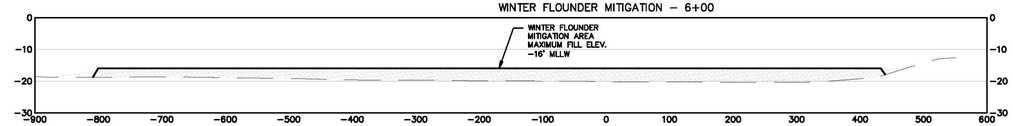
WINTER FLOUNDER MITIGATION – 8+00



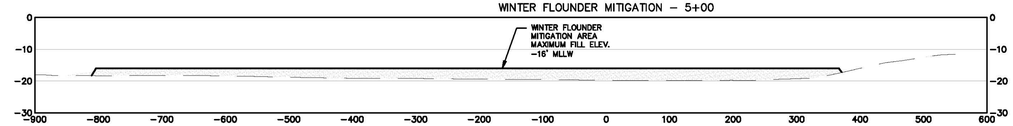
WINTER FLOUNDER MITIGATION – 7+00



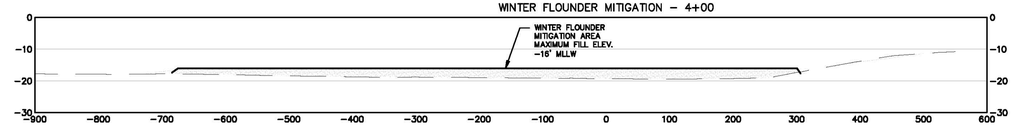
WINTER FLOUNDER MITIGATION – 6+00



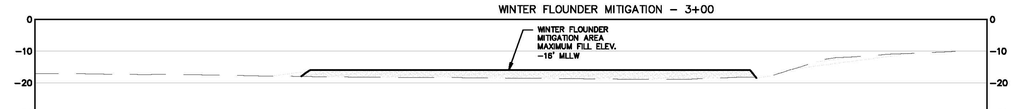
WINTER FLOUNDER MITIGATION – 5+00



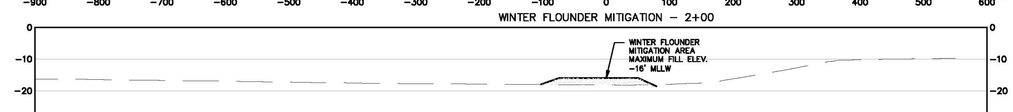
WINTER FLOUNDER MITIGATION – 4+00



WINTER FLOUNDER MITIGATION – 3+00



WINTER FLOUNDER MITIGATION – 2+00



WINTER FLOUNDER MITIGATION – 1+00

NOTE:
1. FOR LOCATION OF WINTER FLOUNDER MITIGATION AREA CROSS-SECTION, SEE DRAWING P-5,1,

APEX
ROCKVILLE, MD
SOUTH WINDSOR, CT - BOSTON, MA - NEW BEDFORD, MA - HOLYOKE, MA

184 HIGH STREET, SUITE 502
BOSTON, MA 02210

55H CONNECTICUT AVENUE
SOUTH WINDSOR, CT

[redacted]

PROJECT
NEW BEDFORD MARINE COMMERCE TERMINAL

OWNER
MASSACHUSETTS CLEAN ENERGY CENTER
55 SUMMER STREET, 9TH FLOOR
BOSTON, MA

NO.	DATE	DESCRIPTION	BY
1.	12-23-11	FOR CONSTRUCTION	CHM

PROJECT NO.	6690
CADD FILE	MIT_OU3_FLNDR
DESIGNED BY	CWM
DRAWN BY	CWM
CHECKED BY	CHM
DATE	8-8-11
DRAWING SCALE	NTS

GRAPHIC SCALE

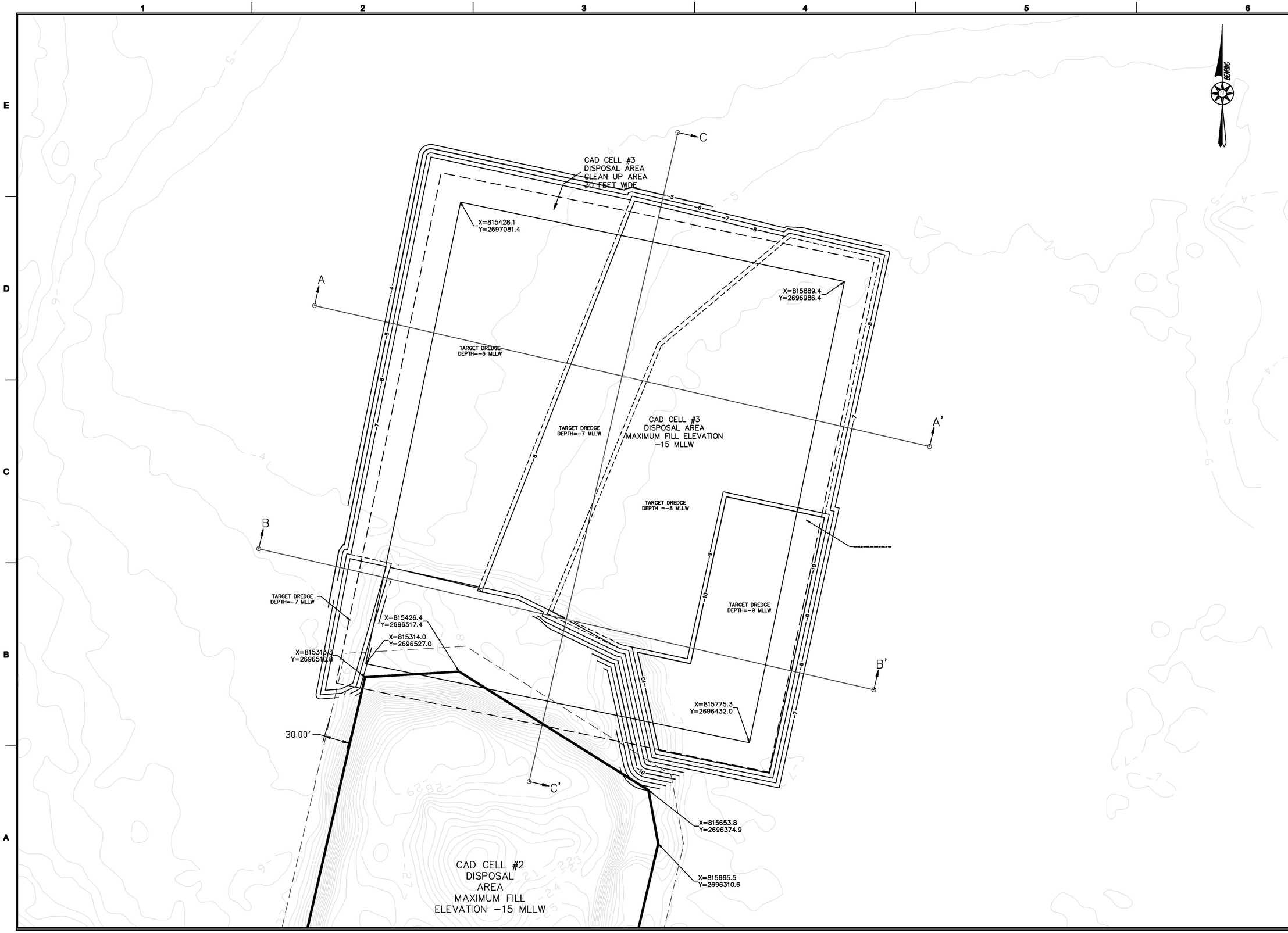
SHEET TITLE

OU-3 AND WINTER FLOUNDER CAPPING AREA CROSS-SECTIONS

DRAWING NO.

X-5.1

DRAFT



APEX

ROCKVILLE, MD
SOUTH WINDSOR, CT - BOSTON, MA -
NEW BEDFORD, MA - HOLYOKE, MA

184 HIGH STREET, SUITE 502
BOSTON, MA 02210

55H CONNECTICUT AVENUE
SOUTH WINDSOR, CT

[redacted]

100% DESIGN FOR REVIEW SET
NOT FOR CONSTRUCTION

PROJECT

NEW BEDFORD
MARINE COMMERCE
TERMINAL

OWNER

MASSACHUSETTS CLEAN ENERGY CENTER
55 SUMMER STREET, 9TH FLOOR
BOSTON, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY

PROJECT NO.	6690
CADD FILE	
DESIGNED BY	GCD
DRAWN BY	GCD
CHECKED BY	CMM
DATE	08/04/2011
DRAWING SCALE	1"=50'

GRAPHIC SCALE

SCALE: 1"=50'

0 25 50 75 125 FEET

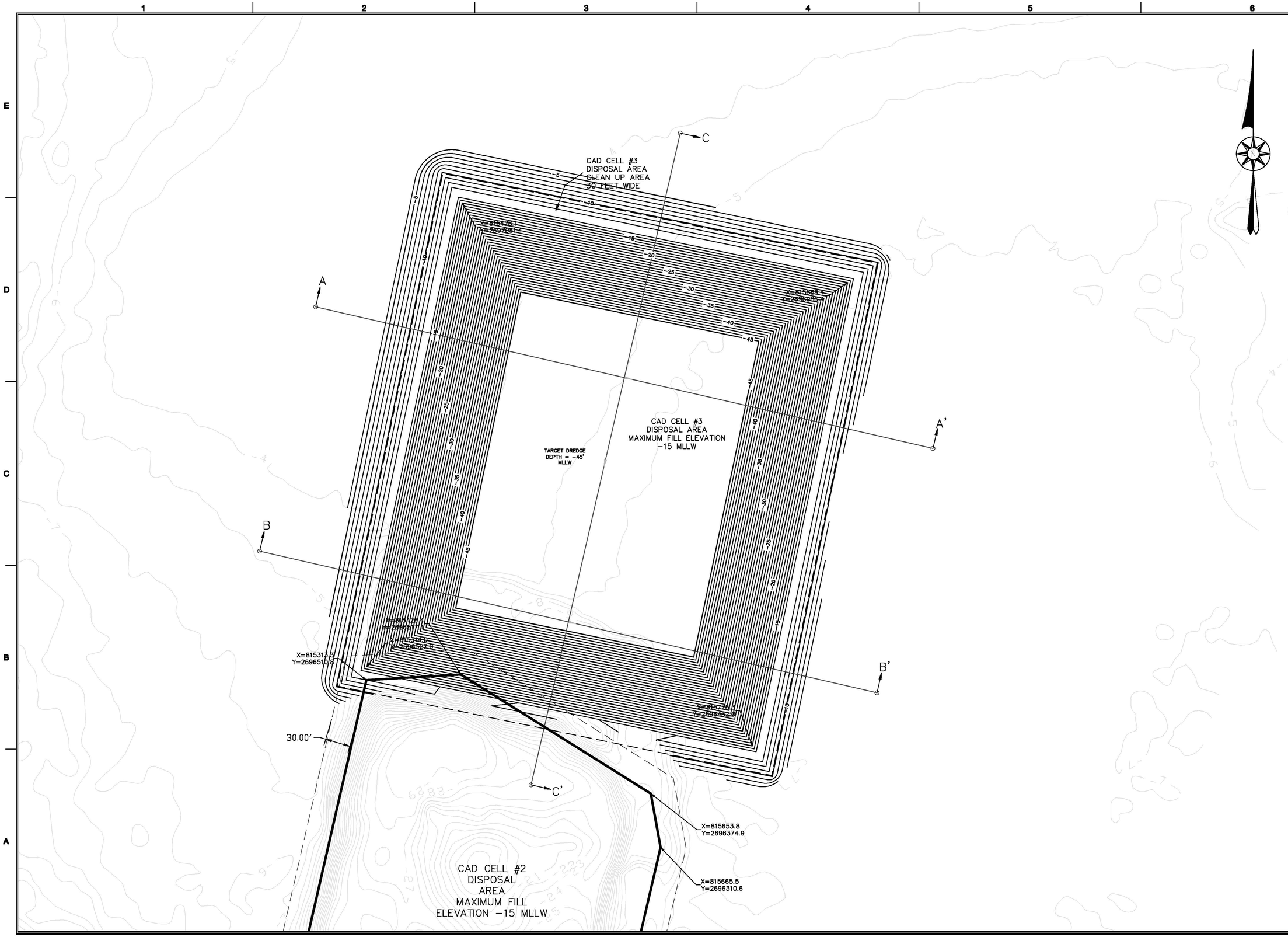
SHEET TITLE

TOP OF CAD #3

DRAWING NO.

P-13

DRAFT



APEX

ROCKVILLE, MD
SOUTH WINDSOR, CT - BOSTON, MA -
NEW BEDFORD, MA - HOLYOKE, MA

184 HIGH STREET, SUITE 502
BOSTON, MA 02210

55H CONNECTICUT AVENUE
SOUTH WINDSOR, CT

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PROJECT
NEW BEDFORD
MARINE COMMERCE
TERMINAL

OWNER
MASSACHUSETTS CLEAN ENERGY CENTER
55 SUMMER STREET, 9TH FLOOR
BOSTON, MASSACHUSETTS

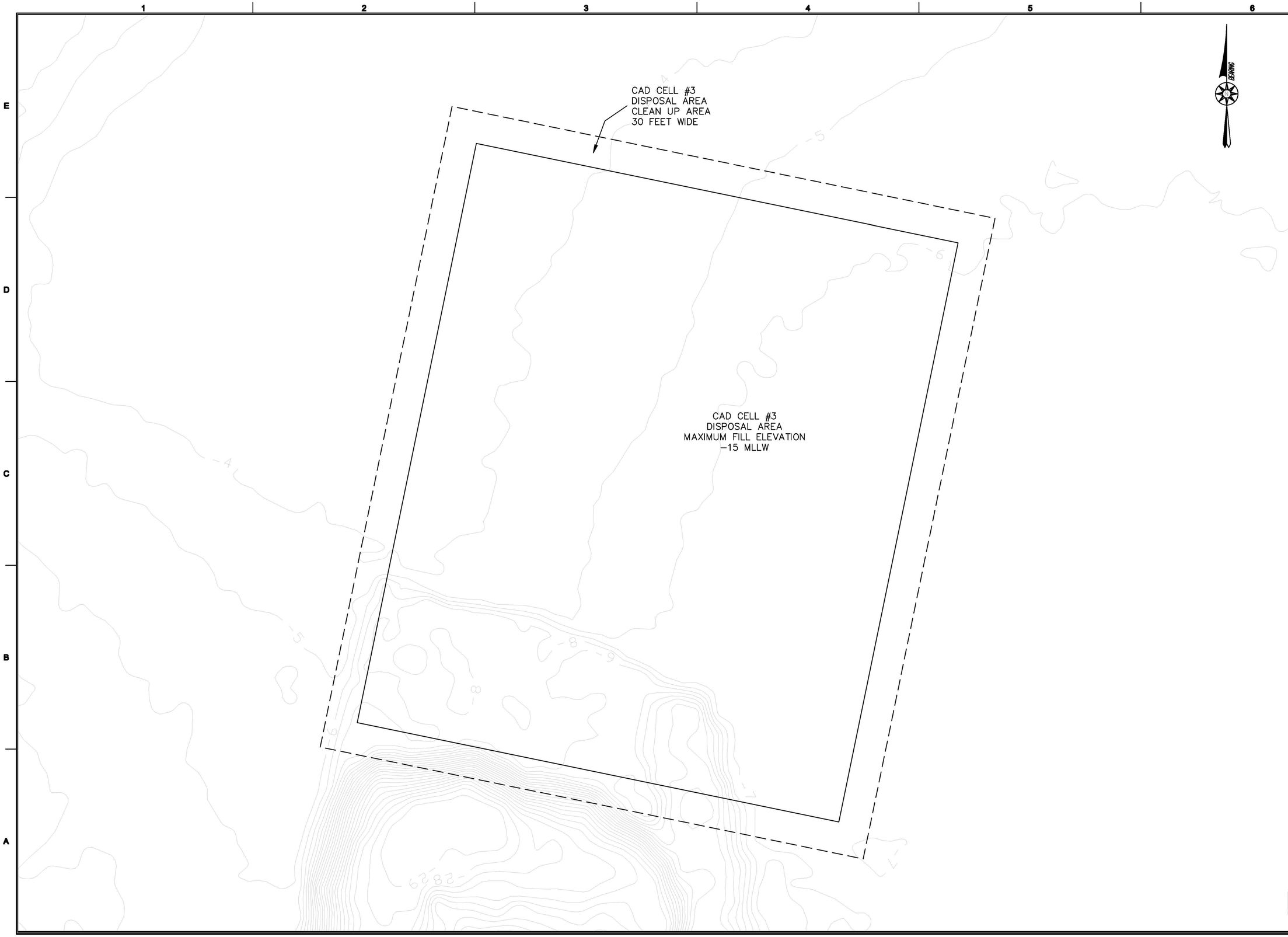
NO.	DATE	DESCRIPTION	BY

PROJECT NO.	6690
CADD FILE	
DESIGNED BY	GCD
DRAWN BY	GCD
CHECKED BY	CMM
DATE	08/04/2011
DRAWING SCALE	1"=50'

GRAPHIC SCALE
SCALE: 1"=50'
0 25 50 75 125 FEET

SHEET TITLE
BOTTOM OF CAD #3

DRAWING NO.
P-14
DRAFT



APEX

ROCKVILLE, MD
SOUTH WINDSOR, CT - BOSTON, MA -
NEW BEDFORD, MA - HOLYOKE, MA

184 HIGH STREET, SUITE 502
BOSTON, MA 02210

55H CONNECTICUT AVENUE
SOUTH WINDSOR, CT

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PROJECT
NEW BEDFORD
MARINE COMMERCE
TERMINAL

OWNER
MASSACHUSETTS CLEAN ENERGY CENTER
55 SUMMER STREET, 9TH FLOOR
BOSTON, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY

PROJECT NO.	6690
CADD FILE	
DESIGNED BY	GCD
DRAWN BY	GCD
CHECKED BY	CMM
DATE	08/25/2011
DRAWING SCALE	1"=40'

GRAPHIC SCALE

SCALE: 1"=40'

0 20 40 80 160 FEET

SHEET TITLE

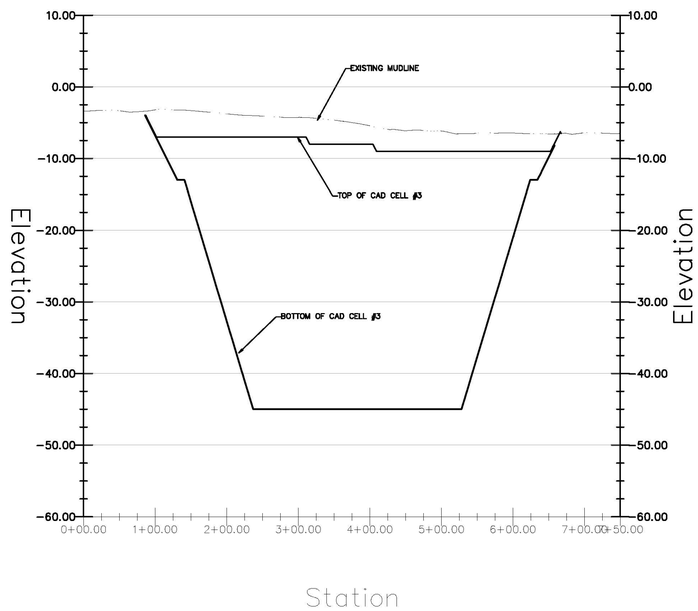
CAD CELL #3
DISPOSAL
PLAN

DRAWING NO.

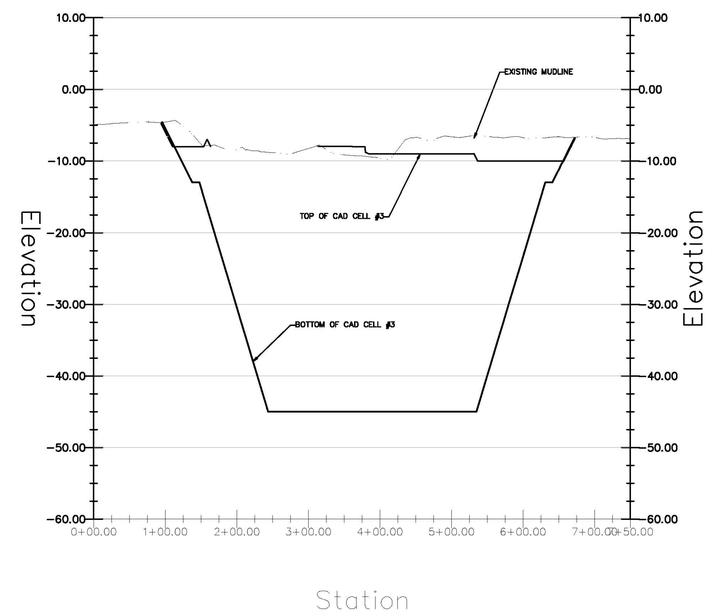
P-26

DRAFT

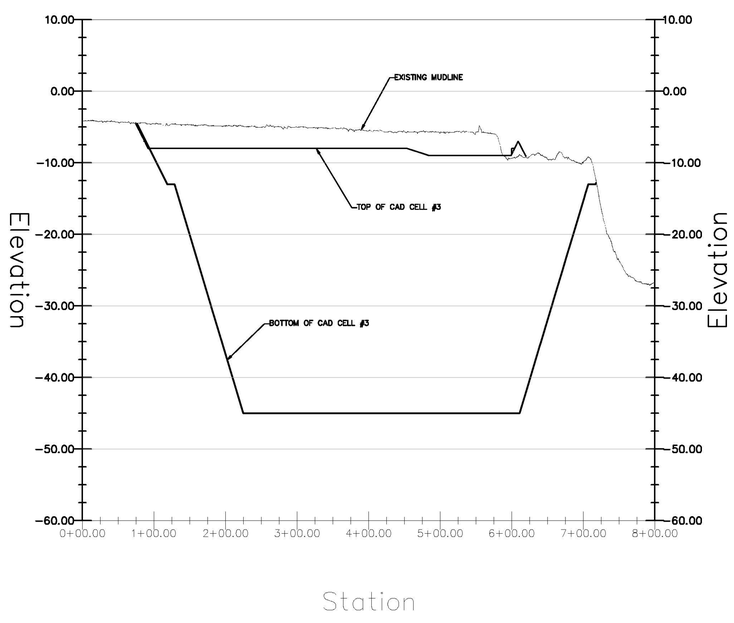
Profile View of A–A'



Profile View of B–B'



Profile View of C–C'



APEX

ROCKVILLE, MD
SOUTH WINDSOR, CT - BOSTON, MA - NEW BEDFORD, MA - HOLYOKE, MA

184 HIGH STREET, SUITE 502
BOSTON, MA 02210

55H CONNECTICUT AVENUE
SOUTH WINDSOR, CT

[illegible]

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PROJECT
NEW BEDFORD MARINE COMMERCE TERMINAL

OWNER
MASSACHUSETTS CLEAN ENERGY CENTER
55 SUMMER STREET, 9TH FLOOR
BOSTON, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY

PROJECT NO.	6690
CADD FILE	
DESIGNED BY	GCD
DRAWN BY	GCD
CHECKED BY	CHM
DATE	08/04/2011
DRAWING SCALE	N.T.S.

GRAPHIC SCALE

SHEET TITLE

CAD CELL #3
CROSS-SECTIONS

DRAWING NO.

X-4

DRAFT

Apex Companies, LLC.

1 WAMSUTTA STREET
SUITE 8
NEW BEDFORD, MA 02740
(508) 996-9828

184 HIGH STREET
SUITE 502
BOSTON MA 02110
(617) 728-0070

REVISIONS

NO.	DATE	DESCRIPTION

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PREPARED FOR:

COMMONWEALTH OF MASSACHUSETTS

DRAWING TITLE:

NEW BEDFORD MARINE COMMERCE TERMINAL

Scale: 1"=150'

0 75 150 300 450 FEET

Date	7/13/11
Proj. Mgr.	JAB
Design	CWM
Check	CHM
Drawn	GCD
Job. No.	6690
Last Rev.	6/28/12

Drawing No.

FIG-2

P:\Jobs\6690 NBH_ Phase IV\PLANS\PERMITTING\SOUTH_TERMINAL_NEW_FOOTPRINT_6_28_12.dwg

Apex Companies, LLC.

1 WAMSUTTA STREET
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SUITE 502
BOSTON MA 02110
(617) 728-0070

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NO.	DATE	DESCRIPTION

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PREPARED FOR:

COMMONWEALTH
OF
MASSACHUSETTS

DRAWING TITLE:

NEW BEDFORD
MARINE
COMMERCE
TERMINAL

Scale: 1"=150'

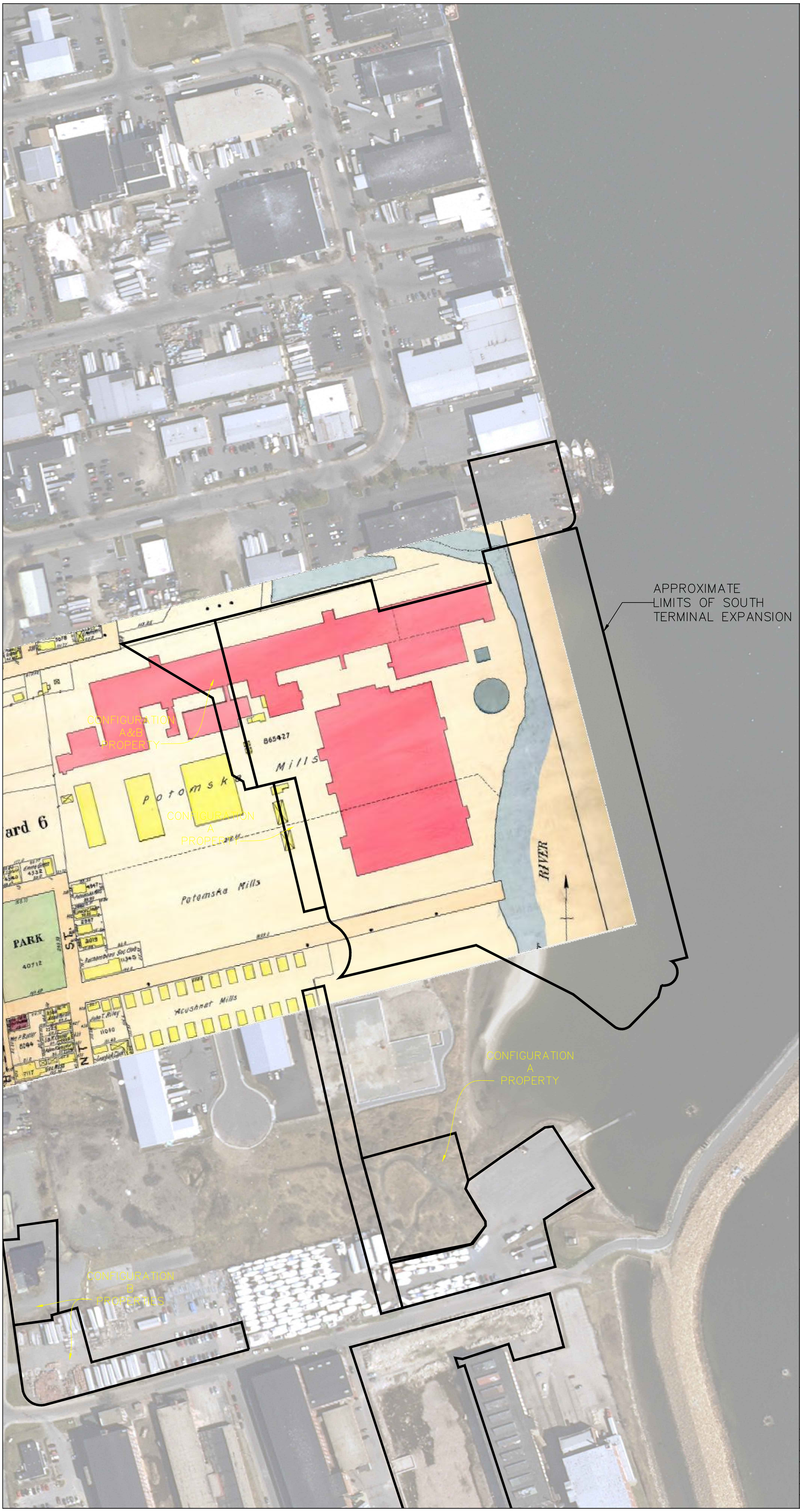
0 75 150 300 450 FEET

Date	7/13/11
Proj. Mgr.	JAB
Design	CWM
Check	CHM
Drawn	GCD
Job. No.	6690
Last Rev.	6/28/12

Drawing No.

FIG-3

P:\Jobs\6690 NBH_ Phase IV\PLANS\PERMITTING\SOUTH_TERMINAL_NEW_FOOTPRINT_6_28_12.dwg



Apex Companies, LLC.

1 WAMSUTTA STREET
SUITE 8
NEW BEDFORD, MA 02740
(508) 996-9828

184 HIGH STREET
SUITE 502
BOSTON MA 02110
(617) 728-0070

REVISIONS

NO.	DATE	DESCRIPTION

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PREPARED FOR:

COMMONWEALTH
OF
MASSACHUSETTS

DRAWING TITLE:

NEW BEDFORD MARINE
COMMERCE TERMINAL
1911 POTOMSKA MILLS
OVERLAY

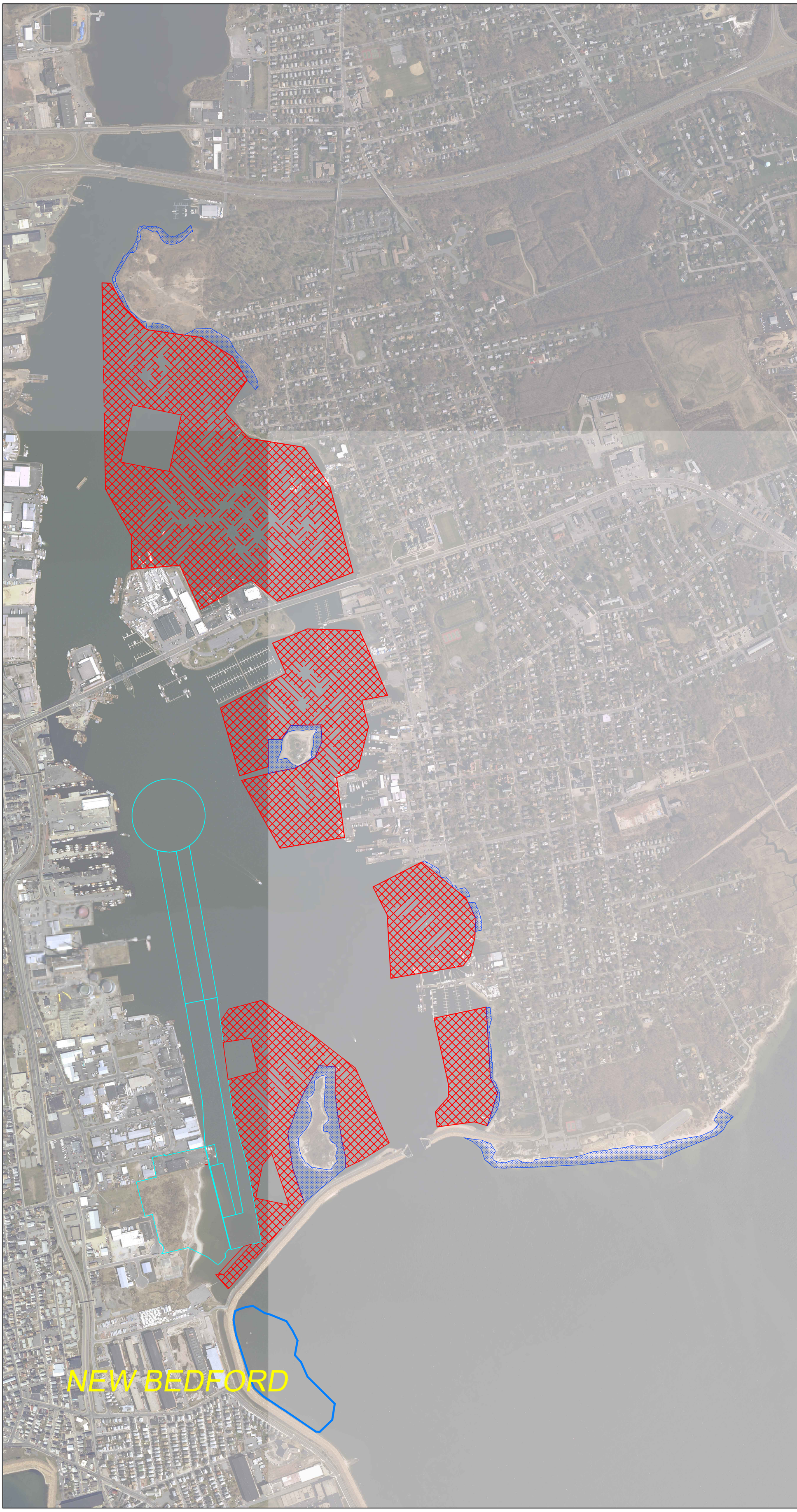
Scale: 1"=100'

0 50 100 200 300 FEET

Date	6/5/10
Proj. Mgr.	JAB
Design	GCD
Check	CM
Drawn	GCD
Job. No.	6690.002
Last Rev.	6/29/12

Drawing No.

P:\Jobs\6690 NBH_ Phase IV\PLANS\Archeology\SOUTHTERMINAL_ARCH)OVERLAY.dwg



APEX

184 HIGH STREET
SUITE 502
BOSTON MA 02110
(617) 728-0070

REVISIONS

NO.	DATE	DESCRIPTION
1.	2/11/10	PRELIMINARY LAYOUT
2.	4/09/10	PRELIMINARY ASSESSMENT
3.	4/15/10	FIELD LOCATION
4.	7/07/10	ADD. FED. RESOURCE

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SUB-TIDAL
(0 TO -16 FT MLLW)

INTERTIDAL

PREPARED FOR:

COMMONWEALTH
OF
MASSACHUSETTS

DRAWING TITLE:

NEW BEDFORD MARINE COMMERCE TERMINAL SIMILAR HABITATS WITHIN NEW BEDFORD HARBOR

Scale: 1"=500'

0 250 500 1000 1500 FEET

Date 3/24/10	Drawing No.
Proj. Mgr.	
Design	
Check CM	
Drawn GCD	
Job. No. 6690	
Last Rev. 8/19/11	

P:\Jobs\6690 NBH_ Phase IV\PLANS\PERMITTING\FIGURE_8_DUPLICATIVE_RESOURCES.dwg

APEX
1 WAMSUTTA STREET, SUITE 8
NEW BEDFORD, MA 02740
(617) 728-0070
184 HIGH STREET, SUITE 502
BOSTON MA 02110
(617) 728-0070

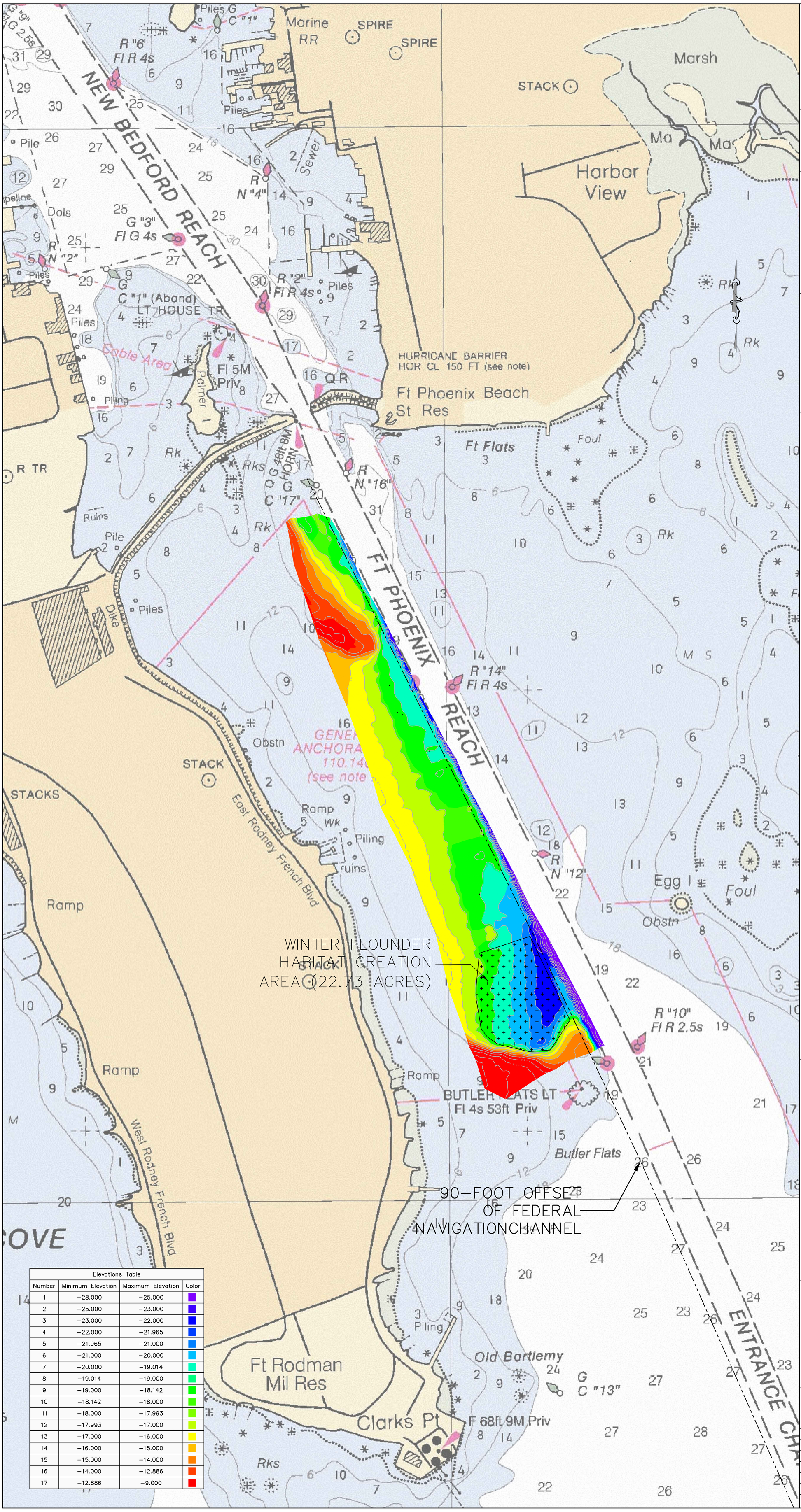
Mitigation Areas Locus Map

NEW BEDFORD MARINE COMMERCE TERMINAL
NEW BEDFORD, MA

Scale: 1"=1500'

0 750 1500 2250

P:\Jobs\6690 NBH_ Phase IV\PLANS\PERMITTING\SOUTHTERMINAL_MITIGATION_FIGURE_10.dwg



Elevations Table			
Number	Minimum Elevation	Maximum Elevation	Color
1	−28.000	−25.000	
2	−25.000	−23.000	
3	−23.000	−22.000	
4	−22.000	−21.965	
5	−21.965	−21.000	
6	−21.000	−20.000	
7	−20.000	−19.014	
8	−19.014	−19.000	
9	−19.000	−18.142	
10	−18.142	−18.000	
11	−18.000	−17.993	
12	−17.993	−17.000	
13	−17.000	−16.000	
14	−16.000	−15.000	
15	−15.000	−14.000	
16	−14.000	−12.886	
17	−12.886	−9.000	

APEX

184 HIGH STREET
SUITE 502
BOSTON MA 02110
(617) 728-0070

REVISIONS

NO.	DATE	DESCRIPTION
1.	11/22/10	MITIGATION AREAS
2.	12/15/10	BATHY UPDATED

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PREPARED FOR:

COMMONWEALTH
OF
MASSACHUSETTS

DRAWING TITLE:

NEW BEDFORD MARINE
COMMERCE TERMINAL
WINTER FLOUNDER
MITIGATION AREA

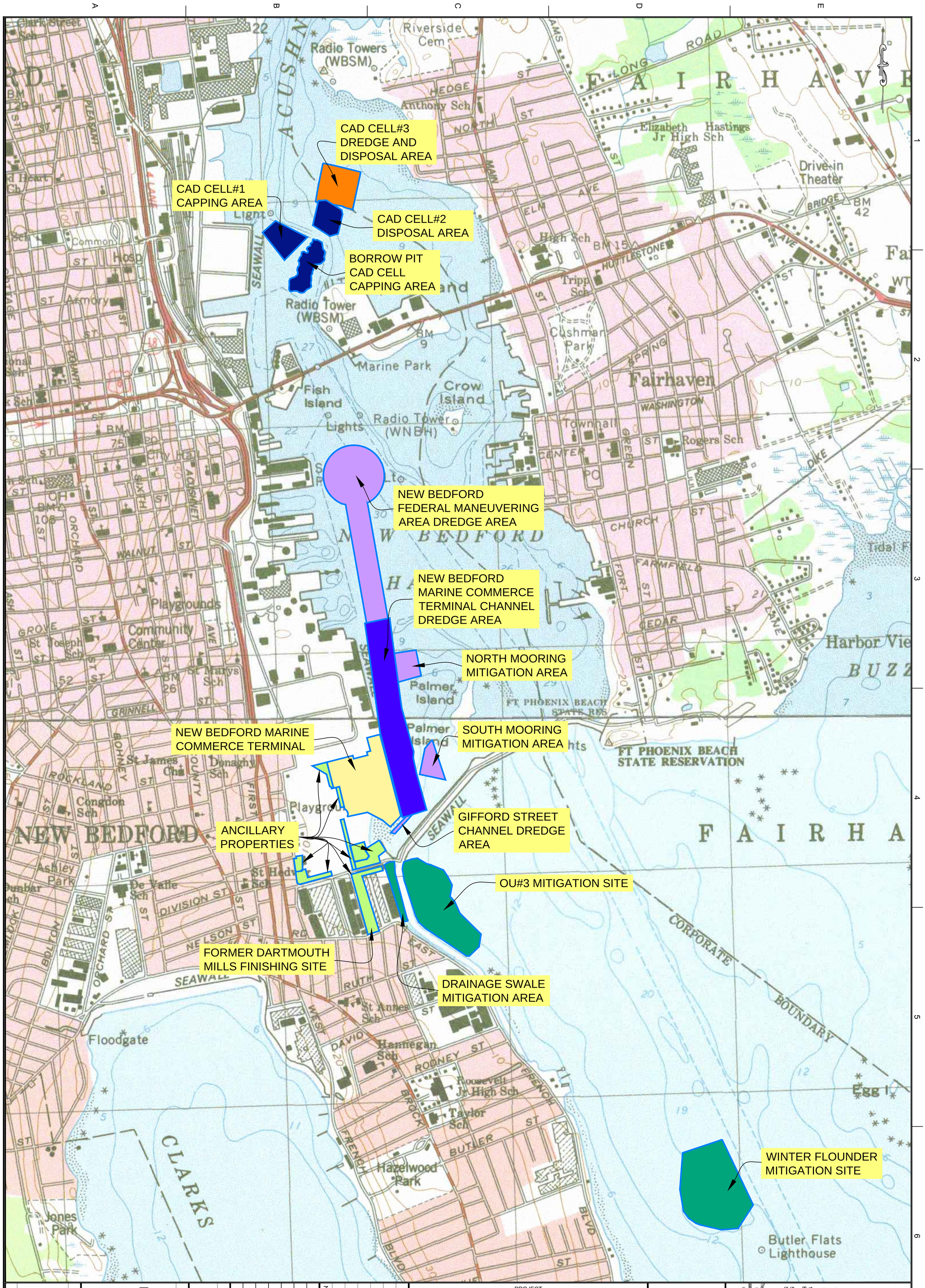
Scale: 1"=500'

0 250 500 1000 1500 FEET

Date	6/5/10
Proj. Mgr.	JAB
Design	GCD
Check	CM
Drawn	GCD
Job. No.	6690.002
Last Rev.	9/20/11

Drawing No.

P:\Jobs\6690 NBH_ Phase IV\PLANS\PERMITTING\FLOUNDER_MITIGATION_AREAS_FIGURE_11.dwg



APEX

ROCKVILLE, MD
SOUTH WINDSOR, CT - BOSTON, MA -
NEW BEDFORD, MA - HOLYOKE, MA

184 HIGH STREET, SUITE 502
BOSTON, MA 02210

58H CONNECTICUT AVENUE
SOUTH WINDSOR, CT

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PROJECT

NEW BEDFORD
MARINE COMMERCE
TERMINAL

OWNER

MASSACHUSETTS CLEAN ENERGY CENTER
55 SUMMER STREET, 9TH FLOOR
BOSTON, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY

PROJECT NO.	6690
CADD FILE	SITE FIGURE
DESIGNED BY	GCD
DRAWN BY	GCD
CHECKED BY	
DATE	5/30/2012
DRAWING SCALE	1 INCH = 600 FEET

GRAPHIC SCALE
SCALE: 1"=600'
0 300 600 1200

SHEET TITLE

NEW BEDFORD
MARINE COMMERCE
TERMINAL
GENERAL SITE
PLAN

DRAWING NO.

1

1 OF 1

P:\Jobs\6690 NBH_ Phase IV\PLANS\EPA_SITE_FIGURE.dwg

LEGEND

EXISTING	DESC.	PROPOSED
80	CONTOURS	80
x 2.8	G.A.F. SPOT GRADES	80x50 50.0
+ 2.8	EASTERN TOPOGRAPHICS SPOT GRADES	
	WETLANDS	
	F.E.M.A. FLOOD ZONE	
	DITCH/SWALE	
D	DRAIN LINE	D
	CATCH BASIN (CB)	
	DRAIN MANHOLE (DMH)	
S	SEWER LINE	S
	SEWER MANHOLE (SMH)	
E	ELECTRIC LINE	E
	ELECTRIC MANHOLE (EMH)	
T	TELEPHONE LINE	T
	TELEPHONE MANHOLE (TMH)	
OHW	OVERHEAD WIRES	OHW
	UTILITY POLE	
	GUY POLE	
	WATER GATE/VALVE	
	WATER SHUTOFF/CURB STOP	
	HYDRANT	
	GAS GATE/VALVE	
	GAS SHUTOFF	
	GAS METER	
W	WATER LINE	W
G	GAS LINE	G
U	UNDERGROUND UTILITIES	U
	FENCE	
	STONEWALL	
	TREELINE	
	HAYBALE	

NOTES:

1.) TOPOGRAPGHICAL BASE MAP WAS PROVIDED TO G.A.F. ENGINEERING, INC. BY LOUIS BERGER GROUP, INC. BY ELECTRONIC FILE. FILE PLAN ENTITLED "TOPOGRAPHICAL WORKSHEET OF THE WINSEGANSET RESERVE MARSHES, FAIRHAVEN, MA FOR TETRA TECH EM, INC. CAMBRIDGE, MA" BY EASTERN TOPOGRAPHICS WOLFEBORO, NH, SCALE 1"=200', CONTOUR INTERVAL: 1', PLAN PHOTO DATE: 19 MAR. 03 (1:3600), COMPILATION DATE 13 MAY 03, GROUND CONTROL BY: NORDE-DIST SURBEY QUINCY, MA.

2.) SUPPLIMENTAL SPOT GRADES, WETLANDS LOCATIONS, SANITARY SEWER LOCATION, SOUNDINGS AND DETAILED LOCATIONS AT RIVER AVE. ARE FROM A FIELD SURVEY CONDUCTED BY G.A.F. ENGINEERING, INC. OCTOBER 2007, NOVEMBER 2004 AND JUNE 2003.

3.) PROPERTY BOUNDARIES ARE COMPILED FROM PLANS AND DEEDS OF RECORD AND TOWN TAX ASSESSMENT RECORDS.

4.) SITE ELEVATION DATUM PER PLAN/ELECTONIC FILE REFERRENCED IN NOTE 1.

0 50 100 200

:H:\GAFDWG\03-5799\MARSH ISLAND\\
035799\Marshisland 07.dwg

REV.	DATE	BY	APP'D	DESCRIPTION

DATE: OCT. 9, 2007
DRAWN BY: GDA
CHECKED BY: GDA
JOB NO.: 03-5799
SCALE: 1" =50'

APPROVED BY:

APPROVED BY:

PROGRESS PRINT
OCTOBER 10, 2007

G.A.F. ENGINEERING, INC.
PROFESSIONAL ENGINEERS & LAND SURVEYORS
266 MAIN STREET - WAREHAM, MA 02571
TEL: (508) 295-6600 FAX: (508) 295-6634
E-MAIL: gaf.eng@verizon.net

PLAN OF TO ACCOMPANY NOTICE OF INTENT

MARSH ISLAND FAIRHAVEN, MA

PREPARED FOR:

LOUIS BERGER GROUP, INC.

JOB NO.: 03-5799

DWG. 1 OF 2

P:\Jobs\6690 NRH_ Phase IV\PLANS\from_louisberger\Grading-Plan for Volume Cocs\BASE\X-Baseplan_CM1677_1.dwg

:H:\DATDWG\03-5799(MARSH ISLAND)\
03579B\Morrisland 07.dwg

REV.	DATE	BY	APP'D	DESCRIPTION

DATE: OCT. 9, 2007
DRAWN BY: GDA
CHECKED BY: GDA
JOB NO.: 03-5799
SCALE: 1" =50'

APPROVED BY:

APPROVED BY:

PROGRESS PRINT
OCTOBER 10, 2007

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PROFESSIONAL ENGINEERS & LAND SURVEYORS
266 MAIN STREET - WAREHAM, MA 02571
TEL: (508) 295-6600 FAX: (508) 295-6634
E-MAIL: gaf.eng@verizon.net

PLAN OF TO ACCOMPANY
NOTICE OF INTENT
MARSH ISLAND FAIRHAVEN, MA

PREPARED FOR:
LOUIS BERGER GROUP, INC.

JOB NO.: 03-5799

DWG.
2 OF 2

P:\Jobs\6690 NBH_ Phase IV\PLANS\from_louisberger\Grading-Plan for Volume Calcs\BASE\X-Baseplan_CM1677_1.dwg

CONTINUED ON SHEET C-9

LOD — LIMIT OF DISTURBANCE

SF — SILT FENCE

6-FOOT CHAIN LINK FENCE

TIMBER GUARDRAIL

ADA COMPLIANT WALKING TRAIL

RESOURCE AREA IMPACT SUMMARY

WETLAND TYPE	AREA (SQUARE FEET) OR LENGTH (LINEAR FEET)	
	PERMANENT	TEMPORARY
BVW	73,826 S.F.	911 S.F.
SALT MARSH	26,386 S.F.	1,820 S.F.
COASTAL BANK	40 L.F.	30 L.F.
COASTAL BEACH	0	1,175 S.F.
LAND SUBJECT TO COASTAL STORM FLOWAGE*	14,342 S.F.	2,970 S.F.
	*398,722 S.F. (9.1 AC) NET-STORAGE GAIN	
RIVERFRONT AREA (DISTURBED)	174,850 S.F.	31,950 S.F.

NOTES:

1. ALL AREAS SHALL BE GRADED WITHIN THE PROPOSED SALT MARSH TO PROMOTE POSITIVE DRAINAGE.
2. AREAS TO BE STABILIZED WITH COIR LOGS ARE AS SHOWN ON THE PLANTING PLAN FOR CLARITY.

50 25 0 50 100

SCALE IN FEET

THE Louis Berger Group, INC.
ENGINEERS • PLANNERS
SCIENTISTS • ECONOMISTS
MANCHESTER, NH (603) 644-5200
NEEDHAM, MA (781) 444-3330
PROVIDENCE, RI (401) 521-5980

REV.	DESCRIPTION	DATE

NOT FOR CONSTRUCTION

National Oceanic and Atmospheric Administration - Restoration Center
55 GREAT REPUBLIC DRIVE
GLOUCESTER, MA 01930

MARSH ISLAND
SALT MARSH RESTORATION
FAIRHAVEN, MASSACHUSETTS

SHEET TITLE: FINAL GRADING PLAN (1 OF 2)

SCALE:	1"=50'	DATE:	JUNE 2012
PROJECT MANAGER:	CAW		
PROJECT ENGINEER:	CF		
CHECKED BY:	CC	SHEET No.	C-8
DRAWN BY:	CL		
JOB NUMBER:	71822		

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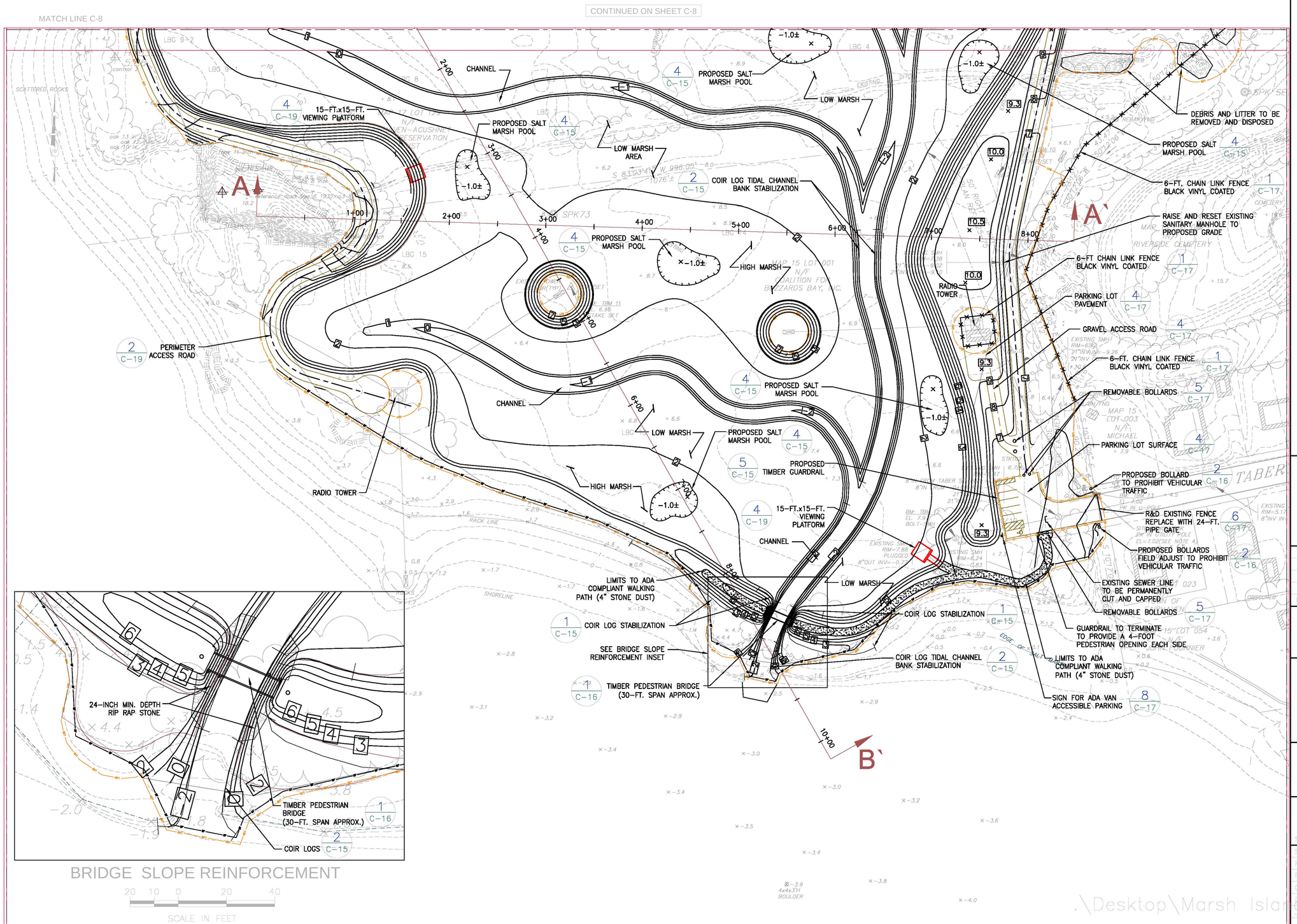

BRIDGE SLOPE REINFORCEMENT

LOD — LIMIT OF DISTURBANCE

SF — SILT FENCE

6-FOOT CHAIN LINK FENCE

TIMBER GUARDRAIL

ADA COMPLIANT WALKING TRAIL

RESOURCE AREA IMPACT SUMMARY

WETLAND TYPE	AREA (SQUARE FEET) OR LENGTH (LINEAR FEET)	
	PERMANENT	TEMPORARY
BVW	73,826 S.F.	911 S.F.
SALT MARSH	26,386 S.F.	1,820 S.F.
COASTAL BANK	40 L.F.	30 L.F.
COASTAL BEACH	0	1,175 S.F.
LAND SUBJECT TO COASTAL STORM FLOWAGE*	14,342 S.F.	2,970 S.F.
	*398,722 S.F. (9.1 AC) NET-STORAGE GAIN	
RIVERFRONT AREA (DISTURBED)	174,850 S.F.	31,950 S.F.

NOTES:

1. ALL AREAS EXCEPT POOLS SHALL BE GRADED WITHIN THE PROPOSED SALT MARSH TO PROMOTE POSITIVE DRAINAGE.
2. AREAS TO BE STABILIZED WITH COIR LOGS ARE AS SHOWN ON THIS PLAN AND PLANTING PLAN FOR CLARITY.
3. TIDAL INLET FROM RIPRAP STABILIZED AREA TO L.O.D SHALL BE STABILIZED WITH COIR LOGS.

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SCALE IN FEET

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ENGINEERS • PLANNERS
SCIENTISTS • ECONOMISTS
MANCHESTER, NH (603) 644-5200
NEEDHAM, MA (781) 444-3330
PROVIDENCE, RI (401) 521-5980

REV.	DESCRIPTION	DATE

NOT FOR CONSTRUCTION

National Oceanic and Atmospheric Administration - Restoration Center
55 GREAT REPUBLIC DRIVE
GLOUCESTER, MA 01930

MARSH ISLAND
SALT MARSH RESTORATION
FAIRHAVEN, MASSACHUSETTS

SHEET TITLE: FINAL GRADING PLAN (2 OF 2)

SCALE:	AS SHOWN	DATE:	JUNE 2012
PROJECT MANAGER:	CAW		
PROJECT ENGINEER:	CF		
CHECKED BY:	CC	SHEET No.	C-9
DRAWN BY:	FBG		
JOB NUMBER:	0U822		

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The COMMONWEALTH OF MASSACHUSETTS
BOARD OF UNDERWATER ARCHAEOLOGICAL RESOURCES
OFFICE OF COASTAL ZONE MANAGEMENT
251 Causeway Street, Suite 800, Boston, MA 02114-2136
Tel. (617) 626-1200 Fax (617) 626-1240 Web Site: www.mass.gov/czm/buar/index.htm

POLICY GUIDANCE FOR THE DISCOVERY OF UNANTICIPATED UNDERWATER ARCHAEOLOGICAL RESOURCES

Introduction

The Massachusetts Board of Underwater Archaeological Resources (MBUAR) is the state agency charged with the identification, preservation and protection of the Commonwealth's underwater archaeological resources. The purpose of archaeological investigations during the planning process for a project is to determine the presence or absence of culturally related materials and resources within a project area and determine or assess eligibility for listing in the National Register of Historic Places (National Register). This work will be undertaken pursuant to the applicable laws and regulations pertaining to the cultural resources of Massachusetts. Generally, these archaeological investigations are conducted to comply with the National Environmental Policy Act of 1969 (NEPA) and Section 106 of the National Historic Preservation Act of 1966, as amended (1976, 1980, 1992, 1999), and implementing regulations of the Advisory Council on Historic Preservation (Advisory Council) as well as pursuant to Massachusetts General Laws concerning the MBUAR and the Massachusetts Historical Commission (MHC).

The MBUAR recognizes that despite intensive background research, remote sensing surveys, and field investigations, it is always possible that cultural resource deposits such as shipwrecks may still be discovered during the course of construction activities on or below state bottomlands, particularly during excavation. MBUAR procedures that should be followed in the event that unanticipated underwater archaeological resources are inadvertently discovered during the non-MBUAR permitted activities are outlined below. NOTE: MBUAR permittees must also adhere to any general and special conditions placed on their permit.

In the event suspected human remains are encountered, you are directed to follow the MBUAR Policy Guidance on the Discovery of Unanticipated Human Remains as well.

Procedures

Below are steps that should be followed in the event that unrecorded shipwreck sites and/or other underwater archaeological resources are discovered during the project.

1. In the event that a suspected shipwreck or other site is uncovered during construction activity, that activity shall immediately be halted in the area of the find until it can be determined whether the object is a shipwreck or other underwater archaeological resource and if it represents a potentially significant feature or site.

2. The project field staff will immediately notify the project proponent upon the suspension of work activities in the area of the find. Notification will include the specific location in which the potential feature or site is located.

3. The project proponent will immediately contact its cultural resource management consultant to review the information. On-site personnel will provide information on the location and any discernable characteristics of the potential cultural resource (the target), and any survey data depicting the find. This information will be forwarded for review by the project archaeologist for the cultural resource management consultant.

4. If the project archaeologist determines that the site, feature, or target is not potentially cultural, the project field staff through the project proponent will be notified by the project archaeologist that work may resume. The project archaeologist will also notify MBUAR of this determination.

5. If, based upon both previously acquired and current remote sensing survey data, or other indications (e.g., timbers, etc.), it is determined that the new target is possibly a shipwreck or other potential cultural resource, the project archaeologist will inform the project proponent, who will inform the project field staff that work may not resume at the given location until notified in writing by the proponent. The cognizant federal and state review agencies, MBUAR, SHPO (State Historic Preservation Officer), and Advisory Council (if applicable) will be notified of this determination within 2 working days.

6. A visual inspection by archaeological divers or remotely operated vehicle (ROV) will be conducted to determine if the site is potentially eligible for listing in the National Register. The results of the survey will be formally submitted to cognizant federal and state review agencies, SHPO, MBUAR and the Advisory Council (if applicable) for final review and comment. The SHPO and MBUAR will endeavor to respond within 2 working days of receiving the inspection results and recommendations.

7. a. If it is determined that the target, feature, or site does not represent a potentially significant resource, and project proponent is in receipt of <u>written comment from the review agency(s)</u>, work may resume in that area.

   b. If a National Register determination cannot be made in accordance with Step 6, the project proponent may either undertake additional research to satisfy Step 6 or exercise Step 8 (avoidance).

8. If agency review concurs or concludes that the site may be important and is potentially National Register eligible, the project proponent will develop avoidance measures to eliminate the site from the Area of Potential Effects. Any proposed avoidance measures will be made available to the cognizant federal and state review agencies, SHPO, MBUAR, and Advisory Council for review and comment.

9. If avoidance measures cannot be developed and executed, the resource may be excavated and/or removed only under a memorandum of agreement with all interested parties including the State Archaeologist/Deputy SHPO, MBUAR Director, MBUAR permittee and/or project proponent, and, if applicable, the Advisory Council subject to appropriate state permits. This memorandum will outline an adequate data recovery plan that specifies a qualified research team and an appropriate research design. The appropriate permits must also be secured from MBUAR (if not already a permittee of MBUAR) and the MHC prior to conducting any further disturbance to the site. In the event that human remains are associated with other cultural resources, see MBUAR's Policy Guidance on the Discovery of Unanticipated Human Remains for required procedures.

Applicable State and Federal Laws

MGL Chapter 9, § 26-27C - MHC review of state projects, State Archaeologist's Permits

MGL Chapter 91, §63 – Underwater Archaeological Resources Permits

312 CMR 2.00: Board of Underwater Archaeological Resources

950 CMR 70.00: Massachusetts Historical Commission

Section 106 of the National Historic Preservation Act of 1966 (16 USC 470f), as amended (1976, 1980, 1992, 1999)

National Environmental Policy Act of 1969 ("NEPA")

List of Contacts

Federal

To be named based on applicable federal jurisdiction

State

State Archaeologist/Massachusetts Historical Commission/SHPO
220 Morrissey Boulevard
Boston, Massachusetts 02125
Contact: Brona Simon, State Archaeologist/Acting Executive Director
(617) 727-8470; FAX: (617) 727-5128
mhc@sec.state.ma.us; Brona.simon@state.ma.us

Massachusetts Board of Underwater Archaeological Resources
Executive Office of Environmental Affairs
251 Causeway Street, Suite 800
Boston, Massachusetts 02114
Contact: Victor Mastone, Director and Chief Archaeologist
(617) 626-1141; FAX (617) 626-1240
Victor.mastone@state.ma.us

Others to be named based on applicable state jurisdiction, such as Commission on Indian Affairs and Tribal Historic Preservation Officers

Short list of potential federal and state agencies with applicable jurisdiction (not comprehensive):

Advisory Council on Historic Preservation
Army Corps of Engineers
Coast Guard
Commission on Indian Affairs
Department of Conservation and Recreation
Federal Energy Regulatory Commission
Fish and Wildlife Service
National Park Service
Tribal Historic Preservation Officer

The COMMONWEALTH OF MASSACHUSETTS
BOARD OF UNDERWATER ARCHAEOLOGICAL RESOURCES
OFFICE OF COASTAL ZONE MANAGEMENT
251 Causeway Street, Suite 800, Boston, MA 02114-2136
Tel. (617) 626-1200 Fax (617) 626-1240 Web Site: www.mass.gov/czm/buar/index.htm

POLICY GUIDANCE ON THE DISCOVERY OF UNANTICIPATED HUMAN REMAINS

Introduction

The Massachusetts Board of Underwater Archaeological Resources (MBUAR) is the state agency charged with the identification, preservation and protection of underwater archaeological resources. MBUAR recognizes that despite intensive background research, remote sensing research, and field investigations, it is possible that human remains may still be discovered during the course of permitted and non-permitted activities on or below state bottom lands, particularly during excavation. For a concise description of your responsibilities under state law, you should visit the Massachusetts Historical Commission (MHC) website and read the following link regarding the treatment of human remains when accidentally discovered: http://www.sec.state.ma.us/mhc/mhcpdf/kn4.pdf. MBUAR procedures that should be followed in the event that suspected human remains are inadvertently discovered during the permitted and non-permitted activities are outlined below (in accordance with the applicable sections of Massachusetts General laws listed in this policy guidance).

Procedures

Generally, the possibility of encountering human remains is not anticipated when conducting background research, remote sensing surveys, or field investigations of shipwrecks or other underwater archaeological resources. However, passengers and crew often die in shipwrecks and for each shipwreck identified there are possibly human remains associated.

If suspected human remains are located within the waters of the Commonwealth of Massachusetts, the following procedures should be followed by MBUAR permittees and/or project proponents:

1. In the event that suspected human remains are encountered, any activity that might affect those remains shall be immediately halted.

2. The Project Director and, if applicable, the Project Archaeologist will be informed and notified of the exact location of the remains. *

3. The Project Archaeologist and the Project Director will be responsible for **immediately** notifying the State Police Detectives at the local District Attorney's Office, the Chief Medical Examiner, the State Archaeologist, the MBUAR, and the Environmental Police

(contact information provided below).

4. If the Chief Medical Examiner determines that the human remains are less than 100 years old, a criminal investigation may be warranted. If the remains are determined to be older than 100 years, the Chief Medical Examiner will notify the State Archaeologist at the Massachusetts Historical Commission.

5. The State Archaeologist, assisted by MBUAR staff, will conduct an examination to determine the age, cultural affiliation, and identity of the remains. If it is determined that the remains are those of a Native American, the State Archaeologist will notify the Commission on Indian Affairs. The State Archaeologist and MBUAR Director will consult to determine whether any prudent and feasible alternatives exist to avoid, minimize, or mitigate impacts to the site. The results of this consultation will be made available in writing.

   If it is not possible to protect the remains in situ, they may be excavated and/or removed only under a memorandum of agreement with all interested parties including the State Archaeologist/Deputy SHPO (State Historic Preservation Officer), MBUAR Director, MBUAR permittee and/or project proponent, and, if applicable, the Commission on Indian Affairs. This memorandum will outline an adequate data recovery plan that specifies a qualified research team and an appropriate research design (including a proposal for disposition of the remains). Any excavation of said human remains **must** be conducted under a Special Permit (950 CMR 70.20) issued by the State Archaeologist. In the event the human remains are associated with other cultural resources, such as a shipwreck, the appropriate permit must also be secured from MBUAR (if not already a permittee of MBUAR).

NOTE: * Under state law, the finder is responsible to insure that the proper authority is notified when suspected human remains are encountered.

Applicable Massachusetts General Laws (M.G.L.):

- M.G.L. Chapter 38, §6, as amended – Discovery of Unmarked Human Skeletal Remains
- M.G.L. Chapter 9, §26A – State Archaeologist's duties
- M.G.L. Chapter 9, §27C – Cessation of Activities
- M.G.L. Chapter 7, §38A – Preservation, Excavation and Analysis of Native American Human Remains
- M.G.L. Chapter 114, §17 – Preservation of Ancient Burial Places
- M.G.L. Chapter 272, §71 – Crimes and Punishment: Disinterring Bodies
- M.G.L. Chapter 272, §73, as amended – Crimes and Punishment: Injuring or Removal of Burial Markers
- M.G.L. Chapter 91, §63 – Salvage, Recovery, etc. of Underwater Archaeological Resources; Permits

List of Contacts

State

District Attorney's Office State Police Detectives Unit
Contact: State Police Communications Section
(who will contact detectives at local district attorney's office)
(508) 820-2121

Massachusetts Environmental Police
251 Causeway Street, Suite 100
Boston, Massachusetts 02114
Contact: Communications Center (who will contact local EPO)
(800) 632-8075 or (617) 626-1665

State Office of the Chief Medical Examiner
720 Albany Street
Boston, Massachusetts 02118
Contact: Dr. Ann Marie Mires, Forensic Anthropologist
(617) 267-6767; Fax (617) 266-6763
AnnMarie.Mires@state.ma.us

State Archaeologist/Massachusetts Historical Commission
220 Morrissey Boulevard
Boston, Massachusetts 02125
Contact: Brona Simon, State Archaeologist/Acting Executive Director
(617) 727-8470; FAX: (617) 727-5128
mhc@sec.state.ma.us; Brona.simon@state.ma.us

Massachusetts Board of Underwater Archaeological Resources
251 Causeway Street, Suite 800
Boston, Massachusetts 02114
Contact: Victor Mastone, Director
(617) 626-1141; FAX (617) 626-1240
Victor.mastone@state.ma.us

Commission on Indian Affairs
100 Cambridge Street, Suite 300
Boston, MA 02114
Contact: Jim Peters, Executive Director
(617) 573-1291; FAX: (617) 573-1515
Indian_Affairs@hotmail.com

Superfund Records Center
SITE: New Bedford
BREAK: 4.9 SDMS# 509463

LEARN MORE AT: www.epa.gov/nbh

Draft Determination for the Proposed South Terminal Project

For the Commonwealth of Massachusetts' Request to Include Construction of a Confined Disposal Facility as Part of the State Enhanced Remedy

PROPOSAL:

The Commonwealth of Massachusetts has requested that EPA include construction of a Confined Disposal Facility ("CDF") as part of the State Enhanced Remedy ("SER"). The SER is already incorporated into the 1998 Record of Decision for the Upper and Lower Harbor at the New Bedford Harbor Superfund Site (1998 ROD); and, until now, the SER consisted of navigational dredging and disposal of dredged sediment in Confined Aquatic Disposal facilities (CADs). This would be the first time navigational dredged material would be disposed of in a CDF in New Bedford Harbor. The Commonwealth's proposal includes navigational dredging of approximately 44.94 acres of waters in New Bedford Harbor, and filling of approximately 0.18 acres of salt marsh, 0.1 of freshwater wetlands, and 6.67 acres of other Harbor waters with navigational dredged material, in order to construct a multi-purpose marine terminal, the primary purpose of which will be to provide critical infrastructure to serve offshore renewable energy facilities and accommodate international shipping. The proposal also involves dredging to construct an 8.76 acre Confined Aquatic Disposal Cell (CAD) to be used for disposal of navigational dredged material and to fill and cap portions of previously constructed CADs.

YOUR OPINION COUNTS: PUBLIC MEETINGS

EPA and the Commonwealth are holding two meetings to discuss this draft decision.

Public Informational Meeting
July 24, 2012 from 6:00 – 7:30 pm
Fort Taber Community Center, New Bedford

A Formal Public Hearing will be held immediately following the Public Informational meeting from **7:30–9:00 pm at the same location** at which time oral public comments will be accepted. Portuguese and Spanish interpreter(s) will be available at both meetings.

KEY CONTACTS:

KELSEY O'NEIL
U.S. EPA Community Involvement Coordinator
(617) 918-1799
oneil.kelsey@epa.gov

GENERAL INFO:

EPA NEW ENGLAND
5 Post Office Sq.,
Suite 100
Boston, MA 02109-3912

TOLL-FREE CUSTOMER SERVICE
1-888-EPA-7341

COMMENT PERIOD:
Jul 16 - Aug 21
Send postmarked or dated no later than 8/21/12:

email:
South-Terminal-Draft-Comments@epa.gov

In writing to:
Elaine Stanley,
EPA New England
5 Post Office Sq, Ste 100
Mail Code OSRR07-4
Boston, MA 02109-3912

continued >

COMMENT PERIOD:

EPA will accept public comments during a 30-day formal comment period. EPA considers and uses these comments to improve its Draft Determination. During the formal comment period, EPA will accept written comments via mail, email, and fax. Additionally, verbal comments may be made during the formal Public Hearing on July 24, 2012 during which a stenographer will record all offered comments during the Hearing. EPA will not respond to your comments at the formal Public Hearing but will hold an informational meeting prior to the start of the formal Public Hearing.
Provide EPA with your written comments by email or mail postmarked no later than Tuesday, August 21, 2012:

Email to: South-Terminal-Draft-Comments@epa.gov

In writing to:

Elaine Stanley, EPA New England
5 Post Office Square, Suite 100
Mail Code OSRR07-4
Boston, MA 02109-3912

EPA will review the transcript of all formal comments received at the Hearing and all written comments received during the formal comment period, before making a final determination about the proposed South Terminal Project. EPA will then prepare a written response to all the formal written and oral comments received. Your formal comment will become part of the official public record. The transcript of comments and EPA's written responses will be issued in a document called a Responsiveness Summary when EPA releases the Final Determination. The Responsiveness Summary and the Final Determination will be made available to the public on the New Bedford Harbor Superfund web site (www.epa.gov/nbh), at the New Bedford Public Library, and at the EPA Records Center. EPA will announce the release of the Final Determination through the local media and via the Harbor web site.

EPA will be accepting public comment on this Draft Determination from July 16, 2012 through August 21, 2012. You don't have to be a technical expert to comment. If you have a concern or suggestion regarding EPA's draft determination, EPA wants to hear from you before making a final determination on the Commonwealth's request. EPA is also requesting public comment concerning its specific draft wetland and floodplain determinations and its use of two separate draft risk-based determinations concerning containment of low-level polychlorinated biphenyls (PCBs). See discussion beginning on page 9 for more details on these draft findings and determinations. Comments can be sent by mail or e-mail. People can also offer oral or written comments at the formal public hearing (see page 2 for details). If you have specific needs for the public meetings, questions about the meeting facility and its accessibility, or questions about how to comment, please contact Kelsey O'Neil at 617-918-1799 or oneil.kelsey@epa.gov.

For detailed information about this Project and additional information that EPA considered in making its Draft Determination, see the Administrative Record for this South Terminal Project available for review as of July 23, 2012, at the New Bedford Public Library,613 Pleasant Street, 2nd floor Reference Department, New Bedford, MA (508) 961-3067 and the EPA New England Records Center, 5 Post Office Square, 1st floor, Boston, MA (617) 918-1440 or online at www.epa.gov/nbh. The Administrative Records for the New Bedford Harbor Superfund Site are incorporated by reference into this Administrative Record and may be viewed at the same locations.

The Draft Determination At A Glance...

The Commonwealth has submitted to EPA a detailed proposal concerning the State Enhanced Remedy ("SER") that was approved and integrated into the 1998 Record of Decision ("1998 ROD") for New Bedford Harbor. This new proposal increases the scope and detail of the SER as set forth in the ROD, but does not fundamentally change the approved SER. Because of this increase in scope and detail, EPA is evaluating the proposal to ensure it is consistent with the regulations at 40 C.F.R. 300.515(f)(1(ii) (State enhancement of remedy) and of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), 42 U.S.C. §§9601 et. seq.[1]

EPA is tentatively determining that the Commonwealth's proposal to construct a 28.25 acre marine terminal (consisting of 6.85 acres of filled waters (referred to as "the confined disposal facility" or the "CDF") and approximately 21.4 acres of upland area, (including the ancillary properties) (referred to as "the upland area")) in the South Terminal location of the New Bedford Harbor as well as the dredging and filling associated with that construction, including dredging and filling of confined aquatic disposal cells 2 and 3 and capping of CAD cell 1 and the borrow pit (collectively the "proposed Project", the "Project", or the "South Terminal Project") is both protective of human health and the environment and meets the substantive requirements of applicable or relevant and appropriate federal environmental standards. EPA also accepts the Commonwealth's determination that the proposed Project meets the applicable or relevant and appropriate state environmental standards. The proposed Project does not conflict with and is not inconsistent with the New Bedford Harbor Superfund remediation, and EPA reaffirms that the 1998 ROD, including the State Enhanced Remedy, remains protective of human health and the environment. EPA makes this determination after carefully reviewing the extensive submissions provided by the Massachusetts Department of Environmental Protection ("MassDEP"). This tentative determination is subject to the conditions set out below beginning on page 15 of this document. Accordingly, the proposed Project will benefit from the Section 121(e) permit exclusion.

Why Is EPA Issuing This Draft Determination?

As authorized by CERCLA and the National Contingency Plan, 40 C.F.R. Part 300 ("NCP"), EPA's cleanup of the New Bedford Harbor Superfund Site ("the Site") includes a State Enhanced Remedy ("SER"). A SER is an enhancement to the cleanup that is completely funded by the state. The SER for this Site, as proposed in the 1996 Proposed Plan[2], included, among other things, navigational dredging and the concept of a large navigational confined disposal facility ("CDF") for navigational dredged material to be constructed in the lower harbor, located just north of the hurricane barrier on the New Bedford shore[3]. As contemplated under the 1996 Proposed Plan and the 1998 Record of Decision ("1998 ROD"), it was

[1] While EPA does not believe that an Explanation of Significant Differences (ESD) under CERCLA is required here, this Determination meets the requirements for an ESD as EPA has complied with CERCLA §117(c) and NCP §§300.435(c)(2)(i) and 300.825(a)(2). In addition, as with an ESD, this Determination describes to the public the nature of the significant changes, summarizes the information that led to making the changes, and affirms that the revised action complies with the NCP and the statutory requirements of CERCLA.

[2] Proposed Cleanup Plan, Upper and Lower New Bedford Harbor, New Bedford, MA, November, 1996

[3] The State Enhanced Remedy was later incorporated into the Record of Decision and integrated into the remedy for the Upper and Lower Harbor operable unit that was issued in September, 1998 ("1998 ROD").

left to the Commonwealth to formulate the specific details of the dredging projects and disposal options. The Commonwealth has now provided specific details related to the proposed Project through the Commonwealth's recent submittals. These submittals provide details, including alternatives to, and impacts of the proposed Project.

Under CERCLA and the NCP, no federal, state or local permits are required with respect to on-site cleanup actions. The purpose of the permit exclusion is to ensure that procedural requirements are streamlined and do not delay or hamper performance of remedial actions under CERCLA. Substantive environmental requirements, the same as those that would apply to a permitted project, must be met. Under CERCLA, while no permits are required, on-site actions must comply with the substantive requirements of applicable or relevant and appropriate environmental laws.

Because the SER selected for the New Bedford Harbor Site is part of EPA's remedial action, CERCLA's permit exclusion applies to the SER. However, consistent with the 1998 ROD, once the details of the proposed navigation projects are known, EPA performs a review to ensure that the proposed navigation projects meet CERCLA requirements in order for the proposed Project to benefit from CERCLA's permit exclusion.

After reviewing the Commonwealth's submittals, EPA has made the tentative determination that the proposed Project is protective and that it complies with all applicable or relevant and appropriate environmental laws for this Project. The Project satisfies the same substantive requirements that would apply if the Project were subject to permit procedures. The proposed Project remains consistent with and does not conflict with the remedy.

EPA is soliciting public comment on this Draft Determination. Although public comment is not legally required, EPA is providing a public comment period as a matter of Agency discretion. **EPA therefore invites comments on its determination that this proposal meets all the substantive environmental requirements that would be applicable or relevant and appropriate to such a project.**

The proposed Project is presented in this Draft Determination and described in more detail in the document entitled, State Enhanced Remedy in New Bedford, South Terminal and its appendices, dated January 18, 2012, as modified by its June 18 and June 29, 2012 submittals, which were prepared by the Massachusetts Department of Environmental Protection (MassDEP). These and other supporting documents may be found in the Administrative Record for this proposal at www.epa.gov/nbh , the New Bedford Public Library and the EPA New England Records Center in Boston. The scope and a summary of the proposed Project are presented below.

Scope and Summary of Proposed Project

This Draft Determination evaluates the location and construction of a shoreline marine terminal, including a 6.85 acre CDF, in the South Terminal area of New Bedford Harbor, dredging of channels and a turning basin necessary to access the CDF, mitigation measures within and outside the hurricane

barrier, and dredging, filling and capping activities associated with CAD cells. The basic purpose of the project is to develop a marine terminal that will provide infrastructure capable of supporting the development of offshore renewable energy facilities as well as other future uses (such as container shipping, break-bulk cargo shipping, and short-sea shipping). A secondary purpose is to provide a site for the disposal of, and staging for beneficial reuse of material dredged from the navigational dredging associated with the State Enhanced Remedy.

This Draft Determination does not evaluate the location of CAD cell 3, which is to be constructed as part of this Project. The preferred location for navigational CAD cells in New Bedford (between the Route 195 and Route 6 bridges) was determined in the October 2003 Final Environmental Impact Report for the New Bedford/Fairhaven Harbor Dredge Material Management Plan ("2003 DMMP") prepared by the Massachusetts Office of Coastal Zone Management. [4] The Project's proposed CAD cell 3 will be located within this state-approved 2003 DMMP area. This Draft Determination will evaluate the activities of capping the existing borrow pit and existing CAD cell 1, the disposal of navigational dredged sediment (less than 50 ppm PCBs) into existing CAD cell 2, and dredging and partial filling of CAD cell 3.

Remediation of the upland portion of the terminal site adjacent to the proposed CDF will be conducted independently by the Commonwealth through the State hazardous waste cleanup program M.G.L. c. 21E ("21E"), and its implementing regulations in the Massachusetts Contingency Plan ("MCP"), 310 CMR 40.0000. However, the entire marine terminal, including the remediated portions, will be subject to the conditions set out in a draft risk-based TSCA Determination which is attached to this Draft Determination as Appendix J(1).[5]

Lead Agency

The entire cost of this proposed Project will be funded by various funding mechanisms available to the Commonwealth; the federal Superfund will not be funding any portion of this proposed Project.

Construction of the Project will be overseen by the Commonwealth, through Massachusetts Department of Environmental Services, as lead agency for the State Enhanced Remedy with ongoing consultation of the Resource Agencies[6] (including the U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, National Fisheries Management Service, Massachusetts Coastal Zone Management, Massachusetts Division of Marine Fisheries, and other relevant federal and state regulatory programs) in

[4] The 2003 DMMP, prepared to comply with the Massachusetts Environmental Protection Act and its implementing regulations (M.G. L. c. 30, ss. 61-62H; 301 CMR 11.00) concluded that this area, referred to as "Popes Island North" was the preferred location for CAD cells due to, among other factors, its greater depth to bedrock and thus higher disposal capacity, its location outside of main navigational channels, its lower potential for cap disruption, and its higher potential for benthic recolonization (2003 DMMP, pp. 4-15 - 4-17). Subsequently, the exact boundary of the 2003 DMMP CAD cell area has been modified twice, in January 2005 and April 2008, but remains bounded by the Route 195 bridge to the north and the Route 6 bridge to the south.

[5] Offshore disposal of dredged material is the subject of two permits issued by the U.S. Army Corps of Engineers in 2011 and is not included within the scope of this Draft Determination.

[6] The agencies that comprise the "Resource Agencies" and the roles and responsibilities of the Commonwealth and these Resources Agencies for the enhancement work are set out in a Memorandum of Agreement between U.S. EPA and the Commonwealth of Massachusetts, dated January 10, 2005. See Administrative Record #509397.

accordance with the State Enhanced Remedy process. Construction of the proposed Project is expected to take approximately 2 years. The Commonwealth's submittal indicates that use of the facility would begin as soon as construction is completed, approximately January 2014[7].

Overview of the Proposed Project and Major Components

The proposed Project consists of construction of a 28.25 acre site, comprised of a 6.85 acre shoreline CDF adjacent to existing upland (as well as to several ancillary properties) in the South Terminal area located in the lower portion of New Bedford Harbor, creation of a CAD cell (CAD cell 3), filling and capping of existing CAD cells, dredging of a navigational channel, boat basin and mooring area, and mitigation measures. The proposed CDF and upland area, once completed, will function as a marine industrial terminal capable of supporting offshore renewable energy development[8], and, with some modification, container, break bulk, and bulk cargo shipping as well as short-sea shipping if it were to occur in the Harbor. The terminal would also provide a site for disposal of clean, dredged material associated with the SER during construction of the Project and would provide for a staging area for additional clean, dredged material for future beneficial reuse, thereby avoiding ocean disposal of this clean material.

The Commonwealth has also requested that potential additional work be evaluated as part of this Draft Determination, although funding for this proposed work (and potentially for some of the mitigation work) is not secured. The proposed additional work consists of (1) a width increase of 50 feet in the approach channel; (2) up to 300 feet increase in length of the deep draft dredging area; and (3) expansion of CAD cell 3 to accommodate the additional volume of dredged contaminated sediment (below 50 ppm PCBs). EPA has included this additional work as part of its evaluation.

The major components of the proposed Project are set out below:

- Construction of up to a 8.76 acre CAD cell between the Route 195 and Route 6 bridges to hold navigational dredged contaminated sediment;
- Navigational dredging of approximately 934,600 cubic yards* of material in the waters of New Bedford including:
    - Approximately 247,100 cubic yards of sediment contaminated with average PCB-concentrations of less than or equal to 50 parts per million (ppm) and disposal of these sediment in existing CAD cell 2 and the newly constructed CAD cell 3; and
    - Approximately 687,500 cubic yards of clean, glacial material below the removed contaminated sediment and use of this material as clean fill for the CDF, capping of

[7] The Commonwealth's June 18, 2012 submission, at pages 11 and 12, notes that the schedule presented in earlier submissions for use of the terminal has been revised. See also Attachment F of the June 18, 2012 submission for a revised schedule.

[8] See pages 29 – 33 of the Commonwealth's June 18, 2012 submittal for a detailed description of the how the proposed marine terminal CDF will be used to support offshore renewable energy development.

existing borrow pit and CAD cell 1, for use in associated mitigation projects, and offshore disposal;

- Construction of a 28.25 acre multi-purpose marine terminal (including ancillary properties) including:
    - Construction of a 6.85 acre CDF with a 1200 foot linear coffer dam bulkhead and a pier supported apron;
    - Placement of approximately 142,000 cubic yards of clean, dredged material behind the bulkhead;
    - Remediation of upland areas to address PCBs concentrations greater than 25 ppm and elevated levels of PAHs and lead in soil;
    - Excavating, filling and regrading portions of upland soil adjacent to the filled area, including excavation and modification of an existing state-authorized cleanup remedy;
    - Realignment of Gifford Street Boat Ramp channel and temporary closure of Gifford Street Boat Ramp;
- Capping of the CDF and upland area (together, the marine terminal) with 3 feet of a dense stone aggregate;
- Long-term upland groundwater monitoring;
- Mitigation, including:
    - Creation of 22.73 acres of winter flounder habitat;
    - Creation/restoration of 1.9 acres of successional marsh area;
    - Creation/enhancement of 4.47 acres of intertidal habitat;
    - Creation/enhancement of 14.91 acres of shallow subtidal habitat;
    - EPA is recommending reseeding of 24,542,803 shellfish over 10 years to replace 9,817,121 impacted shellfish, given the expected 40% survival rate;
    - Completion of a Tern Monitoring Program;
- Implementation of an Activity and Use Limitation on the CDF to protect the remediated areas and a limitation on the use of groundwater; and
- Inclusion of locations of CAD cells on navigational charts and implementation of any required anchorage restrictions.

A map of the proposed work components is found in Attachment A of the Commonwealth's June 29, 2012 submittal and is attached to this Draft Determination as Figure 1.

*Cubic yards includes current estimated total volume of material that is anticipated to be dredged in association with this Project (including the maximum anticipated volume should the additional potential work of dredging up to 300 feet to extend the deep-draft berthing along the bulkhead wall, the 50 foot widening of the channel, and associated increases in the size of CAD 3 to accommodate additional impacted dredged material for disposal be required). For a breakdown of these volumes, see Attachment S of the Commonwealth's June 18, 2012 submittal, a copy of which is attached to this document as Table 1 for reference. (Note: The engineering plans in Attachment A of the June 18, 2012 submittal reflect a smaller 6.3 acre CAD and do not include this additional work and would require

dredging of 740,600 cubic yards. See Attachment A of the Commonwealth's June 29, 2012 submittal for engineering plans of the above-described additional work.)

POTENTIAL COMMUNITY IMPACTS

Although the proposed Project is located in the Designated Port Area of the Harbor, the work may temporarily impact the surrounding community. Potential effects may include increased construction noise, traffic, and dust. Different steps will be taken to reduce these possible impacts. For instance, truck traffic will enter and leave the work area directly from Potomska Street through one site driveway and access Route 18. Construction equipment would use ultra low sulfur diesel fuel in all diesel engine powered equipment. Equipment would be fitted with mufflers and enclosures to minimize sound and time of day restrictions may be imposed for equipment that cannot be muffled. Construction areas would be fenced during construction to block public access. Trucks would be covered and washed before leaving the construction zone to make sure contamination would not spread and to reduce dust. Dust suppression measures would be used such as covering soil piles and keeping exposed soil surfaces wet. Air monitoring would be conducted at the construction area. If monitoring showed a problem, varying steps like spraying water would be taken to reduce dust, ultimately halting work if unsafe levels are found. Temporary impacts will also result from the relocation of the Gifford Street Boat Ramp, a public boat ramp and realignment of the channel. Special arrangement could be made to allow access for primary users of the impacted ramp during construction and two new boat mooring areas will be created.

For additional discussion of beneficial and detrimental public impacts, see section 9 of Appendix E and Appendix M to this Draft Determination.

RESOURCE IMPACTS

The proposed Project will impact wetlands and other waters of the U.S., floodplains, and aquatic life (including significant impacts on shellfish and winter flounder). Two paleosol[9] areas and a shipwreck were also indentified but no impacts to these areas are anticipated. The roseate tern, an endangered species, has been identified as present in the area but the Project is unlikely to adversely affect the species. Atlantic sturgeon has been identified as potentially present in the area; potential adverse affects are currently under evaluation. Blasting, if it occurs, may have impacts on, including and up to mortality for aquatic plants, aquatic invertebrates, amphibians and reptiles and fish. It may also impact larval stages of fish and fish eggs.

EPA is specifically seeking comment on the following determinations:

[9] Typically former or "fossilized" soil preserved within a sequence of geological deposits that are indicative of past conditions.

Impacts to Wetland and Other Waters: The proposed Project includes activities that would impact wetlands and other waters of the U.S.; specifically, filling of 6.9 acres of intertidal and shallow, near-shore subtidal habitat, salt marsh, and freshwater wetland areas and dredging of up to 53.7 acres of near-shore subtidal and subtidal areas.

Regulations implementing Section 404 of the Clean Water Act ("CWA") (the 404(b)(1) guidelines), and Executive Order 11990 (Protection of Wetlands), prohibit discharges into wetlands and other waters of the U.S. if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem (as long as the alternative does not have other significant adverse environmental consequences). EPA has tentatively determined that given the proposed purpose of constructing a marine terminal capable of supporting offshore renewable energy, particularly the offshore wind industry and the minimum criteria required for that use, there is no practicable alternative that would be less environmentally damaging to the aquatic ecosystem.[10] See Appendix E for full discussion of impacts to wetlands and other waters.

Therefore, EPA has tentatively determined that the proposed South Terminal Project is the least environmentally damaging practicable alternative ("LEDPA"). **EPA is specifically requesting comments on its determination that the proposed South Terminal Project is the LEDPA.**

The Section 404(b)(1) guidelines also forbid approval of a project that would involve placing dredged or fill material in wetlands or other waters of the U.S. if it would cause or contribute to significant degradation of waters of the U.S.; cause or contribute to violations of state water quality standards; or jeopardize the continued existence of an endangered or threatened species. EPA has tentatively determined that while there will be adverse effects to water quality and aquatic resources, there will not be violations of water quality standards, nor will there be significant degradation of the aquatic environment provided that the Commonwealth employs best management practices to minimize harmful impacts on the wetlands and other waters and their associated aquatic life and habitat and implements the required compensatory mitigation. See Appendix E of this Draft Determination for full discussion. EPA has also tentatively determined that the project will not jeopardize the continued existence of threatened or endangered species. (See discussion at Appendix I to this Draft Determination).

Further, the § 404(b)(1) guidelines require that all appropriate and practicable mitigation be employed to address the unavoidable impacts to the waters of the U.S. EPA has tentatively determined that the Commonwealth's mitigation plan described above, with certain modifications, will satisfy the federal requirements. See Appendix E of this Draft Determination for full discussion.

Floodplain Impacts: The proposed Project arguably includes federal activities in a floodplain subject to Executive Order 11988; thus, for purposes of assuring that this Executive Order is complied with, EPA has undertaken an analysis of the State Enhanced Remedy under that Executive Order. That analysis is also relevant in assessing the extent to which the remedy is protective of human health and the

[10] Information regarding impacts under Section 10 of the Rivers and Harbors Act, 33 U.S.C. §403 may be found in Appendix E.

environment.

Executive Order 11988 (Floodplain Management) requires EPA to evaluate, when applicable, four basic requirements. These include: determining if an action is to occur in a floodplain; determining if there are practicable alternatives; where there is no practicable alternative to development in a floodplain, minimize potential harm to or within the floodplain; and to provide the public with an early opportunity to comment upon the relevant plans and proposals.

EPA is asking for specific public comment on the proposed actions relating to floodplains as explained in Appendix L.

The South Terminal proposal includes activities that affect or result in the occupancy and modification of the floodplain. Construction of the CDF will involve dredging and filling of salt marsh and intertidal and subtidal areas and the installation of a bulkhead, all of which will occupy and modify the area's floodplains. As a result, Executive Order 11988 (Floodplain Management) requires EPA to make a determination that there is no practicable alternative to locating the CDF in floodplains. After reviewing other alternative locations, EPA has determined that, given the use of the CDF as a marine terminal to support the offshore wind industry and the required criteria to support that use, there is no practicable alternative to occupancy and modification of the floodplain. As a result, actions must be taken to minimize potential harm to or within the floodplain. One of the primary beneficial floodplain values identified for the area affected by this project is flood prevention. Analysis by the U.S. Army Corps of Engineers and the Commonwealth suggests that the State Enhanced Remedy will result in the loss of 27.33 acre-feet of flood storage capacity behind the hurricane barrier in New Bedford Harbor, which represents a rise of approximately 0.156 inches in water levels during a flood event. Restoration actions in the Marsh Island area will more than compensate for the loss of flood storage capacity caused by the South Terminal Project. As a result, the substantive requirements of Executive Order are satisfied given flood storage protection is the primary value served by the floodplain in the area of the Project. More details on mitigation measures are included in Appendix L.

Risk-based TSCA Determination: Consistent with Section 761.61(c) of the Toxic Substances Control Act (TSCA), based on information provided by the Commonwealth, EPA has made a draft determination that the proposed method of excavation and disposal of the proposed upland soils and dredging and disposal of certain PCB-contaminated sediment, including dredging and disposal activities relating to CAD cell 3, all of which are included in the proposed South Terminal Project, do not pose an unreasonable risk to human health or the environment as long as the conditions set out in the TSCA Determination attached as Appendix J(1) to this Draft Determination are met. The activities covered by, and the conditions contained within this TSCA Determination are more fully described within Appendix J(1).

In addition, EPA is proposing to modify an existing TSCA Determination issued on November 12, 2008, as modified on June 18, 2012, to include dredging and disposal of PCB-contaminated sediment dredged from within the footprint of CAD cell 3 and from the tidal tributary adjacent to the hurricane barrier into existing CAD cell 2. Based on the information provided by the Commonwealth, and provided the conditions in this Second Modification to the November 12, 2008 TSCA §761.61(c) Determination are

met, EPA is determining that disposal of CAD cell 3 sediment and tidal tributary sediment into CAD cell 2 does not pose an unreasonable risk to human health and the environment. The activities covered by, and the conditions contained within this modified TSCA Determination are more fully described within Appendix J(2).

EPA is asking for specific public comment on these two proposed TSCA §761.61(c) determinations found in Appendices J(1) and J(2).

State Enhanced Remedy Timeline[11]

1996: Commonwealth of Massachusetts requests that navigational dredging and disposal be included in the planned 1998 ROD

November 1996: EPA issues Proposed Plan for the Upper and Lower Harbor, including navigational dredging and disposal and conceptual idea of construction of a large navigational CAD in the lower harbor

September 1998: EPA issues Record of Decision for Upper and Lower Harbor and includes SER

June 14, 2002: Commonwealth certifies Draft Environmental Impact Report for Dredge Material Management Plan for location of CADs in New Bedford Harbor

September 25, 2002: Original New Bedford/Fairhaven Municipal Harbor Plan issued; includes proposed navigation dredging projects

State Pier dredging and borrow pit dredging and filling subsequently implemented

October 15, 2003: Commonwealth of Massachusetts issues Dredge Material Management Plan Final Environmental Impact Report for location of CADs in New Bedford Harbor

January 10, 2005: Memorandum of Agreement completed between EPA and Commonwealth to designate State as lead for SER, EPA as lead for non-SER work and to determine roles and responsibilities for Resource Agencies. Memorandum of Agreement also completed between Commonwealth and City of New Bedford

2004 – 2006 time frame: Phase II work plans reviewed and Phase II work completed, including construction of CAD 1

2006 – 2007 time frame: Phase III work plans reviewed and Phase III work completed, including construction of CAD 2

[11] This timeline relates solely to the State Enhanced Remedy work and not to the work that EPA is conducting to address PCB contamination exceeding the cleanup levels in the 1998 ROD. For information about the work that EPA is conducting, see the Administrative Records for the New Bedford Harbor Superfund Site which may be viewed at the New Bedford Public Library, at EPA's Record Center or at www.epa.gov/nbh.

2010: New Bedford/Fairhaven Harbor Plan renewal approved; includes proposed navigation dredging projects

January 2010: Commonwealth requests EPA evaluate proposed South Terminal Project as part of the SER

Significant Commonwealth submittals with information about the proposed Project:

> August 2010 – Initial comprehensive submittal for construction of CDF and dredge and filling activities for proposed Project
>
> January 18, 2012 – Revised submittal to include, among other things, CAD cell 3, expansion of the dredge footprint and elimination of a temporary bridge
>
> June 18, 2012 – Scope of proposed Project revised to include potential dredging of certain portions of the federal channel, potential expansion of deep draft berthing area, potential increase in the width of the approach channel, potential need for underwater blasting and change to proposed ancillary properties to be included in the Project. Resource impacts and mitigation plans were revised.
>
> June 26, 2012 – Provides updated plans and additional information about the revised proposed Project scope described in June 18, 2012 submittal.

July 16, 2012: EPA issues this Draft Determination that the proposed South Terminal Project is protective, that it meets the applicable and relevant and appropriate requirements that would apply to such a project were it subject to normal permitting and regulatory procedures, and that it will be included in the State Enhanced Remedy for the New Bedford Harbor Superfund Site.

Alternative Sites Evaluated

Included in EPA's Draft Determination is a finding that the South Terminal Project represents the least environmentally damaging practicable alternative ("LEDPA") to other locations presented by the Commonwealth and evaluated by EPA. The alternative locations evaluated consist of the following areas: Several sites at the Port of Davisville, Quonset Point, Rhode Island; Dry Dock # 4 in Boston, Massachusetts; Fall River State Pier, Fall River, Massachusetts; Union Wharf and Fairhaven Shipyard, Fairhaven Massachusetts; North Terminal and Pope's Island, New Bedford, Massachusetts; and State Pier, New Bedford, Massachusetts.

A discussion of these alternatives and the basis for EPA's conclusion that the South Terminal location is the LEDPA, is contained in Appendix E to this Draft Determination.

Statutory Authority and Background

What is the State Enhanced Remedy?

As EPA develops and analyzes alternative remedies for addressing a specific Superfund cleanup, or even after EPA has issued its decision document, the state may suggest or develop either changes to the selected remedy or expansion of the scope of the cleanup. For these situations, the NCP provides that: "if EPA finds that the proposed change or expansion is not necessary to the selected remedial action, but would not conflict or be inconsistent with the EPA-selected remedy, EPA may agree to integrate the proposed change or expansion into the planned CERCLA remedial work if: (A) The State agrees to fund the entire additional cost associated with the change or expansion; and (B) The State agrees to assume the lead for supervising the state-funded component of the remedy...".[12] [13]

In 1996, prior to issuance of the 1996 Proposed Plan, the Commonwealth requested that EPA integrate navigational dredging and onsite disposal into EPA's remedy for New Bedford Harbor. This enhancement, the State asserted, "will result in the cleanup of additional amounts of contaminated sediments sooner than would otherwise be possible." In its request, the Commonwealth points out that its ability to provide funding for the enhancement is dependent on its ability to receive state bond funding.

While navigational dredging and disposal is not "necessary and appropriate" to the remedy (see footnote 13), EPA included the Commonwealth's enhancement for navigational dredging and onsite disposal in the 1996 Proposed Plan because it provides a number of potential and significant benefits to EPA's cleanup plans for the Harbor and it does not conflict with and is not inconsistent with the remedy. The Plan noted that the benefits of such a linkage would primarily stem from a streamlined permitting process for navigational sediment disposal facilities[14], as well as the possibility of using navigational sediments for preliminary cap material. In addition, the proposed SER was beneficial because navigational dredging would remove sediment containing PCBs up to 50 ppm and heavy metals that the EPA preferred alternative would not be addressing. Finally, the Plan noted that navigational dredging works in concert with the City's plans for developing the public and economic uses of the Harbor.

After public review and comment on the 1996 Proposed Plan, EPA integrated the State's enhancement request into its remedy through issuance of the 1998 ROD. Integration of the SER in the ROD allowed it to benefit from the CERCLA permit exemption, provided that the SER maintained consistency with 40

[12] NCP §515(f)(1)(ii), 40 C.F.R. §300.515(f)(1)(ii).

[13] Section 515(f)(1)(i) provides another avenue for a state to ask EPA to make changes in or expansions of a remedial action: "(i) If EPA finds that the proposed change or expansion is necessary and appropriate to the EPA-selected remedial action, the remedy may be modified (consistent with §300.435(c)(2)) and any additional costs paid as part of the remedial action." Because the Commonwealth's request is not "necessary and appropriate" to the remedial action, this subsection did not apply.

[14] Pursuant to CERCLA §121(e)(1), permits are not required for remedial actions if certain criteria are met: CERCLA §121(e)(1) states: No Federal, State, or local permit shall be required for the portion of any removal or remedial action conducted entirely onsite, where such remedial action is selected and carried out in compliance with this section. See also 40 C.F.R. § 300.400(e) and 53 Fed. Reg. 51394, 51406-7 (December 21, 1988).

CFR 300.515(f)(l)(ii) and complied with CERCLA and other dredging-related regulations.[15] Since then, two phases of SER work have been completed, Phase II and Phase III.[16] To date, the integration of the enhancement work with the Superfund remedial work has resulted in savings of both costs and time, while enhancing environmental benefits. For example, EPA used the clean sand generated by one of the SER enhancement CAD cells to provide the capping material for a "pilot cap" covering a hot spot of contaminated sediments south of the hurricane barrier, allowing EPA to address a contaminated portion of the Site that otherwise would not have been addressed for some time.

By letter dated January 25, 2010, the Commonwealth requested that EPA further enhance the remedial action at the Harbor by proposing the construction of CDFs at three locations, including the South Terminal portion of the Site. Subsequently, the Commonwealth narrowed its proposal to include only a CDF located at South Terminal. At this time, the Commonwealth proposes building a CDF at the South Terminal location by using clean sediment generated by the associated navigational dredging activities along with a CAD cell (CAD cell 3) for disposal of contaminated sediment (generally PCB concentrations below 50 ppm) generated by the proposed Project. Pursuant to NCP requirements, the Commonwealth would fully fund the proposed work, and the Commonwealth provided information to enable EPA to make a determination about the proposed Project's compliance with CERCLA, including compliance with all substantive requirements and evaluations that would normally be conducted for this proposal as part of a regulatory review and permitting process. Although the proposed CDF in the South Terminal location was already included in the SER, EPA has carefully reviewed the Commonwealth's detailed proposal to determine whether or not the proposed Project complies with CERCLA and the substantive requirements of the applicable or relevant and appropriate state and federal environmental laws that would normally apply as part of a permitting process.[17]

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[15] See page 33 of the 1998 ROD. Page 33 and 34 of the 1998 ROD goes on to say: "EPA believes that the primary benefits of linking the two dredging programs, while not sacrificing the normal regulatory review process for federal navigational projects, will be a streamlined permitting process for on-site navigational disposal facilities (if any), coordinated rather than separate environmental monitoring programs, where feasible, and increased overall coordination between the two dredging projects. In fact, the overall environmental benefit of the remedial CDFs is increased by using the CDFs to contain a portion of the navigational sediments (as part of the interim caps) as well as the more highly contaminated remedial sediments. Such a scenario should also reduce cleanup costs since at least some of the costs for the clean fill that would otherwise be required for the preliminary caps would no longer be necessary. Incorporating the enhanced remedy shall not jeopardize or delay the overall implementation or funding of the selected remedy. Rather, implementation of the navigational dredging project, including solicitation of public comment on it, will be the responsibility of those parties normally involved in such projects, namely the MA Coastal Zone Management office, the US Army Corps of Engineers, the National Fisheries Management Service and other relevant state and federal regulatory programs. Consistent with 40 CFR 300.515(f)(l)(ii)(A), the EPA Superfund program will not be responsible for funding any part of the enhanced remedy."

[16] See Phase II and Phase III Work Plans in the Administrative Record for a description of that work.

[17] As indicated above, this EPA Draft Determination does not evaluate the location of CAD cell 3 because the location of CAD cells was already considered and approved by the State as part of the Massachusetts Office of Coastal Zone Management evaluation. See footnote 4. However, in analyzing the Commonwealth's proposed Project as a whole, including the proposed CAD cell 3, EPA does consider the additional dredging and filling to be performed in order to construct the proposed CAD.

EPA has compiled all of the documents it relied on to reach this Draft Determination in the Administration Record for this Project, available as of July 23, 2012, at the New Bedford Public Library, EPA New England Records Center and on line at www.epa.gov/nbh.

EPA's Draft Determination

Subject to the conditions and understandings set out herein, after review and consideration of all the information submitted by MassDEP, on behalf of the Commonwealth of Massachusetts, EPA has tentatively determined that the Commonwealth's proposed Project, which consists of constructing a 28.25 acre marine terminal (consisting of 6.85 acres of filled waters (the CDF) and approximately 21.4 acres of upland area, (including the ancillary properties)) in the South Terminal location of the New Bedford Harbor as well as the dredging and filling associated with that construction, including the dredging and filling of CAD cells 2 and 3 and the capping of CAD cell 1 and the borrow pit (collectively the "proposed Project", the "Project", or the "South Terminal Project"), is both protective and meets the substantive requirements of the applicable and relevant and appropriate federal environmental law that would normally apply as part of a permitting process; and EPA accepts the Commonwealth's determination that the project meets the applicable and relevant and appropriate State environmental standards. The proposed Project does not conflict with and is not inconsistent with the remedy. EPA reaffirms that the 1998 ROD, including the State Enhanced Remedy, remains protective of human health and the environment.

As a result, EPA is tentatively approving inclusion of the proposed Project in the State Enhanced Remedy at the New Bedford Harbor Superfund Site which enjoys the benefit of the permit exclusion found in Section 121(e) of CERCLA provided that, prior to EPA's issuance of a Final Determination, the following conditions are met by the Commonwealth:

1. A final assessment of the upland area of the proposed Project that complies with National Historic Preservation Act requirements is provided to EPA and the consulting parties, and appropriate consultation is conducted regarding potential effects to historic properties.
2. A final consultation on ESA and final FWCA and EFH coordination.
3. A sufficiently detailed mitigation plan that satisfies the requirements of 40 C.F.R. 230.94(c) and addresses the impacts caused by the proposed project as identified pursuant to the requirements of Section 404 of the Clean Water Act, and that satisfies any additional conditions resulting from EPA's ESA, EFH and FWCA consultations.
4. A map showing the final configuration of the New Bedford Marine Commerce Terminal, including all ancillary properties.
5. Acoustical studies of blasting and pile driving related to potential effects on Atlantic sturgeon.
6. The U.S. Army Corps of Engineers' concurrence, in accordance with 33 U.S.C. § 408, that the channel design proposed in the successional marsh mitigation will have no adverse effect on the operation of the Hurricane Barrier.

7. All the conditions contained in Appendix E to this Draft Determination.

If, after review and comment, there are no significant comments that cause EPA to revaluate its Draft Determination that the Project meets all applicable and relevant and appropriate requirements, implementation of the Project will be based on certain conditions. These conditions are set out below based on current knowledge. Additional conditions may be identified in EPA's Final Determination.

1. Compliance with all applicable and relevant and appropriate requirements is maintained including
    a. Additional conditions imposed by the State and Tribal Historic Preservation Officers to avoid adverse effects to historic properties/artifacts; and
    b. Completion of the Marsh Island mitigation project to compensate for flood storage loss;
2. EPA's authorization of storm water discharges associated with construction activities is conditioned upon the Commonwealth's updating and completing its Storm Water Pollution Prevention Plan (SWPPP) to address all of the elements of the CGP no later than fourteen (14) days before land disturbing activities take place, and on the Commonwealth's implementation of the SWPPP consistent with the terms and conditions of the CGP.
3. The following workplans are provided to EPA for review and approval at least thirty (30) days before land or water activities take place:
    a. A Phase IV workplan for dredging and disposal of sediments;
    b. A Construction Management Plan that includes plans for minimizing impacts during construction of the Project on the surrounding community, including dust, noise, and truck traffic;
    c. A work plan for blasting that includes health and safety measures for human and aquatic life;
    d. An air monitoring plan that meets minimum requirements in Appendix A;
    e. A Contractor Workplan for the PCB remediation work of the upland area within the site boundary shown on Attachment 8 to Appendix J (1). Any additional areas beyond those shown on Attachment 8 will require review by EPA and may result in an issuance of a new or revised TSCA Determination;
    f. If it occurs, a workplan for Federal channel dredging; and
    g. If it occurs, a workplan for the expansion of deep draft berthing area to the north or south of the currently planned CDF bulkhead.
4. No blasting except during November through February of any year.
5. All the conditions contained in Appendix E to this Draft Determination.

This Draft Determination is also conditioned on the information provided to EPA in the Commonwealth's submittals; any subsequent change to that information may cause EPA, in its sole discretion, to withdraw or modify its Draft Determination and potentially reissue it for public comment.

Description of Proposed Location

A description of the proposed Project is provided below; however, EPA refers the reader to the Administrative Record for a more complete description of the work.

Project Location- General New Bedford Harbor Environment

The Commonwealth proposes to locate the Project in New Bedford Harbor, New Bedford Massachusetts. New Bedford Harbor is located on the northern shore of Buzzards Bay, bordering the City of New Bedford to the west; to the east, the communities of Acushnet and Fairhaven. It extends from the shallow northern reaches of the Acushnet River estuary, south through the commercial harbor of the City of New Bedford and into 17,000 adjacent acres of Buzzards Bay.

New Bedford is home port to a large offshore fishing fleet and is a densely populated manufacturing and commercial center. By comparison, the eastern shore of New Bedford Harbor in the communities of Acushnet and Fairhaven is predominantly residential or undeveloped. Numerous storm drains, combined sewer overflows (CSOs) and industrial discharges discharge directly to the Harbor, and smaller brooks and creeks discharge to the Harbor.

There is a federal navigation channel beginning in the outer harbor and leading into the Harbor through gates in the hurricane barrier. The main channel splits into two channels once inside the barrier, providing access in the lower harbor to the New Bedford commercial wharfs on the west side and to the Fairhaven wharfs on the east side. A turning basin lies at the end of the New Bedford channel.

Project Location - Harbor Waters

The water quality classification of the inner harbor is Class SB, with a "CSO" qualifier, indicating that the water body has been impacted by the discharge of combined sewer overflows (CSO). The New Bedford Inner Harbor (MA 95-42) is currently listed as an impaired water on Massachusetts 2010 Clean Water Act § 303(d) list. The pollutants associated with the impairments are priority organics, metals, nutrients, organic enrichment, low dissolved oxygen, pathogens, oil and grease, taste, odor, color and objectionable deposits.

Project Location - New Bedford Harbor Contamination[18]

From the 1940s into the 1970s two electrical capacitor manufacturing facilities in New Bedford, one located near the northern boundary of the Site (the Aerovox Facility) and one located just south of the New Bedford Harbor hurricane barrier (the Cornell-Dubilier Facility), discharged PCB-wastes either directly into the harbor or indirectly via discharges to the City's sewerage system. Designated by the Commonwealth, pursuant to 40 C.F.R. § 300.425(c)(2), as its highest priority site, the New Bedford Site was proposed for inclusion on the Superfund National Priorities List in 1982. Pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, EPA placed the New Bedford Site on the National Priorities List, set forth at 40 C.F.R. Part 300, Appendix B, by publication in the Federal Register on September 8, 1983, 48 Fed. Reg.

[18] For more information about site contamination and the New Bedford Harbor Superfund Site, see www.epa.gov/nbh. See also the administrative records for the New Bedford Harbor Superfund Site, all of which are incorporated by reference into the Administrative Record for this Draft Determination.

40658-40673. The harbor is contaminated with high concentrations of many hazardous substances, notably polychlorinated biphenyls (PCBs) and heavy metals, with contaminant gradients decreasing from north to south. In addition, in 2008, EPA analytical tests showed that PCB-contaminated sediment excavated from an area along the shoreline near the former Aerovox Facility had high levels of trichloroethylene ("TCE"), a volatile organic compound, which made such sediment RCRA hazardous waste. The greatest human health risks result from ingestion of contaminated local seafood with unacceptable risks also from direct contact with shoreline contamination and incidental ingestion of contaminated shoreline sediment (for younger children (ages 1-5)). Contaminated media (sediment, sediment pore water (the water in the small spaces between sediment particles) and the water column) pose risks to ecological receptors at the Site. EPA's fish consumption guidelines may be found at www.epa.gov/nbh; a copy is also attached as Appendix B to this Draft Determination for reference.

The Superfund Site has been divided into three areas - the upper, lower and outer harbors - consistent with geographical features of the area and gradients of contamination (Figure 2). The upper harbor comprises approximately 187 acres, with current sediment PCB levels ranging from below detection to approximately 4,000 ppm. The boundary between the upper and lower harbor is the Coggeshall Street bridge where the width of the harbor narrows to approximately 100 feet. The lower harbor comprises approximately 750 acres, with sediment PCB levels ranging from below detection up to 190 ppm. The boundary between the lower and outer harbor is the 150 foot wide opening of the New Bedford hurricane barrier. (The hurricane barrier was constructed in the mid-1960s). Based on currently available data, sediment PCB levels in the outer harbor have been found to be generally low, with only localized areas of PCBs in the 50-100 ppm range, including an area just south of the hurricane barrier near the Cornell-Dubilier plant and an area near the City's sewage treatment plant's outfall pipes. These areas were included in the 1998 ROD as an interim remedy to the extent that they contain PCB-contaminated sediment above the 50 ppm cleanup level for the lower harbor. (As part of an EPA pilot capping project, sediment exceeding 50 ppm in the area just south of the hurricane barrier has been capped with clean, navigational dredged sediments.) Further investigations of the outer harbor will be undertaken as part of operable unit three to determine whether additional remediation is appropriate for this area.

EPA's selected remedy involves dredging and a combination of containment in CDFs, a CAD and offsite disposal of contaminated sediment. Sediment in the upper harbor with PCB-concentrations at or above 10 ppm and in the lower harbor at or above 50 ppm will be addressed as part of the 1998 ROD remedy. Cleanup of PCBs in shoreline beachcombing areas (at or above 25 ppm), residential area (1 ppm) and saltmarsh areas (50 ppm) are also included within 1998 ROD remedy. Full-scale dredging began in 2004; to date, approximately 225,000 cubic yards of contaminated sediment have been dredged.

Project Location - South Terminal Area

General Area Description: The proposed Project will be located within the Designated Port Area (DPA) in the lower harbor, an area specifically reserved for water-dependent industrial uses by the State. See Figure 3. The 28.25 acre site, including the CDF, adjacent upland, and ancillary properties, is to be located east of Route 18, just north of the Hurricane Barrier and is at the interface of Waterfront

Industrial and "Industrial B" zoning districts. The main portion of the facility would be comprised of approximately 11 contiguous acres of existing upland and 6.85 acres of additional land created by construction of a CDF in adjacent waters. An additional 8 acres of ancillary upland south of the main portion would be used for wind blade lay-down. In addition, two different configurations of an additional 2.4 acres are under consideration by the Commonwealth. Configuration A would add an additional 1.1 acres contiguous to the main portion of the facility, and the remainder would be contiguous to the 8 acres of ancillary parcels to the south. Configuration B would add an additional .75 acres contiguous to the main portion, and 1.65 acres to the west of the 8 acres of ancillary parcels.[19] The parcels of existing upland that would comprise the terminal facility are owned by the New Bedford Redevelopment Authority, the Commonwealth, and several private owners with which the Commonwealth is engaged in negotiations to obtain the necessary property rights. The Commonwealth anticipates completion of those negotiations in the near future and does not anticipate the need to relocate any water dependent users. With the exception of the two westernmost properties, the upland parcels are undeveloped. Several businesses serving the industrial port occupy the four blocks between Route 18 and the proposed CDF location. A "Mixed Use Business District" can be found across Route 18. A residential area is in the "Mixed Use Business District" on the opposite side of Route 18 from the proposed CDF. Another residential area is located south of Cove Street, near the southern ancillary properties.

Main Upland Portion of the Proposed Marine Terminal Facility: The main upland portion of the proposed terminal consists of approximately 13.4 acres, with approximately seven acres of the proposed upland area abutting the Harbor waters, with the land sloping generally from west to east toward the water. Historically, much of the existing upland that will be incorporated into the site is former heavy industrial property, the former location of an extensive mill complex. The Potomska Mills, which once stretched from the current intertidal area to beyond the western proposed terminal boundary, was present at this location from the late 1800's until about 1936 (when it was demolished), and encompassed an area of approximately 19 acres, more than half of which is within the footprint of the proposed marine terminal. (See Figure 6 of the Commonwealth's January 18, 2012 submittal). A wetland resource investigation of the proposed location was conducted confirming the presence of historic filled tidelands between the historic high water line and the existing high water line. Most of the area consists of urban fill including angular stone, soil, brick, gravel, asphalt, tar, concrete, steel, automobile and truck parts, tires and inner-tubes, plastic and glass. Brick, asphalt, and trash were identified within 15 inches of the surface, even in an area with hydric soils and wetland indicator species (primarily invasive species). Urban fill underlies this wetland area as well and it appears to be one small adjacent (neighboring) wetland which is degraded and not tidally influenced. There are no local water supply wells or reservoirs located within the proposed Project area.

[19] Figures of these two configurations can be found in Attachment D to the Commonwealth's June 18, 2012 submittal and are included as Figures 4(a) and 4(b) to this Draft Determination.

Soil and groundwater sampling was conducted as part of a 21E assessment for this upland area.[20] Soil sampling revealed the presence of various contaminants with PCBs, Total Petroleum Hydrocarbons, exceeding the MCP risk-based standard for S-3/GW-3 which the proponent identifies as the standards considered applicable for the marine terminal after development. PCBs and EPHs also exceeded MCP Upper Concentration Limits Lead was found in levels that exceed the limit that indicates the potential for leaching into groundwater; however, none of the contaminants detected in groundwater exceeded the MCP risk-based standards for category GW-3 or the MCP Upper Concentration Limits (UCLs). See p. 96 of the Commonwealth's January 18, 2012 submittal and Tables 3 through 7 for a summary of soil sampling results; and page 101, Tables 8 through 12 for a summary of groundwater sampling results.

In addition, within a portion of this upland area is an asphalt cap, a remedy put in place pursuant to the state hazardous waste cleanup law, to address a release of lead and PAHs in this area. See Figure 1. An Activity and Use Limitation has been recorded to protect the cap and prevent unauthorized use of the land.

Resource areas: Four primary resource areas were identified: (1) intertidal areas; (2) shallow, near-shore subtidal areas (between -1 and -6 MLLW); (3) deeper, subtidal areas (between -20 and -25 MLLW; and (4) a salt marsh area[21]. No federal resource areas or state protected wetland resources are present within the ancillary properties. A resource area location map is included as Figure 5 of the 1/18/2012 submittal.[22]

The Project is located within the 100-year floodplain and in a non-attainment area for ground level ozone. In addition, the proposed Project area provides fish and shellfish habitat, and is within an area designated as essential fish habitat for 20 fish species. Approximately 25 priority bird species have also been observed within or near the proposed Project area. See section 3.0 of the Appendix E for a detailed description of aquatic resource functions and values.

There are no designated marine sanctuaries in or directly adjacent to the proposed Project area nor are there Massachusetts Areas of Critical Environmental Concern (301 CMR 12.00).

While not identified as critical habitat, the roseate tern and the Atlantic sturgeon, both endangered species, may be present in the proposed Project area. See Appendix I **for** further discussion concerning Project impacts to these species.

An archeological investigation identified an intertidal and a subtidal area containing paleosols and an area containing a shipwreck. The paleosols are located between the existing Gifford Street boat ramp and the southern edge of the proposed CDF. The shipwreck is located at the southern end of the existing bulkhead at the north end of the beach area. No areas of historic significance were identified in

[20] A full 21E investigation into the vertical and/or horizontal extent of potential contaminants has not been completed as of the time of issuance of this Draft Determination.
[21] Additionally there is a 0.1 acre wetland pocket on the upland portion of the site that will be filled.
[22] Note Figure 5 was revised in Attachment N in the June 18, 2012 submittal from the original version in the January 18, 2012 submittal.

the upland portions of the CDF. See Appendix 42 of the 1/18/2012 for a summary of the archeological investigations and map in Appendix 43.

Description of Proposed Work

Construction of CAD Cell 3

A CAD cell (maximum of 8.76 acres) will be created in the State-approved area (see 2003 DMMP) between the Route 195 and Route 6 bridges for disposal of the contaminated sediment generated from dredging activities ("CAD cell 3").[23] This is the third CAD cell to be constructed as part of the State Enhanced Remedy. The SER CAD cells in New Bedford Harbor were constructed by first removing the top few feet of contaminated organic silts since this material is unsuitable for open water disposal. This unsuitable material has been disposed of within the navigational CAD cells. (The unsuitable contaminated sediment from the top of navigational CAD cell 1 was disposed in the borrow pit CAD cell. The unsuitable top of CAD cell 2 was disposed in CAD cell 1.[24]) Once the unsuitable material is removed, the underlying clean glacial sandier material is then excavated and either disposed at permitted open water disposal sites or routed for beneficial reuse.

CAD cell 3 will be similarly built and will provide for disposal of unsuitable material dredged from the navigational channels (Gifford Street channel, approach and tug channels, (and portions of federal channel and turning basin if dredging in these two areas is necessary)), the CDF footprint, and the Gifford Street boat basin and mooring areas. The unsuitable material dredged from within the footprint of CAD cell 3 and the sediment excavated from the drainage swale (referred to as "the drainage swale", the "stormwater drainage swale", or the "tidal tributary") will be disposed of into CAD cell 2. The clean, glacial sand will be mechanically dredged down to 45 feet below the existing harbor floor and placed into scows for either offshore disposal or for transportation to a staging area on the main upland portion of the proposed terminal to be used as fill behind the terminal bulkhead, as capping material for CAD cell 1, the borrow pit, and for mitigation measures.

Capping of this CAD cell 3 will not occur as part of the construction of this Project in order to allow sufficient consolidation and development of bearing capacity of the sediment disposed in the cell. However, EPA's draft TSCA Determination, attached as Appendix J(1) includes capping requirements as well as maintenance and monitoring requirements for this CAD cell 3 which will be performed over the long-term.

[23] See Appendices D through K of the 2003 DMMP for studies conducted by the Commonwealth regarding potential resuspension and potential consequential environmental impacts associated with CAD construction.
[24] Construction of CAD cells 1 and 2 and associated dredging were completed as part of the State Enhanced Remedy, Phases II and III. See SER Phase II and SER Phase III workplans for a description of this work. A borrow pit containing sediment dredged near State Pier was created outside of the SER process by the City of New Bedford as part of its Municipal Harbor Plan process.

Disposal of dredged sediment into CAD cells 2 and 3 (once it is created) involves the deposition, via split-hull scow, of material mechanically dredged into the CAD cells via gravity. The dredged sediment will not be mechanically dewatered prior to placement, although some passive dewatering will occur during material handling and transport. The scows will be properly located over the CAD cell and operators will open the scow bottom to release the sediments. Minor re-suspension of sediment is anticipated to take place during these activities. The work will be monitored to ensure it meets performance standards for turbidity and other water quality parameters. Excavation of the CAD cell will be conducted using best management practices that will minimize environmental impacts, including maintaining water quality performance standards. See Performance Standards and Significant Substantive Requirements discussion below. Water quality performance standards are found in Appendix C **to**of this Draft Determination.

Attachment A of the Commonwealth's June 29, 2012 submittal includes engineering plans for the 8.76 acre CAD cell (included in the event all additional work is completed). Note: The engineering plans in Attachment A of the June 18, 2012 submittal reflect a smaller proposed CAD cell 3 (6.3 acres).

The three current disposal cells (CAD cells 1 and 2 and the borrow pit) are functioning effectively to contain approximately 200,000 cubic yards of navigational dredged sediment. A description of plume tracking, toxicity testing, and water quality monitoring that was performed in 2009 during placement operations at navigational CAD cell 2 can be found beginning on page 8 of the March 2011 Final – Fourth Explanation of Significant Differences for the New Bedford Harbor Superfund Site, OU 1.

Capping of Borrow Pit and CAD cell 1

The purpose of capping CAD cells is to adequately isolate the contaminated dredge material in the CAD cell from the environment. Capping requirements for CAD cell 1 and the borrow pit can be found in the January 12, 2005 TSCA Determination (see Attachment 2 to Appendix J(1) of this Draft Determination. The CAD cells will be capped in the same manner as described above using clean, suitable material of sufficient thickness lo isolate the PCB-contaminated sediments physically, chemically and biologically from the surrounding benthic environment. Compliance with the water quality and turbidity performance standards must be maintained. A bathymetric survey shall be performed upon completion of the cap placement. The CAD cell caps will be monitored to demonstrate their physical, chemical and biological quality. This monitoring shall include bathymetric surveys, chemical sampling and sediment camera work (as an altemative to benthic faunal enumeration). The frequency of this cap monitoring shall be at least annually for the first three years after cap placement, unless otherwise directed by EPA New England. After three years, the Commonwealth may propose a revised schedule for monitoring. Annual reporting will also be required. The location of the CAD cells will be included in all future nautical charts of the New Bedford Harbor and anchorage restrictions will be implemented if necessary.

Navigational Dredging Associated with Construction of the Marine Terminal CDF

Navigational dredging, which will generate both contaminated sediments (less than 50 ppm PCBs) and clean sand, is necessary to both widen and deepen the approach to the proposed terminal from the

existing federal channel and turning basin, and to widen and deepen an area along the proposed bulkhead of the CDF to allow deep water vessels, approximately up to 90 feet wide, access to and berthing at the terminal. In addition to the 175 foot wide approach channel, a 100 foot wide tug channel will run parallel to the approach channel. Tug boats are necessary to guide the longer barges and international vessels that are expected to use the marine terminal to the bulkhead and into berthing position, including those vessels transporting equipment and material to support the wind industry.

Shallow rock is located just below the harbor bottom within the proposed dredge footprint, primarily along the northern portion of the eastern face of the proposed CDF bulkhead wall. This shallow rock must be removed. The Commonwealth anticipates conventional removal of this rock with standard excavating equipment; however, blasting may be necessary. As a result, impacts associated with blasting are included in EPA's evaluation of this Project. Were blasting to occur, the Commonwealth anticipates that the blast location would be in excess of 25 feet below the water column and the maximum radius of impact will be approximately 50 feet. Access near the blast area must be restricted in accordance with a health and safety plan, and the blast will need to be carefully controlled such that there is no impact to adjacent structures or vessels. Silt curtains will be used around each blasting area, as well as the use of non-explosive noise techniques to move fish from the immediate blast zone. Given the location of the potential blasting activities and the location of the nearest paleosol area at the southern face of the proposed bulkhead, the Commonwealth believes blasting will not adversely affect either the subtidal or intertidal paleosol areas. (Blast design and biological parameters can be found on pages 6-7 of Commonwealth submittal dated 6/18/2012. Additional blasting conditions can be found in Appendix E and on p. 12 of the Commonwealth's ARARs letter dated June 18, 2012 which is attached as Appendix D to this Draft Determination. Draft proposed construction specifications and design requirements for blasting can be found in Attachment B to 6/18/12 submittal.)

Limited dredging, called floatation dredging, will occur first in the beach area to create a work zone and allow equipment access in the water to install the sheet pile wall and pilings for the terminal. Once the sheet pile wall and pilings are installed to create the filled portion of the CDF, navigational dredging seaward of the wall will occur to varying depths, based on the depths of anticipated vessels that will use the marine terminal. Much like the creation of CAD cell 3, the top layer of contaminated sediment will be removed and disposed of into CAD cell 2. Deeper, clean sand will be removed and staged for reuse or disposed offshore.

Below is a summary of the various dredging depths; specific details and additional maps may be found in the administrative record.

Piling area along seaward edge of CDF: This area will be dredged to a slope with depths ranging from -5 MLLW to -14 MLLW on the southern side of the dredge footprint and -25 MLLW to -32 MLLW on the northern side of the dredge footprint. A concrete blanket will cover the surface of the piling area with a rip-rap type material to protect the piling area from propeller wash.

Deep draft along the seaward side of the CDF: Approximately 600 feet in length will be dredged to -32 MLLW from a depth of -30 to -32 feet MLLW at the northern portion of the sheet pile wall.[25]

Approach channel: Beginning at the northern federal channel turning basin, running south, a 175 foot wide channel will be dredged to varying depths ranging from -32 MLLW in the northern portion to -14 feet MLLW in the southern portions of the channel.[26]

Tug channel: Parallel to the approach channel, a 100 foot wide tug boat channel will be dredged to -14 MLLW.

Gifford Street Boat Ramp: Because the CDF footprint will fill a portion of the existing Gifford Street navigation channel located adjacent to the Gifford Street Boat Ramp, a new relocated navigation channel will be dredged. The dredging of the approach channel for access to the proposed marine terminal will also displace some navigational boat moorings. As mitigation, two new mooring areas will be created. The northern area is already at depth; the southern area will require some dredging to achieve the desired depth.

Although uncertain at the time of this Draft Determination, certain areas of the federal channel and turning basin may need to be dredged to remove harbor bottom that is currently above the desired depth of -32 MLLW (up to 13.26 acres). In light of this uncertainty, the impacts to subtidal resources from this potential dredging have been evaluated in this Draft Determination. Attachment R to the Commonwealth June 18, 2012 submittal depicts the areas of the federal channel to be dredged and is attached to this document as Figure 6 for reference.

See Appendix 37 of the 1/18/2012 submittal for sampling results in the federal channel areas that may be included in this project.

Contaminated sediment generated from navigational dredging associated with CDF footprint and deepening of the channels will be disposed in CAD cells 2 and 3. Clean navigational dredged sand will be used as fill within proposed CDF, for CAD capping, mitigation, or disposed offshore consistent with an already issued permit for such offshore disposal.

Dredging will be conducted using best management practices that will minimize environmental impacts, including maintaining water quality performance standards. See Performance Standards and Significant

[25] The City of New Bedford has requested that additional deep draft dredging occur along either the northern or southern portion of the northern end of the sheet pile wall; however, City funding for this work is not currently available. In light of this request, EPA has included in its impacts evaluation an additional 1.28 acres (from -20 MLLW to -32 MLLW) for potential northern expansion and 0.62 acres (from -14 MLLW to -32 MLLW) for southern expansion.

[26] The Commonwealth notes it is possible the width of this channel may need to be expanded an additional 50 feet in width if vessel significantly wider than the anticipated 90 foot wide vessels were to use the terminal. This proposed expansion would take place in both the federal channel and in the approach channel, beginning at the federal turning basin. Given this possibility, impacts associated with this expansion were evaluated in this Draft Determination.

Substantive Requirements discussion below. Water quality performance standards are found in Appendix C of this Draft Determination.

Proposed South Terminal CDF

To support offshore renewable energy development, particularly the wind industry, the Commonwealth identified certain criteria that define the terminal, including the following:

- Horizontal clearance of at least 130 feet to accommodate expected widths of international vessels;
- Jack-up barge access (which requires a stable harbor bottom);
- Overhead clearance of at least 250 feet to accommodate the height of cranes and spuds of the installation vessels;
- Total wharf and yard upland area of at least 28 acres;
- Berthing space of at least 1,200 linear feet to accommodate one international vessel and two jack-up barges at any one time;
- Site control and availability; and
- Proximity to future offshore facilities.[27]

The 28.25 acre site consists of a 6.85 acre CDF, approximately 11 acres of adjacent upland, and approximately 8 acres of ancillary properties (see page 19 and footnote 19 for full description of acreage). The Commonwealth anticipates that ancillary properties will primarily be used for wind blade storage when the CDF is used to support renewable energy.

To create the proposed facility, an existing sheet pile wall in the south terminal area (the Shuster property) will be extended to the south, running approximately parallel to the shoreline, then turning southwest and then toward the shore. This wall of linked coffer dams (round circles linked together) will form a bulkhead of approximately 1200 linear feet. Riprap will be installed along the southern side of the wall to protect the paleosol areas and to protect the southern face from erosion that could impact the existing salt marsh. In addition, the southern face of the terminal would be graded away from the edge, toward a stormwater collection interceptor trench which also is designed to collect stormwater that flows toward the south. A pile supported concrete apron supporting a utility corridor will extend seaward over the coffer dam wall. The pilings will be located on approximately 16 x 16 foot grid and a concrete blanket will be installed (with a rip-rap type material) to protect this piling area from propeller wash. See Figure 2 of 1/18/2012 submittal and 100% construction design plans in Attachment A of the Commonwealth June 18, 2012 submittal. (See Binders S and T, with Index in T in Attachment A.)

Once the wall is secured, dredging will occur along the seaward side of the wall and the area behind the wall will be backfilled with clean dredged material to mean high water. All material generated from dredging and used as backfill in the terminal will meet the same parameters as those required for offshore disposal. The remaining four to five feet above mean high water to the bottom elevation of the cover (described below) will be filled and covered as part of the upland area 21E remediation.

[27] See p. 18-19 of the Commonwealth's June 18, 2012 submittal for additional criteria.

Construction of the CDF includes filling of a portion of the existing navigation channel to the adjacent Gifford Street Boat Ramp. This area has been identified as one of the ancillary parcels to be used as a lay down area for storing wind turbine components. The Gifford Street Boat Ramp will have limited access during that time. The Commonwealth represents that the parcel will be reopened for full recreational boating access once more conventional uses are conducted at the proposed marine terminal.

Upland 21E remediation: As stated above, sampling conducted as part of the 21E process on the approximately 11 acres of the upland area that will be incorporated into the marine terminal revealed soils contaminated with, among other things, PCBs greater than 1 ppm and lead with concentrations that qualify it as a characteristic hazardous waste under RCRA. As a result, this area will be remediated independently by the Commonwealth as part of its 21E/MCP process under the direction of a Licensed Site Professional as required by state law. Federal TSCA regulations will also apply to the remediation; any remediation performed at this upland area must be conducted consistent with EPA's TSCA Determination attached to this Draft Determination as Appendix J(1). This area will not be addressed as part of the New Bedford Harbor Superfund Site or under any CERCLA authority[28]. The Commonwealth anticipates excavating all 13.4 acres of the upland area, including the existing asphalt cap area that was the subject of a past 21E remediation, and stockpiling the material onsite. Soils with PCB concentrations exceeding 25 ppm will be trucked offsite to a licensed TSCA landfill. The remaining soil will be evaluated for its structural stability to support the heavy loads anticipated during use of the terminal to support renewable energy and future cargo shipping. If determined to be sound, the soil will be backfilled from areas of excavation and will be used to backfill the area behind the bulkhead above mean high water but below the bottom grade of the cover. Because this backfilled soil will contain PCB concentrations up to 25 ppm as well as characteristic lead, a protective cover must be put in place over the entire terminal along with an Activity and Use Limitation (AUL) on the property. The remediation, including the disturbed area of the prior 21E cleanup, will achieve a status of No Significant Risk remedial action outcome in accordance with the state c. 21E program. In addition, a groundwater monitoring plan and long-term operation and maintenance plan will be required consistent with the TSCA Determination.

[28] To the extent it may be useful to understanding the Commonwealth's plans with respect to the state cleanup of the upland area, EPA includes the following evaluation: If CERCLA did assume jurisdiction over this remediation, RCRA requirements would be evaluated and would take into account that material that could qualify as characteristic waste (lead) may be present. RCRA is applicable to treatment, storage and disposal of hazardous waste generated after 1980. Because soil excavation and backfilling will occur within an Area of Contamination (onsite, in the same location, etc.), waste is not being generated and, therefore, RCRA is not applicable. Because there is the possibility that material that is remaining within this AOC would be hazardous waste based upon its characteristics if it were generated, EPA could determine that RCRA Subtitle C requirements, including requirements for an impermeable cover (to prevent leaching) were relevant and appropriate (c. 21E does not incorporate the concept of relevant and appropriate). However, because this area is not a drinking water source and because lead was not found in groundwater sampling, EPA would determine that these requirements were not appropriate. As a result, RCRA Subtitle C requirements would not be identified as relevant and appropriate requirements under CERCLA. A hybrid cap which prevents direct contact would then be appropriate, along with property use restrictions and long-term monitoring and maintenance requirements. See EPA guidance "RCRA ARARs: Focus on Closure Requirements", OSWER Dir. 9234.2-04FS (October, 1989).

(See the Commonwealth's response to USEPA June 23, 2012 TSCA-Related Questions for additional details.)

The cover placed on the CDF and upland area shall function as a barrier to direct contact exposure to the contaminated soil. Given the heavy loads anticipated on the terminal, an asphalt or concrete cap is not deemed feasible. Such load will result in surface cracks. Therefore, the cover shall consist of, at minimum, three feet of Dense Graded Aggregate which is a mixture of gradations of aggregates, and shall be consistent with the attached TSCA Determination (see Appendix J(1) of this Draft Determination). Small parts of this proposed terminal may be paved for access driveways, equipment pads and hardstand areas. The site will be graded so that sheetflow is toward the permanent catch basins.

Compaction of the filled area and the adjacent upland portion of the main part of the terminal will be necessary to support the anticipated heavy loads prior to installing the cover. (The design supports a uniform live load of 20 tonnes (metric tons) per square meter or approximately 4,098 pounds per square foot.) Vibration and conventional methods will be used for compaction. The area will then be graded and capped as described above.

The ancillary properties shown on Attachment D to the Commonwealth's June 18, 2012 submittal will require some work in order to make them viable for use of the CDF to support the wind industry. One property with existing overhead restrictions (Map 31, Parcel 234 – owned by N.B. Radio, Inc.) will only be used as a laydown area for wind industry equipment and will not be used for pre-assembly of wind turbines or loading of equipment onto vessels. In addition, one of the properties in configuration A (See Attachment D of the June 18, 2012 Commonwealth submittal) has a wetland present; if this configuration is incorporated into the terminal site, further evaluation of the wetland impacts and appropriate mitigation will be necessary.

Performance Standards

The Commonwealth has collected water column samples to provide pre-dredged conditions at the proposed location of the Project to assess potential contamination in the water column that may affect the water quality from Project activities. (See Appendix 36 of the Commonwealth's January 18, 2012 submittal.) Turbidity monitoring will be performed around all dredging, capping and bulkhead construction work locations. Silt curtains will be required around any capping, dredging, or other in-water work between January 15 and June 15 of any year to protect fish windows. Silt curtains will also be required at all times around any filling area that is not completely enclosed (such as behind the proposed bulkhead). Water Quality performance standards, which represent the minimum actions that must be taken, are attached to this Draft Determination as Appendix C. Should these performance standards be exceeded, engineering controls that, at a minimum, will include use of silt curtains and absorbent booms, will be implemented. If performance standards are still exceeded, the work will stop until the problem is addressed in a way to prevent further exceedences. See also Appendix E for additional standards relating to dredging and disposal.

An air monitoring program will be conducted throughout the construction process for land-based work and an air monitoring plan, consistent with Appendix A (Minimum Air Monitoring Plan Requirements) and the TSCA Determinations for this proposed Project, shall be submitted to EPA. At a minimum, four air monitoring stations will be established around the land-based construction area with daily measurements of particulate matter. Air monitoring results will be made available to the surrounding communities. Best management practices such as keeping exposed soil surfaces treated or wet, covering soil piles and unconsolidated materials when not in use, and providing enclosed areas for fine materials will be included for dust suppression. Stationary emergency or standby engines installed at the construction area as well as construction equipment shall meet state and federal emission standards including the use of ultra low sulfur diesel fuel. Noise levels will be controlled through the use of mufflers and time of day operating restrictions. To the extent practicable, measurements will be collected daily for noise along the boundary of the land-based construction area and will be reported to the surrounding communities. See further discussion of these measures on pages 45-49 of the Commonwealth's June 16, 2012 submittal.

Prior to the start of construction, the paleosol areas will be marked and no equipment will be allowed within or floating above this area. Further, no dredging or other work activities will take place within 100 feet of this area without a temporary excavation support (anticipated to be in the form of sheet pilling to support the paleosols.)

Best management practices will be used during construction of the proposed marine terminal. Solid waste will be disposed of in portable dumpsters and transported offsite to a licensed municipal disposal facility. Supply and storage areas will be covered when not in use. Materials likely to be stored on the proposed terminal include wood, construction material, sheet piles, lubrication products, oil and grease, gas, paint, coating material and construction equipment. A decontamination area with a temporary polyethylene liner will be established near the construction entrance with hay bales and silt fencing in place downgradient of the decontamination area. This area will be inspected daily and cleaned as necessary.

Stockpiled clean dredged material to be used as fill for the CDF or the upland area that is left for more than 15 days, shall be treated with air dried wood chip mulch or seeded with perennial fescue-grass. [29] For upland work, silt fencing will isolate excavated, stockpiled soil. Soil piles with slopes greater than 10% will be surrounded by a berm and swale system. Stockpiled material associated with the upland excavation and backfilling left for more than 7 days shall be treated with air dried wood chip mulch or seeded with perennial fescue-grass.

Stormwater will be managed according to a Storm Water Pollution Prevention Plan (SWPPP)that will be finalized in the design documents. The stormwater system will be designed and operated to ensure discharges from the proposed CDF do not cause or contribute to a violation of water quality standards. The focus of the program will be to control erosion and sedimentation resulting from movement of large quantities of earth material and to control runoff from the clean, dredged material used as fill.

[29] In its June 29, 2012 submittal, the Commonwealth rescinded the use of tackifiers and polymer emulsions as stabilizing measures for stockpiled soil that was presented in its January 18, 2012 submittal.

In general, stormwater will be rerouted around the construction area using swales, diversions, checkdams and temporary sediment basins. Sediment and erosion controls will prevent sediment runoff into the Harbor waters without prior treatment for suspended solids and other TMDL limits. Outfalls in the northern portion of the proposed CDF will be extended through the new sheet pile wall to ensure stormwater does not discharge into the bulkhead area. Existing pipelines will be modified and strengthened or replaced as necessary to accommodate loads from filling, storage, truck traffic and heavy equipment, including the 600 ton cranes needed to transfer wind turbine equipment on and off the proposed CDF from and back onto vessels waiting along the bulkhead.

An Activity and Use Limitation pursuant to M.G.L. c. 21E will be recorded for the entire filled and upland area of the terminal. Any development or activity on the proposed CDF shall be designed, implemented and maintained in a manner to prevent any release or exposure to any material contaminated with PCBs at greater than 1 ppm concentration. Institutional controls will be implemented that prohibit use or contact with groundwater, that prohibit activities that would adversely affect the cap, and that prohibit any land use activities that were not considered as part of the TSCA determination. Once completed, the Commonwealth will secure a M.G.L. c.91 license as well as other regulatory permits for use of the CDF.

Mitigation Measures

To compensation for impacts caused to resource areas, the Commonwealth is required to implement the following mitigation measures:

1. Creation/enhancement of 4.47 acres of intertidal habitat and 14.91 acres of subtidal habitat south of the hurricane barrier in the area of the Superfund pilot cap;
2. Creation/enhancement of 1.9 acres of a combination of successional marsh in a tidal tributary along the western end of the hurricane barrier;
3. Creation of 22.73 acres of winter flounder habitat in the Outer Harbor
4. EPA recommends reseeding of 24,542,803 shellfish over 10 years given the expected 40% survival rate; and
5. Completion of Tern Monitoring Program

<u>Addition of clean sand to existing Superfund pilot cap located south of hurricane barrier to create or enhance 19.38 acres of aquatic habitat</u>: This mitigation will consist of creation/enhancement of 4.47 acres of intertidal habitat and 14.91 acres of subtidal habitat through the placement of suitable dredged material outside the Harbor, adjacent to the hurricane barrier between the barrier and the existing Superfund pilot cap[30]. This mitigation creates intertidal and subtidal areas with clean sand generated from dredging activities while simultaneously capping and isolating sediments with less than 10 ppm

[30] Page 6 of the 1998 ROD identified two areas located just south of the hurricane barrier in the outer harbor as containing sediment with PCB concentrations greater than the lower harbor cleanup level of 50 ppm and determined that these areas would be addressed on an interim basis as part of the remedy. A pilot underwater cap was placed in 2005 over one of the areas of contaminated sediment to evaluate the performance of an underwater cap in the outer harbor. See Figure7 for location of the cap. Additional information about the pilot underwater cap may be found at www.epa.gov/nbh.

PCB contamination. This will enhance spawning and foraging areas for winter flounder, scup, black sea bass and windowpane flounder, shellfish habitat, and horseshoe crab habitat. See Attachment A of the Commonwealth's June 29, 2012 submittal for engineering plans for this area.

Hurricane barrier vegetated swale rehabilitation and restoration: Conditional upon the U.S. Army Corps of Engineers' concurrence, in accordance with 33 U.S.C. § 408 that the channel design will have no adverse effect on the operation of the Hurricane Barrier, this mitigation will consist of creation/enhancement of 1.9 acres of a combination of successional marsh area (mudflat, low marsh, high marsh, and transitional area) within the tidal tributary area behind the hurricane barrier between Cove and Gifford Streets. This involves removal of some of the PCB contaminated sediment that has filled the tributary, disposal of that material in CAD cell 3 and capping the area with clean material and grading to prevent direct contact with the remaining residual impacted sediment. Replanting with native wetland plants and installation of a public access walkway/bike path adjacent to the newly created marsh area will also be part of this mitigation measure. A monitoring program will be implemented to protect against invasive species. This mitigation measure will enhance the hydraulic capacity of the tidal tributary to transport stormwater from behind the Barrier and will enhance spawning and foraging areas for winter flounder, scup, black sea bass and windowpane flounder, and enhance foraging area for avian wildlife identified within the resource delineation. See Attachment A of the Commonwealth's June 18, 2012 submittal for plans and cross-sections for these mitigation activities.

Creation of 22.73 acres of winter flounder habitat in Outer Harbor:[31] This measure consists of filling a relative depression west of the Federal Channel, immediately north of the Butler Flats lighthouse. The eastern edge of the area to be filled (the edge closest to the channel) is 90 feet from the western boundary of the Federal Channel. Clean navigational dredged fill will be placed in this area to raise the elevation from -20 MLLW to a depth of approximately -16.4 MLLW.

Shellfish seeding: To compensate for the approximately 9,817,121 shellfish lost during filling and/or dredging operations, the seeding proposed is designed to provide between 1,000,000 and 2,000,000 seed per year for the next five to ten years in order to provide approximately 9,817,121 seed for this project. See Attachment E of the Commonwealth's June 18, 2012 submittal and Attachment A of the June 29, 2012 submittal for engineering plans for this area. Given the expected 40% survival rate, EPA recommends reseeding of 24,542,803 shellfish over 10 years to replace 9,817,121 impacted shellfish.

Completion of the Tern Monitoring Program: The Commonwealth is proposing a survey to confirm the presence of foraging habitat as well as tern use of the area. As terns are migratory birds, the best time to conduct the survey would be from May to mid June timeframe with boat transects completed once every 2 weeks to count the type and number of terns flying over the transect. If this proposed Project is approved, the Commonwealth anticipates conducting the survey during the Spring/Summer of 2013.

[31] Acreage proposed for Winter Flounder habitat was increased from the original 17.73 acres presented by the Commonwealth in its January 18, 2012 submittal to the present 22.73 acres in its June 18, 2012 submittal. The additional mitigation was added to compensate for the potential federal channel dredging and potential widening and deepening of the deep draft channel; however, because this additional work is uncertain at this time, there is no commitment from the Commonwealth to perform this increased mitigation work.

CERCLA Requirements

The proposed Project complies with CERCLA § 121:

The Proposed Project is Protective of Human Health and the Environment

As described more completely in Sections V and VI of the 1998 ROD, EPA found that PCB contamination to result in unacceptable risks to human health and the environment. The biggest human health risk was found to be from frequent (e.g., weekly) ingestion of local seafood, although unacceptable risks were also found from frequent human contact with PCB-contaminated shoreline sediments or soil. Ecologically, EPA's investigations concluded that the harbor's marine ecosystem is severely damaged from the widespread sediment PCB contamination. Dredging and isolation in CAD cells, with eventually capping, will much more quickly sequester approximately 240,000 cubic yards of PCB contaminated sediment that would likely not be addressed by the Superfund dredging, depending on the concentrations (Superfund cleanup levels are 50 ppm PCBs for the lower harbor and salt marshes; 25 ppm for beachcombing areas; and 1 ppm for residences[32]). The great majority of PCB concentrations in sediment in the proposed Project area are below 50 ppm. Dredging will also remove heavy metals in sediment that are co-located with PCBs. These actions enhance the 1998 ROD by further reducing the likelihood of a direct contact and incidental ingestion of contaminated sediment along the existing beach area. In addition, dredging and isolation of the contaminated sediment in intertidal and subtidal areas removes the availability of PCB contamination to aquatic life, particularly those that bioaccumulate PCBs which has led to the Site's risk from consumption of fish. See Section VI of the 1998 ROD for a more detailed discussion of the Superfund site risks.

In addition, although it will be conducted independently by the Commonwealth through its state cleanup program, the upland remediation work will address soil contaminated with PCBs and other contaminants that would not otherwise be addressed in the forseeable future if this proposed Project did not occur. PCBs greater than 25 ppm in soil will be excavated and disposed offsite; remaining contaminants will be capped with a state and TSCA-compliant engineered barrier to prevent direct contact with contamination.

Both the CADs and the upland caps will be remain protective through long-term operation and monitoring plans, and through land use and navigational restrictions as necessary.

The Proposed Project Utilizes Permanent Solutions and Alternative Treatment or Resource Recovery Technologies to the Maximum Extent Practicable

The proposed Project provides a permanent solution to the widespread and persistent PCB contamination in the lower harbor sediment. CADs (and the CDF to the extent any remaining sediment

[32] The 1998 ROD also includes a cleanup level of 10 ppm for the upper harbor subtidal and mudflat sediment.

after dredging the CDF footprint is contaminated) permanently isolate these sediment from human and environmental receptors by containing them in perpetuity using a safe and protective technology.[33]

The Proposed Project Does not Satisfy the Preference for Treatment as a Principal Element

The proposed Project does not use treatment of the PCB-contaminated sediment as a principal element. Protection against site risks posed by these sediments (particularly aquatic exposure and seafood consumption resulting from bioaccumulation in fish tissue) is provided by removing and permanently isolating them in CADs (and to the extent there is contaminated sediment left in the CDF footprint after dredging) in a CDF. Treatment of the dredged sediment is not necessary since CADs are protective whether or not sediments contained within them are treated. Treatment would add additional short term risks due to the material handling and emissions that would result and, although not calculated for this proposed Project, treatment would likely add significant cost to this project without added protectiveness.[34]

The Proposed Project is Cost Effective

The Commonwealth has not provided cost information that would enable EPA to analyze the cost-effectiveness of this particular proposed Project; however, no Superfund money will be used to finance the proposed Project.

The Proposed Project Attains ARARS

A detailed discussion of how this proposed Project complies with ARARs follows below.

Significant Substantive Requirements

Because EPA has integrated the State Enhanced Remedy into the 1998 ROD, this proposed Project must comply with §121(d) of CERCLA[35] and §300.450 of the NCP which requires the work to meet the

[33] EPA recently issued an Explanation of Significant Differences to the 1998 ROD in which it selected use of a CAD for certain dredged sediment in the lower harbor and the southern part of the upper harbor. In that document EPA presented its basis for finding that CADs are safe and protective. See March 2011 Final – Fourth Explanation of Significant Differences for Use of a Lower Harbor CAD cell (LHCC), New Bedford Harbor Superfund Site, Operable Unit #1, New Bedford, Massachusetts. All the administrative records for the New Bedford Harbor Superfund site are incorporated by reference into this administrative record and are also available at the New Bedford Public Library, EPA's Superfund Record Center and www.epa.gov/nbh.

[34] EPA did investigate various treatment technologies for the significantly more contaminated sediment dredged from the upper harbor hot spot area. Based on community concerns about air emissions from the various treatment technologies and costs, EPA's 1999 Amended Record of Decision selected offsite landfilling at an appropriately licensed facility. See the Amended Record of Decision for the New Bedford Harbor Hot Spot, Operable Unit 2, issued April 27, 1999. All the administrative records for the New Bedford Harbor Superfund Site are incorporated by reference into this administrative record and are also available at the New Bedford Public Library, EPA's Superfund Record Center and www.epa.gov/nbh.

[35] Under Section 121(d)(1) of CERCLA, [r]emedial actions selected under this section or otherwise required or agreed to by the President ... shall attain a degree of cleanup of hazardous substances, pollutants, and

substantive requirements of all applicable or relevant and appropriate regulations (ARARs).[36] Simply described, an applicable requirement is a cleanup standard, standard of control and other substantive environmental protection requirements, criteria or limitations promulgated under Federal or State law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site. Relevant and appropriate requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under Federal or State law that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstances at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to a particular site.[37] In addition, there are non-promulgated advisories or guidance issued by Federal or State government that are not legally binding and do not have the status of potential ARARs. However, in many circumstances this material, referred to as non-promulgated but "To Be Considered" ("TBC"), will be considered along with ARARs as part of the sit risk assessment and may be used in determining the necessary level of cleanup for protection of health or the environment.[38]

Tables reflecting the federal substantive requirements for this proposed Project are presented in Table 2 of this Draft Determination. A summary of the more significant federal requirements follows below. Appended to this document, as noted, are more detailed descriptions of these requirements and actions to be taken to comply with the requirements.

State ARARs were identified by the Commonwealth in a submittal provided to EPA on June 18, 2012. That submittal supplemented and updated prior submittals of the Commonwealth that identified state substantive requirements. Copies of these submittals are included with this Draft Determination as Appendix D.

Section 404 of the Clean Water Act (33 U.S.C. § 1344)
Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. § 403)

Wetland Executive Order 11990

Section 404 of the Clean Water Act prohibits the discharge of dredged or fill material into waters of the U.S. except in compliance with the requirements of the § 404(b)(1) guidelines (40 C.F.R. Part 230). In

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contaminants released into the environment and of control of further release at a minimum which assures protection of human health and the environment.

[36]Section 300.430 (e)(9)(iii)(B)provides that remedial alternatives "shall be assessed to determine whether they attain applicable or relevant and appropriate requirements under federal environmental laws...." Further, Section 300.430 (f) (1) (ii))(B) of the NCP provides "On-site remedial actions selected in a ROD must attain those ARARs that are identified at the time of ROD signature or provide grounds for involving a waiver under Section 300.430(f)(1)(ii)(C)." While ARARs for the enhancement work were not identified in the Proposed Plan or ROD, it was made very clear in those documents and in EPA's response to comments that although no permits would be required, the enhancement work had to meet the substantive requirements that a permitted facility must meet.

[37] CERCLA Compliance with Other Laws Manual: Interim Final, OSWER/EPA/540/G-89/006 (August 1988), p. 1-10.
[38] Id. at p. xiv.

particular, the guidelines prohibit, among other things, discharges into wetlands and other waters if there is a practicable alternative to the proposed discharge which would have less adverse impacts on the aquatic ecosystem. They also prohibit discharges that would cause or contribute to violations of state water quality standards; jeopardize the continued existence of an endangered or threatened species or result in the likelihood of the destruction or adverse modification of such species' critical habitat; or cause or contribute to significant degradation of waters of the U.S. Finally, they require all appropriate and practicable steps to be taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem, including compensatory mitigation for any unavoidable impacts. After careful review of the Commonwealth's submittals and based on the information provided in those submittals, EPA has tentatively determined that the Project satisfies the § 404(b)(1) guidelines provided that specified minimizing and mitigating measures are employed. EPA has similarly concluded that the Wetland Executive Order has been satisfied. The basis for EPA's determinations is set out in Appendix E to this Draft Determination. **EPA is specifically requesting public comment on EPA's determination that the Project represents the least environmentally damaging practicable alternative and that it satisfies the other requirements of the § 404(b)(1) guidelines.**

Section 10 of the Rivers and Harbors Act prohibits the obstruction or alteration (including dredging) of any navigable water of the U.S. unless it is determined that the activity is not contrary to the public interest and otherwise complies with all applicable federal laws. EPA has considered all relevant factors associated with the proposed South Terminal Project and has preliminarily determined that the proposed Project is not contrary to the overall public interest. EPA will need to conclude coordination with Federal and state resource agencies in several areas before a Final Determination can be made as to whether this proposed Project meets all requirements.

For a more detailed discussion, See Appendix E to this Draft Determination.

Section 402 of the Clean Water Act, (33 U.S.C. § 1342)

Section 301 of the CWA, 33 U.S.C. § 1311, generally prohibits the discharge of pollutants into waters of the U.S. except in compliance with various sections of the Act, including Sections 402 and 404, 33 U.S.C. §§ 1342 and 1344. Section 402 authorizes discharges subject to the requirements of National Pollutant Discharge Elimination System ("NPDES") permits. Among the discharges regulated by the NPDES permit program are certain storm water discharges, specifically those from regulated municipal separate storm sewers systems ("MS4"); those associated with industrial activity as defined in 40 C.F.R. § 122.26(b)(14); those associated with construction activity as defined in 40 C.F.R. § 122.26(b)(15); and those specifically designated as needing a storm water NPDES permit under EPA's residual designation authority. The NPDES-regulated discharges at the South Terminal Project that are under consideration as part of the State Enhanced Remedy ("SER") are storm water discharges associated with construction activities. Operators of projects subject to EPA's storm water construction regulations must comply with the terms and conditions contained in EPA's Construction General Permit (CGP). Based on the information contained in the Commonwealth's submission entitled *State Enhanced Remedy in New Bedford, South*

Terminal (January 18, 2012), EPA has tentatively concluded that if the construction operations and storm water management measures are undertaken as described, the storm water discharges should meet the terms of the CGP. This tentative conclusion is conditioned upon the Commonwealth's updating and completion of its Storm Water Pollution Prevention Plan to address all of the elements of the CGP no later than fourteen (14) days before land disturbing activities take place, and on the Commonwealth's implementation of the SWPPP consistent with the terms and conditions of the CGP.

For a more detailed discussion, see Appendix F to this Draft Determination.

Navigation and Navigable Waters, 33 USC 408

This statue makes it unlawful for any person to impair the usefulness of any sea wall, bulkhead, jetty, dike, levee, wharf, pier, or other work built by the United States, unless permission is granted based upon a determination that such occupation or use will not be injurious to the public interest.

The Commonwealth, through a private contractor, evaluated the effects of dredging in the vicinity of the hurricane barrier. After conducting a slope stability analysis, it was determined that dredging would not have an adverse impact on the hurricane barrier. A copy of that analysis is attached to the Commonwealth's June 18, 2012 submittal as Attachment Z.

The Corps of Engineers is reviewing the channel design to assure there will be no adverse effect on the operation of the Hurricane Barrier. EPA will coordinate with the Corps to make sure any concerns are addressed before EPA's final decision on the project.

National Historic Preservation Act, 16 U.S.C. §470, 36 CFR Part 800

Section 106 of the National Historic Preservation Act requires Federal Agencies, in consultation with other interested parties, to consider the effects of their undertakings on historic properties prior to the undertaking. To the extent that EPA's issuance of this Draft Determination is considered a Federal undertaking, EPA is required, after consultation, to determine what effect its tentative determination could have on historic properties in advance of issuing its Final Determination.

Two paleosol areas were found in the subtidal vicinity of the proposed Project. Both the State Historic Preservation Officer ("SHPO") and the Massachusetts Board of Underwater Archeological Resources ("MBUAR") requested that the Project planners consider alternatives to avoid adverse impacts to the paleosol areas. In addition, EPA and the Commonwealth engaged in consultation with the Wampanoag Tribe of Gay Head (Aquinnah), and the Mashpee Wampanoag Tribe regarding these soils. In accordance with comments from the consulting parties, the footprint of the proposed CDF was altered to avoid impacts to the paleosols. Neither the SHPO nor MBUAR have objected to, or raised concerns regarding, the redesign of this proposed CDF, and the Tribes have indicated that they are satisfied with the

proposed redesign. In addition, the Commonwealth and Tribes have agreed that the Tribes will be provided with the opportunity to monitor construction activities.

A shipwreck was also identified in the subtidal portion of the Project. The SHPO and MBUAR have agreed that the shipwreck does not meet the Criteria of Eligibility for listing in the National Register of Historic Places, and that no further investigation is warranted.

In addition to providing the Tribes with an opportunity to monitor construction activities, the Commonwealth will take other steps to limit or avoid adverse effects including having a suitably trained archeologist on board dredging vessels to monitor ground disturbing activities and to follow its policies and procedures should unanticipated archeological resources or human remains be discovered.

An assessment of the original 12 acre upland area conducted in 2010 concluded that no additional cultural resources background research or archeological subsurface investigation was necessary in the upland area. Since completion of this assessment, however, the size of the upland area has significantly increased from 12 acres to approximately 21.4 acres to allow for additional lay down space. The Commonwealth has committed to undertake additional assessments, including archeological assessments, as it finalizes the fully delineated site.

EPA has reviewed all of the archeological investigations concerning the areas projected to be impacted by the proposed Project and considered the input of the consulting parties including the SHPO, MBUAR, the Wampanoag Tribe of Gay Head (Aquinnah) and the Mashpee Wampanoag Tribe. In light of the investigations, project design modification, determinations and conditions discussed above, it is EPA's intent to propose a finding of no adverse affect for the subtidal and intertidal areas as long as the Commonwealth agrees to abide by the conditions imposed by the Tribes. In accordance with the applicable regulations, EPA will notify the consulting parties of this finding. If the SHPO and Tribes agree with the finding or do not provide a response within 30 days of its receipt, EPA may proceed with its approval of the proposed Project. EPA cannot, however, conclude the Section 106 consultation process in connection with the upland area until a final assessment of the entire area is completed, and consulting parties are appropriately engaged.

For a more detailed discussion, see Appendix G to this Draft Determination.

Essential Fish Habitat Assessment under the Magnuson-Stevens Act, 16 U.S.C. § § 1851 et seq.

This Act establishes procedures designed to identify, conserve, and enhance essential fish habitat (EFH) for those species regulated under a federal fisheries management plan. Before a federal action is taken, consultation with National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) must be conducted.

The majority of the impacts to EFH habitat associated with this project will be temporary and reversible. Ambient monitoring will be required to ensure that Performance Standards are met. Exceedances of performance standards may trigger reduced dredging rates to ensure the protection of water quality.

For the permanent impacts, the Commonwealth has developed a mitigation package that should offset the projected loss of winter flounder spawning habitat, salt marsh and intertidal habitat. An expanded shellfish reseeding effort consistent with that described above will be necessary to offset the losses associated with that resource. EPA has tentatively determined that impacts to EFH species will be minimized and mitigated to the greatest extent practicable provided that the Commonwealth fully implements all of the proposed minimization and mitigation measures described above.

This EFH assessment is the first step in the required consultation process between the federal action agency (in this case EPA) and NMFS. NMFS will review this document and may issue conservation recommendations. EPA may or may not adopt those recommendations, but if EPA chooses not to adopt any recommendation, EPA must provide a written explanation defending that choice to NMFS. EPA will complete the consultation process before making a final decision on the project.

For a more detailed discussion, see Appendix H to this Draft Determination.

Fish and Wildlife Coordination Act, ("FWCA") 16 U.S.C. §661-677e

The Act requires consultation with the U.S. Fish and Wildlife Service ("FWS") and the fish and wildlife agencies of states to be undertaken for the purpose of "preventing loss of and damage to wildlife resources." This process includes consultation which involves informal and formal participation in all phases of project planning, construction, operation, and maintenance; reporting of findings and recommendations, which is the formal culmination of mandated surveys and investigations; and consideration and implementation, which, technically, are action agency activities but that may be significantly influenced by FWS actions and continued participation in the planning and decision making process.

EPA closely coordinated with FWS regarding both the FWCA and the Endangered Species Act during its evaluation of the proposed Project. EPA's tentative conclusions regarding potential impacts to fish and wildlife from the project and potential mitigation measures are discussed on in sections 5, 6 and 7 of Appendix E. EPA will consider any comments provided by FWS during the public comment period regarding the Project and EPA's Draft Determination as it formulates its final decision, consistent with FWCA.

For a more detailed discussion, see Appendix O to this Draft Determination.

Endangered Species Act, 16 U.S.C. §1531 et seq.

Section 7 of the Endangered Species Act requires EPA to ensure, in consultation with the U.S. Fish and Wildlife Service ("FWS") or the National Marine Fisheries Service ("NMFS") that any action authorized by EPA is not likely to jeopardize the continued existence of any endangered or threatened species or adversely affect its critical habitat.

After identifying three species under the jurisdiction of FWS that may occur in the proposed Project area, EPA initiated informal consultation with FWS and provided it with EPA's draft Biological Assessment. The three species are the roseate tern (endangered), the piping plover and the northeastern beach tiger beetle (both threatened species). EPA subsequently determined, and FWS has informally confirmed, that the piping plover and the northeastern beach tiger beetle are not in the project area. EPA is awaiting final written confirmation from FWS. EPA has completed a final Biological Assessment of the potential effects of the construction and long-term operation of the proposed Project on the roseate tern and, for the reasons discussed in the final Biological Assessment, EPA has concluded that while the proposed Project may affect the roseate tern, the Project is unlikely to adversely affect the species.

EPA also identified the Atlantic sturgeon, an endangered species under the jurisdiction of NMFS, which has the potential to occur in the Project area and may be adversely affected by the proposed action. EPA is currently seeking additional technical assistance from NMFS and is in pre-consultation analysis with it. In that process, EPA and NMFS are discussing time of year restrictions, project sequencing options, and mitigative dredging techniques which could greatly lessen or eliminate any potential adverse effects to the species. In the near future, EPA will enter informal consultation with NMFS which will include preparation of a Biological Assessment.

For a more detailed discussion, see Appendix I to this Draft Determination.

Toxic Substances Control Act (TSCA), 15 U.S.C §2601 et seq.

40 CFR §761.61 PCB Remediation Waste

TSCA, and its implementing regulations at 40 C.F.R. Part 761, regulate the manufacture, processing, distribution in commerce, use, cleanup, storage, and disposal of PCBs. In particular, § 761.61(c) provides cleanup and disposal options for PCB remediation waste, as defined in §761.3, through a self-implementing procedure, through performance-based disposal, or with a risk-based approval issued by EPA. A risk-based approval requires a determination by EPA that the proposed method will not pose an unreasonable risk of injury to health or the environment. The Commonwealth has determined that the PCB-contaminated soil and sediment to be excavated, dredged and disposed meets the definition of PCB remediation waste as defined in §761.3 of TSCA. As such, this soil and sediment are regulated for cleanup pursuant to § 761.61(c).

Based on information provided by the Commonwealth, EPA has made a draft determination that the proposed method of excavation and disposal of the proposed upland soils and dredging and disposal of

certain PCB-contaminated sediment, including dredging and disposal activities relating to CAD cell 3, all of which are included in the proposed South Terminal Project, does not pose an unreasonable risk to human health or the environment as long as the conditions set out in the TSCA Determination attached as Appendix J(1) to this Draft Determination are met. The activities covered by, and the conditions contained within, this TSCA Determination are more fully described within Appendix J(1).

In addition, EPA is proposing to modify an existing TSCA Determination issued on November 12, 2008, as modified on June 18, 2010, to include dredging and disposal of PCB-contaminated sediment dredged from within the footprint of CAD cell 3 and from the tidal tributary adjacent to the hurricane barrier into existing CAD cell 2. Based on the information provided by the Commonwealth, and provided the conditions in this Second Modification to the November 12, 2008 TSCA §761.61(c) Determination are met, EPA is determining that disposal of CAD cell 3 sediment and tidal tributary sediment into CAD cell 2 does not pose an unreasonable risk to human health and the environment. The activities covered by, and the conditions contained within this modified TSCA Determination are more fully described within Appendix J(2).

EPA is asking for specific public comment on these two proposed TSCA §761.61(c) determinations.

***Clean Air Act, 42 U.S.C. §7506(c),* 40 CFR Part 93, Subpart B (General Conformity Rule)**

42 U.S.C. § 7412, 40 CFR Parts 61 and 63 (NESHAPs)

EPA's General Conformity Rule, 40 CFR Part 93, Subpart B, implements section 176(c) of the Clean Air Act for non-attainment areas and maintenance areas. It requires that federal actions, unless exempt, conform with the federally approved implementation plans. EPA has analyzed the impacts on air quality associated with the construction of the South Terminal Project for conformity applicability pursuant to that General Conformity Rule. EPA has determined that such impacts will not exceed de minimis levels of direct or indirect emissions of a criteria pollutant or its precursors, and are exempted by 40 CFR 93.153.[39] Any later indirect emissions are generally not within EPA's continuing program responsibility and generally cannot be practicably controlled by EPA. For these reasons a conformity determination is not required for EPA's authorization of this project.

If the project involves any activities that would be covered under 40 CFR Parts 61 or 63 (NESHAPs), then the proponent will be required to comply with the applicable NESHAP.

See Appendix A to this Draft Determination for minimum air monitoring requirements.

[39] EPA has determined that the output of NOx and VOCs produced during construction of the CDF are below de minimis levels based on the type of equipment to be used, the 9 month construction time frame, and the amount of hours each piece will run per day. The calculated NOx output is approximately 27.70 tons (per calendar year) and approximately 1.3 tons per calendar years of VOCs.

Executive Orders and Policies

Pursuant to EPA guidance, "In additional to legally binding laws and regulations, many Federal and state environmental and public health agencies...develop criteria, advisories, guidance, and proposed standards that are not legally binding, but that may provide useful information or recommended procedures.[40] These "to-be-considered" (TBCs) materials are meant to complement the use of ARARs, not to compete with or replace them. TBCs are not legally enforceable and therefore are not ARARs. Their identification and use are not mandatory.[41] TBCs can also include Executive Orders. Executive Orders differ, however, from other TBCs in that they are orders of the President to all Executive Branch employees, so that even though they are not ARAR under CERCLA they should be complied with.[42]

Following is a list of significant federal Executive Orders that have been identified as TBCs for the proposed Project.

Floodplain Management Executive Order, Executive Order 11988

EPA is asking for specific public comment on the following proposed determination.

Executive Order 11988 setting out requirements for federal agencies in the management of floodplain issues was issued on May 24, 1977 in furtherance of the National Environmental Policy Act of 1969, among other federal statutes, "in order to avoid to the extent possible the long and short term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development whenever there is a practicable alternative." Each agency has a responsibility to evaluate the potential effects of any actions it may take in a floodplain; ... reflect consideration of flood hazards and floodplain management; and to prescribe procedures to implement the policies and requirements of this Order. EPA's issuance of this Draft Determination may be considered a federal action. Before taking action, each agency shall determine (1) whether the proposed action will occur in a floodplain; (2) if so, consider practicable alternatives to avoid adverse effects and incompatible development in the floodplain; (3) prior to taking action, design or modify its action in order to minimize potential harm to or within the floodplain and act to restore and preserve the natural and beneficial values of the floodplain; and (4) provide opportunity for public comment.

The South Terminal Project includes activities that affect or result in the occupancy and modification of the floodplain. The Commonwealth calculates that construction of the South Terminal Project will result in the loss of 27.33 acre-feet of flood storage due to filling within the footprint of the CDF. This represents a rise of approximately 0.156 inches in water levels during a flood event. As a result, Executive Order 11988 (Floodplain Management) requires EPA to make a determination that there is no practicable alternative to locating the CDF in floodplains. **After reviewing other alternative locations,**

[40] See "CERCLA Compliance with Other Laws Manual: Interim Final", EPA/540/G-89/006 (August 1988), p. 1-76.
[41] See "Considering Wetlands at CERCLA Sites", EPA A540/R-94/019 (May 1994), p. 11.
[42] *Id. at p. 12.*

EPA has determined that, given the use of the CDF as a marine terminal to support the offshore wind industry and the required criteria to support that use, there is no practicable alternative to occupancy and modification of the floodplain inside the hurricane barrier in the south terminal area. While the Commonwealth does not believe this impact to be significant[43], it has identified the planned Marsh Island restoration project as providing mitigation for this loss of flood storage capacity.[44] The planned work at Marsh Island will result in an increase in flood storage capacity of 39.67 acre-feet, which is more than enough to compensate for the anticipated 27.33 acre-feet loss from construction of the South Terminal project. The beneficial floodplain values identified for the area affected by this project are flood prevention. As a result, the Commonwealth's promised mitigation project, that primary beneficial value will be restored.

For a detailed discussion, see Appendix L to this Draft Determination.

Executive Order 12898 – Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations**, 59 **Fed. Reg. 7,629 (Feb. 16, 1994)

This federal Executive Order requires, to the greatest extent practicable, that each Federal agency identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States.

The Commonwealth has identified certain areas located within or along the truck access route (Route 18) as environmental justice areas. EPA agrees with this assessment. MassDEP then considered the existing and potential traffic, noise, and air impacts to these areas and determined the proposed Project's additional traffic, noise and air impacts are expected to be minimal, and therefore, are not expected to have disproportionately high and adverse human health or environmental effects on minority or low-income populations. EPA feels that MassDEP appropriately evaluates the impacts to environmental justice populations. A Construction Management Plan (CMP), including air and sound monitoring will be required in order to minimize construction-related impacts.

For a detailed discussion, see Potential Community Impacts on page 8 and Appendix M to this Draft Determination.

[43] EPA, through its own discretion, consulted with FEMA about these impact of flood storage loss to New Bedford Harbor. FEMA did not believe the loss was significant.

[44] The Marsh Island restoration project is outside the scope of this proposed South Terminal Project. EPA has not received any information from the Commonwealth to indicate that the flood storage created by the Marsh Island restoration project has been identified as a floodplain mitigation measure for any other activity in New Bedford Harbor. Attachment B to the Commonwealth's June 26, 2012 submittal contains plans for the Marsh Island restoration project.

Executive Order 13112 Invasive Species

This Executive Order directs federal agencies to review their actions to enhance the control and management and prevent the spread of invasive species. To the extent that EPA's issuance of this Draft Determination is considered a Federal undertaking, EPA has conducted a review of the proposed Project to determine its impact on controlling and prevent the spread of invasive species.

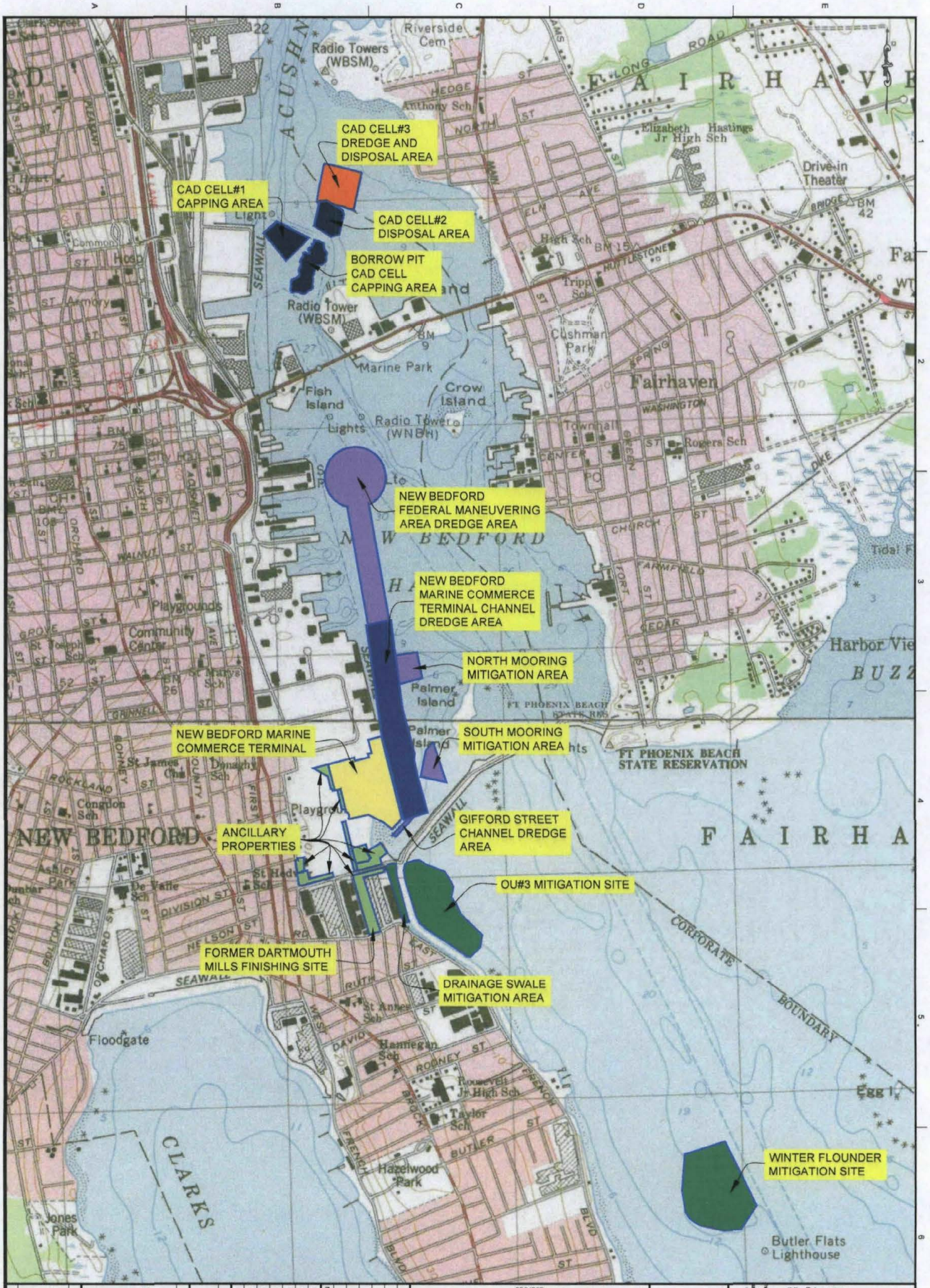
EPA recommends a post-construction bulkhead monitoring plan to detect the presence of new invasive species that may colonize the Harbor waters. An invasive species management plan to protect against invasive species in the swale mitigation measures has been developed by the Commonwealth and is included in Attachment P to its June 18, 2012 submittal. EPA has recommended changes in that plan.

See Appendix N and Section 7.3 of Appendix E for further discussion.

END

EPA Draft Determination for the Proposed South Terminal Project
New Bedford Harbor State Enhanced Remedy

Figure 1
Map of Proposed Work Components
(Second map attached to show existing upland asphalt cap
in white striped area)



PROJECT NO.	6690
CADD FILE	SITE FIGURE
DESIGNED BY	GCD
DRAWN BY	GCD
CHECKED BY	
DATE	5/10/2012
DRAWING SCALE	1 INCH = 600 FEET
GRAPHIC SCALE	SCALE: 1"=600' 0 300 600 1200
SHEET TITLE	NEW BEDFORD MARINE COMMERCE TERMINAL GENERAL SITE PLAN
DRAWING NO.	1
1 OF 1	

NO.	DATE	DESCRIPTION	BY

PROJECT

NEW BEDFORD
MARINE COMMERCE
TERMINAL

OWNER

MASSACHUSETTS CLEAN ENERGY CENTER
55 SUMMER STREET, 9TH FLOOR
BOSTON, MASSACHUSETTS

APEX
ROCKVILLE, MD
SOUTH WINDSOR, CT - BOSTON, MA -
NEW BEDFORD, MA - HOLYOKE, MA
184 MAIN STREET, SUITE 502
BOSTON, MA 02210
591 CONNECTICUT AVENUE
SOUTH WINDSOR, CT

The designs, specifications and other documents and data furnished by APEX to the client for the project and all other purposes hereunder are the property of APEX. The client agrees that all such documents and data will be used only for the purposes for which they are furnished by APEX and shall not be reproduced or transferred to other parties without APEX's prior written consent.

Apex Companies, LLC.

184 HIGH STREET
SUITE 502
BOSTON MA 02110
(617) 728-0070

REVISIONS

NO.	DATE	DESCRIPTION
1.	2/11/10	PRELIMINARY LAYOUT
2.	4/09/10	PRELIMINARY ASSESSMENT
3.	4/15/10	FIELD LOCATION
4.	7/07/10	ADD. FED. RESOURCE
5.	8/24/10	FINAL BULKHEAD ALIGNMENT
6.	6/8/12	HIGH TIDE LINE

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- APPROXIMATE URBAN FILL
- ISOLATED WETLAND
- INTER-TIDAL
- SUB-TIDAL
- INTER-TIDAL SALT MARSH
- APEX TEST PIT
- PROPOSED FACILITY PARCEL

PREPARED FOR:

COMMONWEALTH OF MASSACHUSETTS

DRAWING TITLE:

NEW BEDFORD MARINE COMMERCE TERMINAL FEDERAL RESOURCE AREA ASSESSMENT

Scale: 1"=150'

0 75 150 300 450 FEET

Date 3/24/10	Drawing No.
Proj. Mgr.	
Design	
Check CM	FIG-5
Drawn GCD	
Job. No. 6615	
Last Rev. 6/29/12	

EPA Draft Determination for the Proposed South Terminal Project
New Bedford Harbor State Enhanced Remedy

Figure 2
Map of Geographic Areas of
the New Bedford Harbor Superfund Site

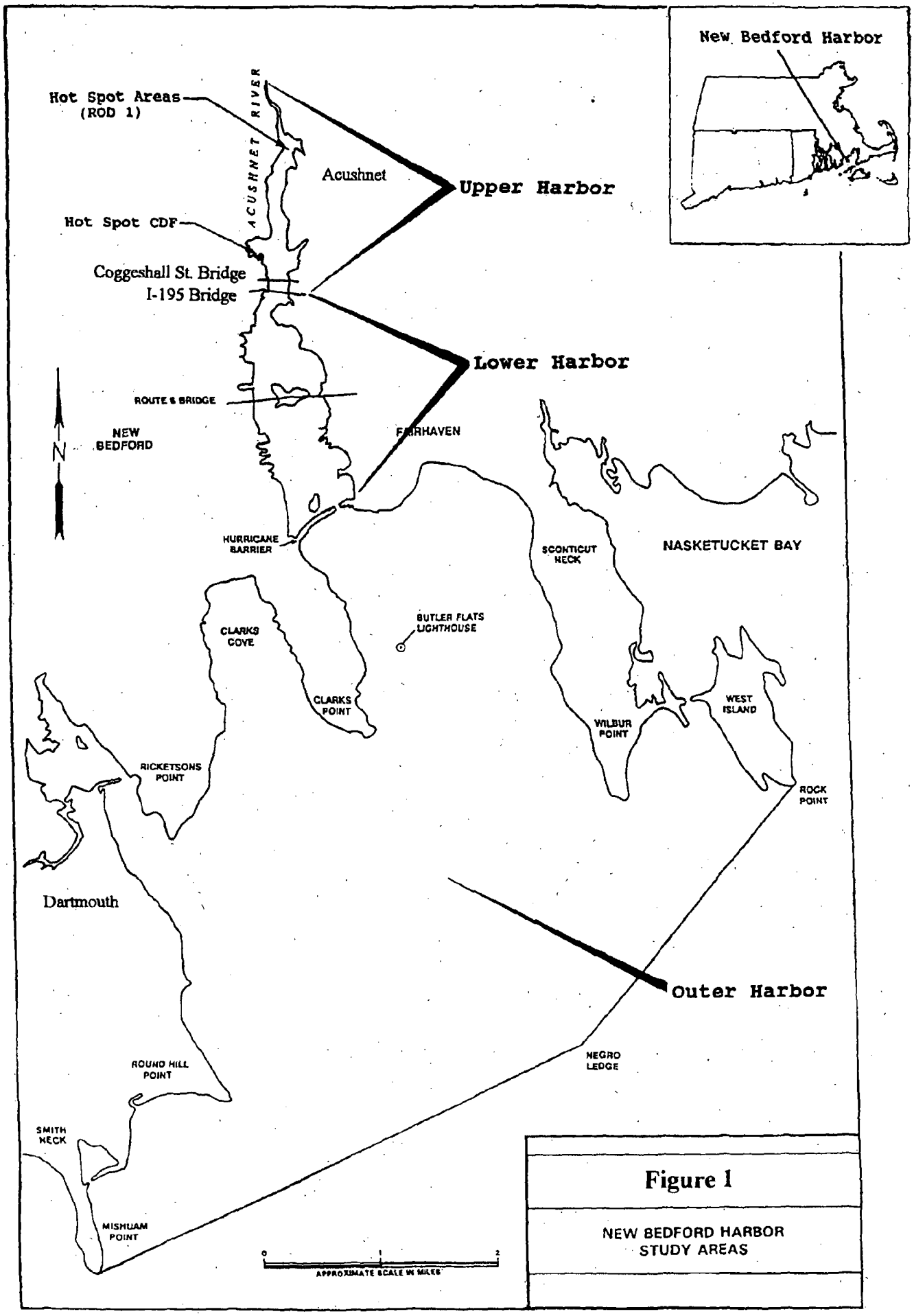

Figure 1

NEW BEDFORD HARBOR
STUDY AREAS

EPA Draft Determination for the Proposed South Terminal Project
New Bedford Harbor State Enhanced Remedy

Figure 3
Map of New Bedford – Fairhaven Designated Port Area

DRAFT DRAFT DRAFT

The Massachusetts Office of Coastal Zone Management
251 Causeway Street, Suite 800
Boston, MA 02114-2138
www.mass.gov/czm

New Bedford - Fairhaven

Designated Port Area (DPA)

For planning purposes only. In the event of conflict between this map and the accompanying written description in which neither the text nor the map is determinative, CZM shall issue a written clarification pursuant to the Designated Port Area (DPA) regulations at 301 CMR 25.00.

Point of Beginning
Point of Ending
Designated Port Area Boundary
Town Boundaries
Chapter 91 - High Water
Assessor's Parcels

N

Basemap: MassGIS Digital Ortho Photos, 2001.
Projection: North American Datum 1983;
Massachusetts State Plane Coordinate System,
Mainland Zone (FIPS zone 2001), meters.

0 375 750 1,125 1,500 Feet

September 1, 2009

EPA Draft Determination for the Proposed South Terminal Project
New Bedford Harbor State Enhanced Remedy

Figure 4(a)
Map of Proposed Configuration A for Ancillary Property

Apex Companies, LLC.

184 HIGH STREET
SUITE 502
BOSTON MA 02110
(617) 728-0070

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COMMONWEALTH OF MASSACHUSETTS

DRAWING TITLE:

NEW BEDFORD MARINE COMMERCE TERMINAL PROPOSED CONFIGURATION A

Scale: 1"=150'

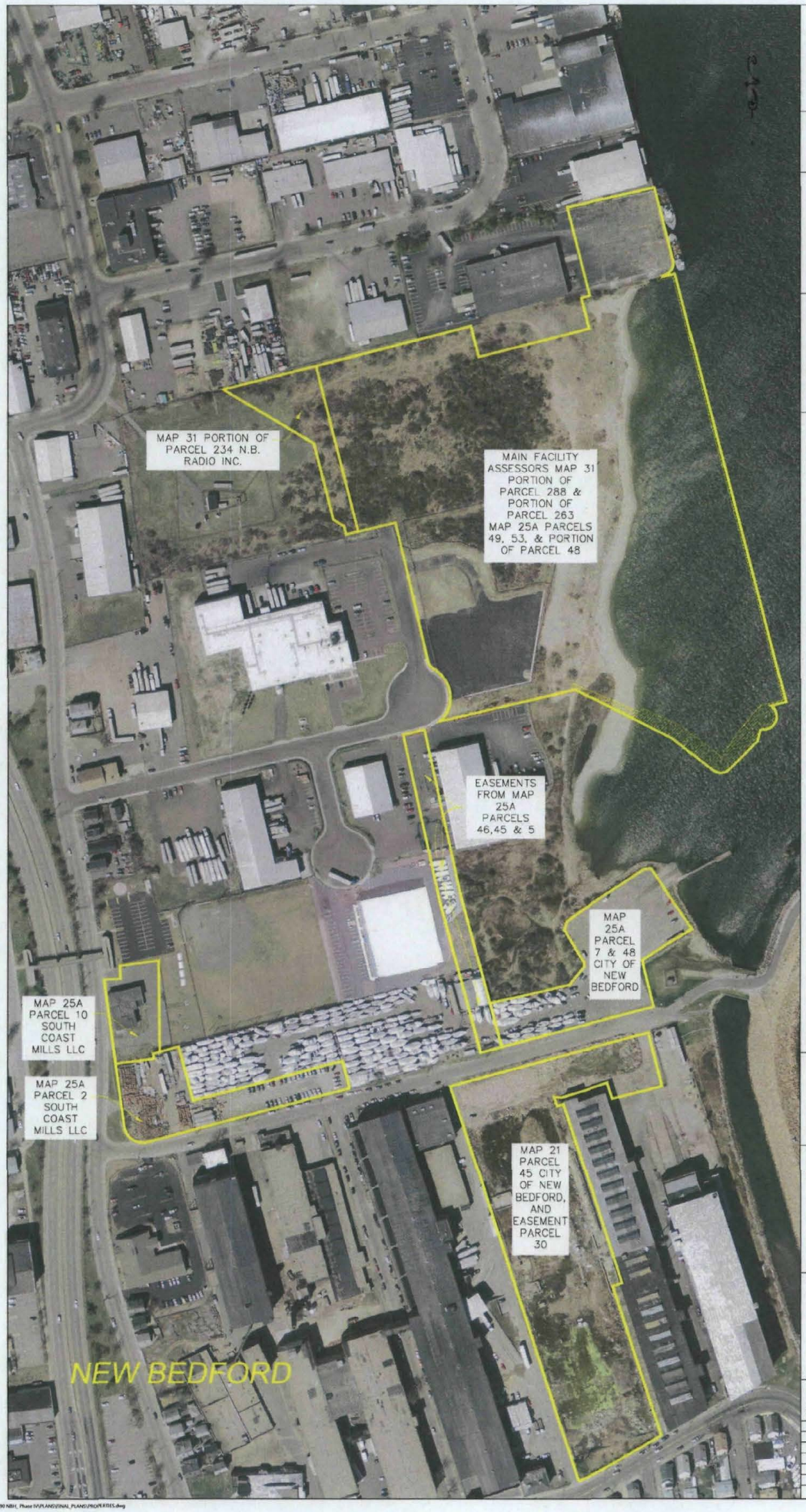
0 75 150 300 450 FEET

Date 3/24/10	Drawing No.
Proj. Mgr.	
Design	
Check CM	
Drawn GCD	
Job. No. 6615	
Last Rev. 7/7/10	

P:\Jobs\6690 NBH_Phase IV\PLANS\FINAL_PLANS\PROPERTIES.dwg

EPA Draft Determination for the Proposed South Terminal Project
New Bedford Harbor State Enhanced Remedy

Figure 4(b)
Map of Proposed Configuration B for Ancillary Property



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COMMONWEALTH OF MASSACHUSETTS

DRAWING TITLE:

NEW BEDFORD MARINE COMMERCE TERMINAL PROPOSED CONFIGURATION B

Scale: 1"=100'

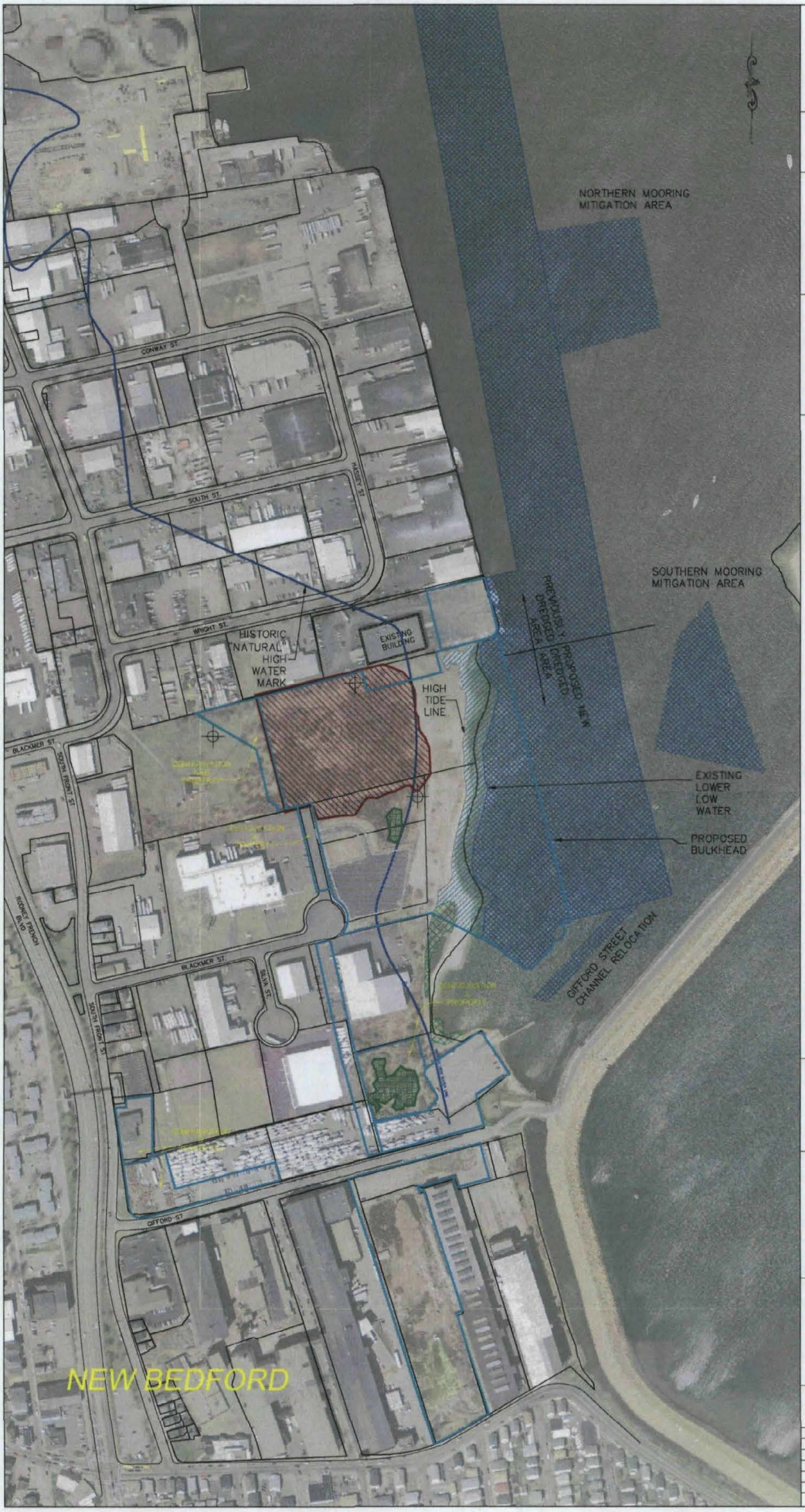
0 50 100 200 300 FEET

Date 3/24/10	Drawing No.
Proj. Mgr.	
Design	
Check CM	
Drawn GCD	
Job. No. 6615	
Last Rev. 7/7/10	

P:\Jobs\6690 NBH, Phase IV\PLANS\FINAL_PLANS\PROPERTIES.dwg

EPA Draft Determination for the Proposed South Terminal Project
New Bedford Harbor State Enhanced Remedy

Figure 5
Maps of Resource Areas
(including Paloesol and Shipwreck)



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Scale: 1"=150'

0 75 150 300 450 FEET

Date 3/24/10	Drawing No.
Proj. Mgr.	
Design	
Check CM	FIG-5
Drawn GCD	
Job. No. 6615	
Last Rev. 6/29/12	

Source: Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs; USGS Color Ortho Imagery - 30cm (2008/2009)

N

0 200 400 800 Feet

Aerial Map

Wetland Report
Land North of Gifford Street
New Bedford, MA

FIGURE 2

LUCAS ENVIRONMENTAL, LLC
LAND DEVELOPMENT & PERMITTING

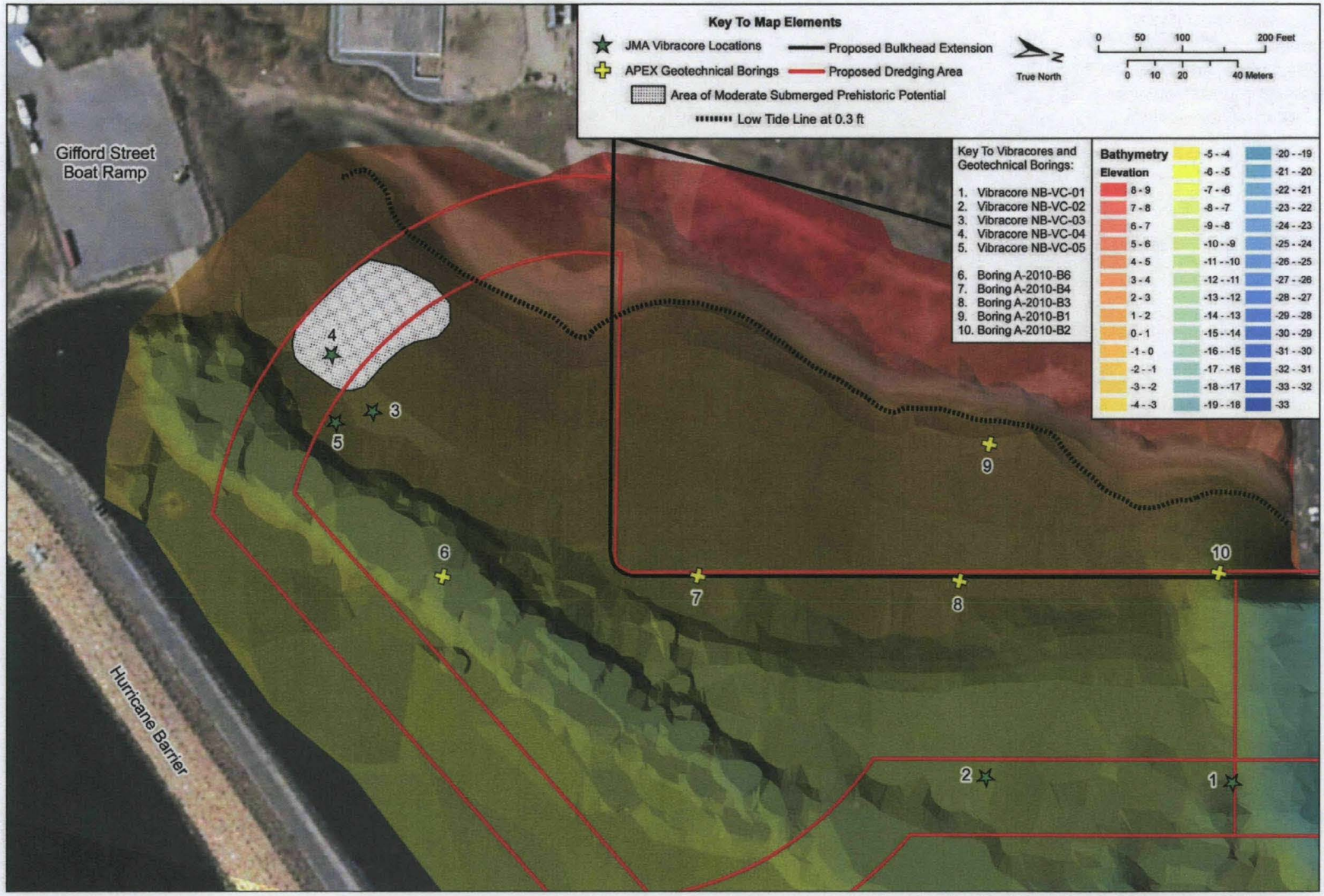
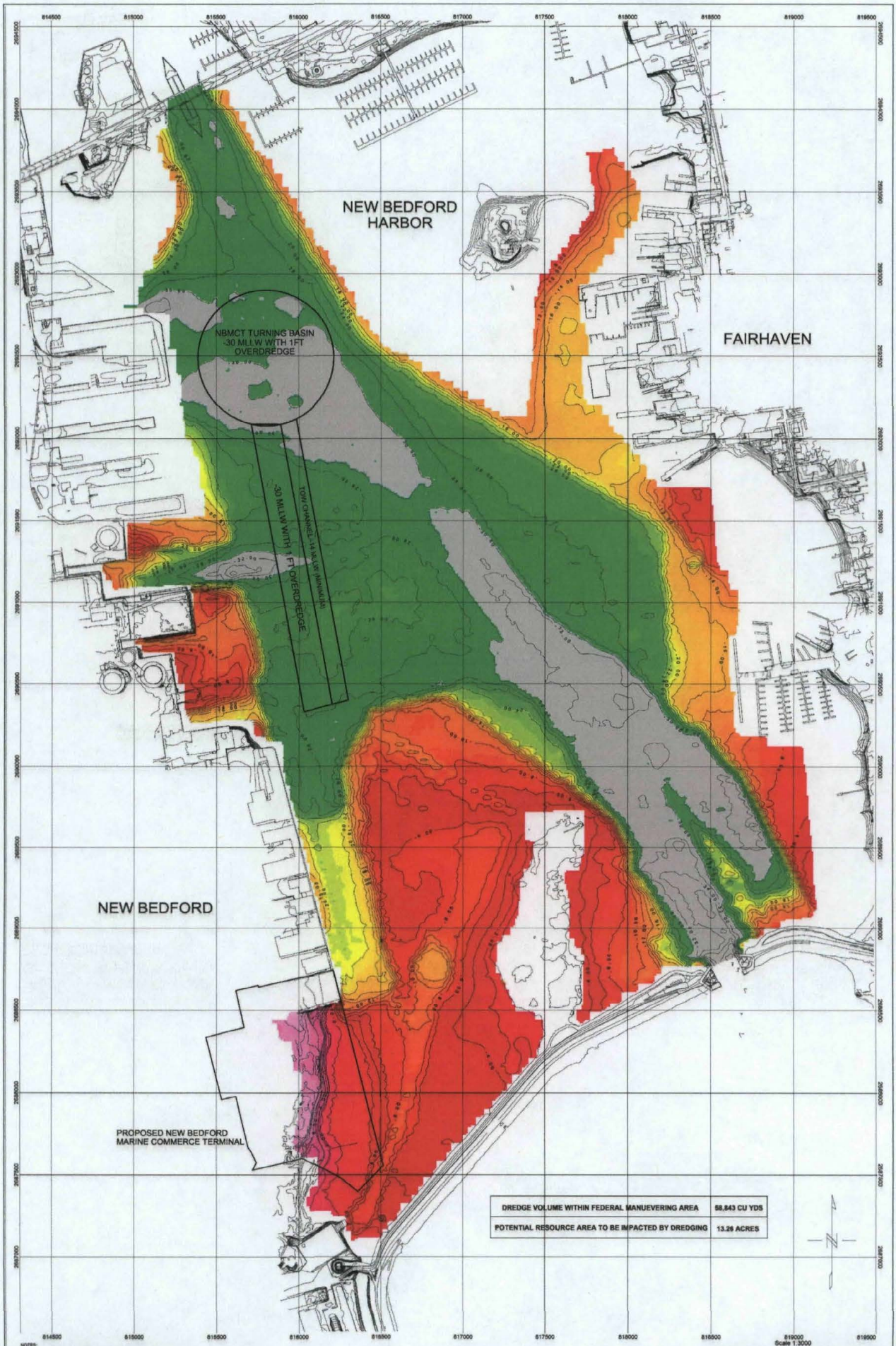


Figure 10. Map of South Terminal Marine Infrastructure Park Project Areas, Depicting Vibracore and Geotechnical Boring Locations, and the Subtidal Area Identified as Exhibiting Moderate Archeological Potential.

Figure 8. Location of Wreck Site in Relation to Existing Shorelines and Bulkheads.

EPA Draft Determination for the Proposed South Terminal Project
New Bedford Harbor State Enhanced Remedy

Figure 6
Map of Potential Federal Channel Dredging



NOTES:

1. COORDINATES SHOWN ARE IN THE STATE PLANE COORDINATE SYSTEM, MASSACHUSETTS MAINLAND ZONE (NAD), REFERENCED TO THE 1983 NORTH AMERICAN DATUM (NAD83). VERTICAL DATUM IS REFERENCED TO MLLW.

2. SURVEY WAS CONDUCTED BY APEX COMPANIES LLC ON FEBRUARY 7-8, 2011 FOR THE BEDFORD HARBOR SECTION NORTH OF THE INTERSTATE, AND ON DECEMBER 9, 2009 BY THE USACE FOR THE AREA NORTH OF THE INTERSTATE.

3. THE INFORMATION DEPICTED ON THIS PLAN REPRESENTS THE RESULTS OF THE SURVEY MADE ON THE DATE INDICATED ABOVE, AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS AT THE TIME OF THE SURVEY AND AT THE SOUNDING POINTS NOTED ON THE PLAN.

4. THIS MAP IS FOR REFERENCE ONLY, AND SHOULD NOT BE USED FOR NAVIGATION.

5. MUDLINE CONTOUR INTERVAL IS 2 FEET.

EPA Draft Determination for the Proposed South Terminal Project
New Bedford Harbor State Enhanced Remedy

Table 1
Volume of Material to be Dredged

Destination of Dredged Material	Material to be Dredged									Totals
	Mooring Northern Mitigation	Mooring Southern Mitigation	Gifford Street Channel Relocation	Stormwater Drainage Swale Mitigation Area	Top of Dredge	Intermediate Dredge	Bottom of Dredge	Top of CAD #3	Bottom of CAD #3	
Stormwater Drainage Swale Mitigation Area:	-	-	-	-	-	-	3,500	-	-	3,500
OU-3 Hot-Spot Capping Mitigation Area:	-	-	-	-	-	-	95,500	-	-	95,500
Disposal Offshore at CCDS/RISDS:	-	-	-	-	-	-	-	-	199,500	199,500
Winter Flounder Mitigation Area:	-	-	-	-	-	12,000	17,500	-	123,500	153,000
New Bedford Marine Commerce Terminal:	-	-	-	-	-	-	142,000	-	-	142,000
Former Dartmouth Finishing Site:	-	-	-	-	-	-	41,000	-	-	41,000
Capping of CAD Cell #1:	-	-	-	-	-	27,500	-	-	-	27,500
Disposal at CAD Cell #2:	-	-	-	2,500	-	-	-	35,000	-	37,500
Disposal at CAD Cell #3:	8,600	10,500	2,000	-	188,500	-	-	-	-	209,600
Capping of Borrow Pit CAD Cell:	-	-	-	-	-	25,500	-	-	-	25,500
Totals:	8,600	10,500	2,000	2,500	188,500	65,000	299,500	35,000	323,000	934,600

EPA Draft Determination for the Proposed South Terminal Project
New Bedford Harbor State Enhanced Remedy

Table 2
Major Federal Substantive Requirements

Table 2

Major Federal Substantive Requirements

Federal Requirement[1]	Status	Synopsis	Action to be Taken
Clean Water Act, Sec. 404 (33 U.S.C §1344), 40 C.F.R. Part 230, Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material (40 C.F.R. Part 230, 231 and 33 C.F.R. Parts 320-323)	Applicable	Prohibits discharges of dredge or fill material into waters of the U.S. except in compliance with the requirements of the § 404(b)(1) guidelines.	After careful review of the Commonwealth's submittals and based on the information provided in those submittals, EPA has tentatively determined that 404(b)(1) guidelines will be met.
Rivers and Harbors Act of 1899, (33 U.S.C. §403 *et seq.;* 33 C.F.R. Parts 320-323) Section 10	Applicable	Prohibits the obstruction or alternation of any navigable water of the U.S. except as authorized after a finding that the activity is not contrary to the public interest.	After careful review of the Commonwealth's submittals and based on the information provided in those submittals, EPA has tentatively determined that the Project meets these requirements
Clean Water Act, Section 401 Water Quality Certification	Applicable	Requires a state Section 401 water quality certification to ensure the project will comply with state water quality standards for any activity that may result in a discharge to navigable waters of the U.S.	Certification/conditions provided by the State and will be followed during project implementation.
Section 402 of the Clean Water	Applicable	Section 301 of the Clean Water	The Commonwealth will implement

[1] This Table includes all major federal substantive requirements (ARARs/TBCs) related to this Draft Determination. Additional federal requirements have also been identified and are included in the Administrative Record for this Project. State substantive requirements are referenced separately in the Administrative Record and can also be found in Appendix D to the Draft Determination. Finally, some federal requirements are implemented by the State. These are referenced in the Administrative Record.

Major Federal Substantive Requirements

Act, 33 U.S.C §1342 (Stormwater)		Act, 33 U.S.C. § 1311, generally prohibits the discharge of pollutants into waters of the U.S. except in compliance with various sections of the Act, including Sections 402 and 404, 33 U.S.C. §§ 1342 and 1344.	a Storm Water Pollution Prevention Plan (SWPPP) which documents the operation of the site and compliance with the substantive requirements of a Construction General permit.
Toxic Substances Control Act (TSCA), 15 U.S.C §2601 *et seq.* PCB Remediation Waste (40 C.F.R. §761.61(c))	Applicable	This section of TSCA provides risk-based cleanup and disposal options for PCB remediation waste based on the risks posed by the concentrations at which the PCBs are found.	EPA has tentatively determined that disposal of material unsuitable for ocean disposal generated from navigational dredging and mitigation measures into CAD cells 2 and 3 will not pose an unreasonable risk to human health or the environment as long as certain conditions are followed. A draft TSCA determination is included in EPA's Draft Determination for CAD cell 3; EPA proposes to modify the existing TSCA determination for CAD cell 2 and has included a draft in its Draft Determination. (Although the upland remediation will be performed independently under the state cleanup program, EPA has included a draft TSCA determination for upland disposal of PCB remediation waste within the upland portion of the terminal and

Major Federal Substantive Requirements

			the CDF.)
TSCA Decontamination Standards, 40 C.F.R. 761.79	Applicable	Sets decontamination standards for removal of PCBs from non-porous surfaces and non-porous surfaces covered with porous material. Allows for alternative methods of decontamination.	Equipment and personal protective gear will be decontaminated in accordance with these substantive requirements.
TSCA Storage for Disposal, 40 C.F.R. 761.65	Applicable	Regulates storage for disposal of PCBs at concentrations of 50 ppm or greater and PCB Items with PCB concentrations of 50 ppm or greater.	Excavated PCB-contaminated soil and sediments stored (including stockpiled) for disposal will be managed in accordance with these substantive requirements.
Clean Air Act, 42 U.S.C. §7506(c), 40 CFR Part 93, Subpart B (General Conformity Rule)	Applicable	Regulates air emissions in nonattainment and maintenance areas. Federal actions, unless exempt, must conform with federally approved implementations plans. The proposed Project is in an 8 hour ozone nonattainment area.	A conformity determination is not required because impacts associated with construction of the proposed Project will not exceed de minimis levels of direct or indirect emissions of a criteria pollutant or its precursors and is exempted by 40 CFR Part 93.153.
Clean Air Act, 42 U.S.C. § 7412, 40 CFR Parts 61 and 63 National Emissions Standards for Hazardous Air Pollutants	Potentially Applicable/Potentially Relevant and Appropriate	NESHAPS are a set of air emission standards for specific air pollutants.	If the project involves any activities that are covered under 40 CFR parts 61 or 63 (NESHAPs), then the appropriate requirements will be followed.
Navigation and Navigable Waters, 33 USC 408	Applicable	Unlawful for any person to impair the usefulness of any sea wall, bulkhead, jetty, dike,	Determination currently under review.

Major Federal Substantive Requirements

		levee, wharf, pier, or other work built by the United States, unless permission is granted based upon a determination that such occupation or use will not be injurious to the public interest.	
Coastal Zone Management Act, 16 USC 1451 *et seq.*	Applicable	Federal agencies conducting activities that directly affect coastal zone must do so in a manner consistent with approved State coastal zone management program.	Activities subject to these requirements will be conducted consistent with approved State coastal zone management program.
Endangered Species Act 16 U.S.C. 1531 *et seq.*	Applicable	Species currently listed on the Endangered Species list could potentially be affected by the Project.	EPA has concluded, for the reasons discussed in its final Biological Assessment that while the Project may affect the roseate tern, it is unlikely to adversely affect the species. The potential for impacts to the Atlantic sturgeon is under review.
Essential Fish Habitat Assessment under the Magnuson-Stevens Act, 16 U.S.C. §§ 1851 *et seq.*	Applicable	This Act establishes procedures designed to identify, conserve, and enhance essential fish habitat for those species regulated under a federal fisheries management plan. Consultation with National Marine Fisheries Service must be conducted.	EPA has tentatively determined that impacts to EFH species will be minimized and mitigated to the greatest extent practicable provided that the Commonwealth fully implements all of the proposed minimization and mitigation measures. NMFS will review this Draft Determination and may issue

Table 2

Major Federal Substantive Requirements

			conservation recommendations which EPA may or may not adopt. EPA will complete the consultation process before making a final decision on the project.
Fish and Wildlife Coordination Act, 16 U.S.C. §661-677e	Applicable	The Act requires consultation with the U.S. Fish and Wildlife Service (FWS) and the fish and wildlife service of the state to be undertaken for the purpose of preventing loss of and damage to wildlife resources.	EPA closely coordinated with FWS regarding both this Act and the ESA during its evaluation of the proposed Project. EPA tentatively concludes there are potential impacts to fish and wildlife and has reviewed potential mitigation measures. See Appendix E to this Draft Determination. EPA will consider any comments provided by FWS during the public comment process.
National Historic Preservation Act, 16 U.S.C. §470; 36 CFR Part 800	Applicable	Section 106 of the Act requires that Federal agencies consider, in consultation with other interested parties, the effects of their undertakings on historic properties prior to implementation and to determine whether or not the undertaking adversely affects these resources. The following cultural resources were identified: two paleosols and a shipwreck.	After initiating consultation, it is EPA's intent to propose a finding of no adverse affect for the subtidal and intertidal areas as long as the Commonwealth agrees to abide by the conditions imposed by the Tribes. EPA cannot conclude the Section 106 consultation process in connection with the upland area until a final assessment of the entire area is completed, and consulting parties are appropriately engaged.

Table 2

Major Federal Substantive Requirements

Preservation of Historical and Archeological Data, 16 USC 469	Potentially Applicable	Provides for the preservation of historical and archeological data (including relics and specimens) which might otherwise be irreparably lost or destroyed as the result of alteration of the terrain	If historical and archeological materials are encountered that are subject to this Act (including relics and specimens), historical and archeological data will be preserved in accordance with these requirements.	
Executive Order 12898 – Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 59 Fed. Reg. 7,629 (Feb. 16, 1994)	To Be Considered	The Executive Order, among other things, requires, to the greatest extent practicable, each Federal agency to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations and to ensure such programs, policies and activities are conducted in a manner that ensures that such programs, policies, and activities do not have the effect of subjecting persons (including populations) to discrimination because of their race, color, or national origin.	Certain areas located within or along the truck access route (Route 18) have been identified as environmental justice areas. Traffic, noise and air impacts are expected to be minimal; however, a Construction Management Plan (CMP) will be required in order to minimize construction-related impacts.	

Table 2

Major Federal Substantive Requirements

Wetlands Protection Executive Order 11990	To Be Considered	Requires federal agencies to avoid undertaking or providing assistance for new construction located in wetlands unless the head of the agency finds (1) that there is no practicable alternative to such construction, and (2) that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use.	EPA has made a tentative determination that there is no practicable alternative to activities that will impact wetlands. The proposed action includes all practicable measures to minimize harm to wetlands which may result.
Floodplain Management 11988	To Be Considered	Federal agencies are required to avoid impacts associated with the occupancy and modification of a floodplain and avoid support of floodplain development wherever there is a practicable alternative.	EPA has tentatively determined that there is no practicable alternative to development in the floodplain. Actions will be taken to minimize impacts.
Executive Order 13112 Invasive Species	To Be Considered	Directs federal agencies to review their actions to enhance the control and management and prevent the spread of invasive species.	Native species will be used for restoration/creation of the drainage swale. Reseeding activities will use native shellfish. A post-construction bulkhead monitoring

Table 2

Major Federal Substantive Requirements

			plan is recommended for the presence of invasive species that may be present in the Harbor waters.
Contaminated Sediment Remediation Guidance for Hazardous Waste Sites (EPA-540-R-05-012 OSWER 9355.0-85, December 2005)	To Be Considered	Guidance for making remedy decisions for contaminated sediment sites.	This guidance will be considered in addressing contaminated sediments.
Coast Guard Anchorage Ground and Regulated Navigation Area Rules (33 C.F.R. Part 110; 165)	To Be Considered (will be Applicable if a Rule is promulgated for CADs)	The Coast Guard may promulgate site-specific rules to establish federal anchorage areas and regulated navigation areas (RNAs). Once promulgated, such a rule is also the basis for the National Oceanic and Atmospheric Administration (NOAA) to revise navigation charts to show the restricted area.	Coordination will occur with the Coast Guard and harbor stakeholders in the promulgation of a rule to establish a RNA for the area of the CADs.

Add RCRA guidance attached to DEP response to Kim's questions dated 6/23/12			
Air retrofit guidance			
EPA Policy on Floodplains and Wetland Assessments for CERCLA Actions, OSWER Directive 9280.0			

Table 2

Major Federal Substantive Requirements

(August 6, 1985)			
Considering Wetlands at CERCLA Sites, EPA A540/R-94/019 (May 1994)			

EPA Draft Determination for the Proposed South Terminal Project
New Bedford Harbor State Enhanced Remedy

Appendix A
Minimum Air Monitoring Standards and Requirements

Minimum Air Monitoring Standards and Requirements

1. The Air Quality Management and Monitoring Plan ("the Plan") shall include:

    a. The means and methods used to perform the proposed Project upland work. The means and methods shall be designed and implemented in a manner that minimizes airborne PCBs and particulates (and asbestos) to the maximum degree practicable. The Plan will detail the means and methods to be used to maintain airborne PCB levels at the performances standards specified in Item 3, below. The Plan will be in effect continuously until completion of the work.

    b. A description of how the proponent will:

    - Establish a minimum of 4 perimeter air monitoring locations;
    - Define air monitoring procedures, parameters and detection limits and the process for modification to these with EPA approval. Air monitoring parameters shall include particulates (PM_{10}), PCBs, asbestos, and lead.
    - Define air monitoring frequency based on site activity and the process for modifying frequency with EPA approval;
    - Establish background levels; and,
    - Calculate a running average of airborne PCB levels monitored at each air monitoring location during performance of the work. This station-specific average shall be submitted to EPA within three days of receipt of the laboratory data.

2. Aroclor versus PCB Homolog Analysis: To be consistent with previous airborne PCB sampling from other site remediation activities in and around the Harbor, EPA recommends at a minimum, that the total homolog approach be used to determine the concentration of total PCBs in air. However, if the proponent can demonstrate, through the performance of a comparative analysis study showing the results of paired homolog versus Aroclor data, that airborne Aroclor data are equivalent to total homolog data at the South Terminal upland work area, EPA will consider use of the Aroclor approach as an alternative. Proponent must first propose and EPA approve, the method for the comparative analysis prior to its implementation.

3. Proponent shall use best management practices to comply at all times during performance of the work with air quality performance standards. On the upland

area, the point of compliance for air quality performance standards shall be the property boundary. At a minimum, a fence shall be constructed along the property boundaries during remedial activities. At no time during the performance of the remedial work shall levels exceed the following standards:

- Airborne particulates (PM_{10}): not to exceed 100 ug/m^3 (10 hour TWA).
- Airborne PCBs: not to exceed background or 0.10 ug/m^3, whichever is higher.
- Airborne asbestos: not to exceed 0.1 fiber/cc.
- Lead: not to exceed 50 ug/m^3.

4. Proponent may propose an alternate PCB standard (Not To Exceed 0.260 μg/m^3) for properties along the fence line where no residential property exists within 200 feet of said fence line.

5. In the event of an exceedance, the Commonwealth shall immediately cease work and submit a proposed corrective action plan. Work shall resume only with EPA's approval and upon implementation of the corrective action plan.

EPA Draft Determination for the Proposed South Terminal Project
New Bedford Harbor State Enhanced Remedy

Appendix B
EPA Guidelines for Fish Consumption in New Bedford Harbor

SUPERFUND

UPDATE ON FISH/SHELLFISH TESTING

New Bedford Harbor New Bedford, MA

U.S. EPA | HAZARDOUS WASTE PROGRAM AT EPA NEW ENGLAND

THE SUPERFUND PROGRAM *protects human health and the environment by investigating and cleaning up often-abandoned hazardous waste sites and engaging communities throughout the process. Many of these sites are complex and need long-term cleanup actions. Those responsible for contamination are held liable for cleanup costs. EPA strives to return previously contaminated land and groundwater to productive use.*

SITE DESCRIPTION:

The U.S. EPA has been committed to the New Bedford Harbor (NBH) cleanup since the 1980s, following discovery of polychlorinated biphenyls (PCBs) in sediment and fish and designation to the national priority list of Superfund sites in 1983. In 1998, EPA proposed a dredging remedy for the Upper and Lower harbors, and full scale dredging started in 2004. Remediation is ongoing, with dredging typically occurring in the summer. In 2009, EPA Administrator Lisa Jackson announced the availability of recovery act funds to help speed up the current cleanup timeframe for the harbor cleanup.

PARTNERING

As part of the NBH site monitoring, the Massachusetts Department of Environmental Protection has conducted annual fish and shellfish sampling to determine whether PCB concentrations in NBH fish and shellfish are declining as a result of cleanup activities. In general, PCB concentrations have indeed decreased from the 1980s to the present in most species, although concerns remain as discussed herein. Fish and shellfish sampling will continue throughout the cleanup efforts, and updates to this fact sheet will be issued as appropriate.

ASSESSMENT

The Massachusetts Department of Public Health (MDPH) has also had extensive involvement with NBH in order to address a variety of health concerns. In 1979, MDPH promulgated state regulations prohibiting the consumption of any fish/shellfish in Area 1 of NBH; of bottom feeding fish (eel, scup, flounder, and tautog) or lobster in Area 2; and lobster in Area 3 (see attached map). These early efforts were followed by human epidemiological studies of PCB exposure via fish consumption by MDPH and others. MDPH has additional advice for sensitive populations (pregnant women, nursing mothers, children under age 12, women who may become pregnant) that can be found at www.mass.gov/dph/fishadvisories. EPA supports this additional advice, and notes that its updated risk assessment (discussed below) recommends that sensitive populations avoid fish, shellfish and lobster from the three closure areas in NBH (see map on reverse) except that shellfish from Area 3 and Clark's cove may safely be consumed by these sensitive populations if limited to one meal per month.

RECOMMENDATIONS

As part of the Superfund process, EPA is required to conduct risk assessments that will result in cleanup levels that the selected remedy for a given site must meet. These risk assessments use conservative (health-protective) assumptions to ensure that even sensitive populations will not have health concerns following completion of remediation activities. In the case of NBH and the risk assessment conducted on fish/shellfish in the closed areas of the harbor, EPA's updated evaluation indicates that some species not currently covered by the 1979 state regulations may present health concerns for recreational fishermen and shell fishermen (and/or their families/friends who consume their take) if these species are consumed in larger quantities than current epidemiological data

continued on next page >

KEY CONTACTS:

BILL LOVELY
U.S. EPA
Project Manager
(617) 918-1240
lovely.william@epa.gov

KELSEY O'NEIL
U.S. EPA Community Involvement Coordinator
(617) 918-1799
oneil.kelsey@epa.gov

JOSEPH COYNE
MassDEP
(617) 348-4066
joseph.coyne@state.ma.us

GENERAL INFO:

EPA NEW ENGLAND
5 Post Office Sq.,
Suite 100
Boston, MA 02109-3912

TOLL-FREE CUSTOMER SERVICE
1-888-EPA-7341

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EPA United States Environmental Protection Agency

September 2011

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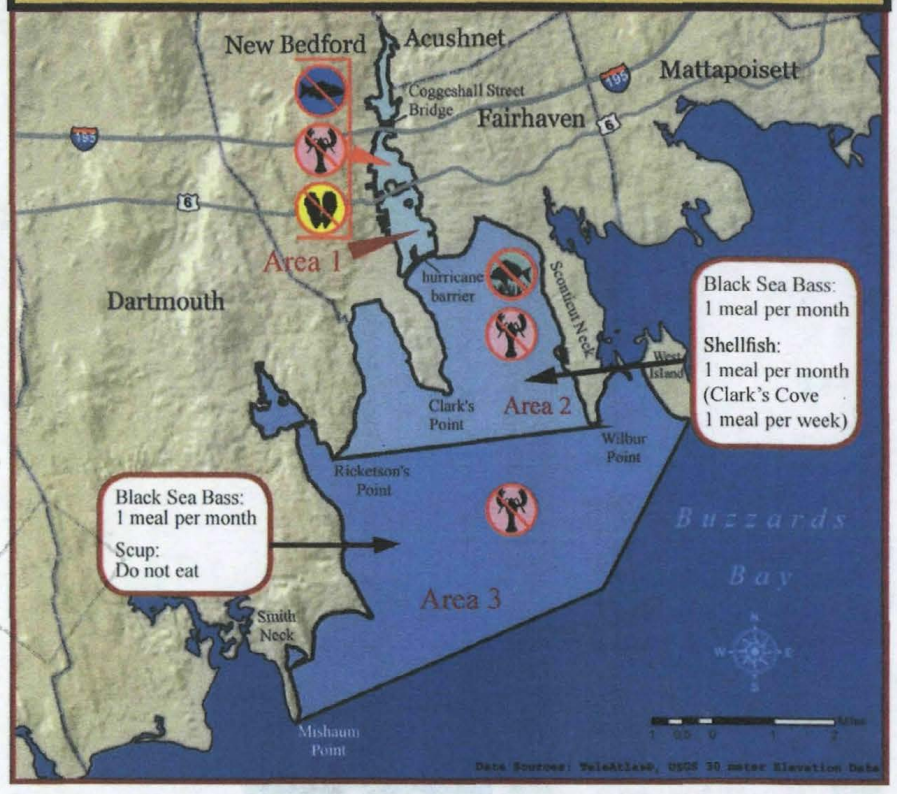
Original Fishing Ban (in effect 1979-present) per Massachusetts Department of Public Health

Updated 2010 U.S. EPA Recommendations per Superfund Risk Assessment with additional species highlighted



Do NOT eat shellfish
No coma mariscos
Não coma mariscos

Do NOT eat fish
No coma pescado
Não coma peixe

Do NOT eat lobster
No coma langosta
Não coma lagosta

Do NOT eat bottom feeding fish:
No coma pescado de fondo:
Não coma peixe de fundo:

- flounder
- lenguado
- solha
- scup
- sargo
- sargo
- tautog
- tautoga
- bodião da ostra
- eel
- anguila
- anguila

continued from front >> suggest. EPA believes it is important that recreational fishermen and shell-fishermen be aware that the risk assessment suggests that: consumption of black sea bass be limited to one meal per month if they are obtained in Areas 2 and 3; that scup not be consumed from Areas 2 or 3; and that general guidelines for shellfish include limiting consumption to one meal a month in Area 2 and one meal a week in Area 3. See map above for a summary of EPA's recommendations.

It is important to recognize the substantial benefits of fish consumption for everyone. Fish is one of the best sources of fatty acids which are helpful in reducing the risk of heart disease. In order to avoid exposure to a harmful level of contaminants, people should choose a variety of fish and shellfish from a variety of sources.

EPA

September 2011

Original Fishing Ban (in effect 1979-present) per Massachusetts Department of Public Health

Updated 2010 EPA Recommendations for Recreational Fishermen/Shellfishermen per Superfund Risk Assessment with additional species highlighted*

Do NOT eat shellfish
No coma mariscos
Não coma mariscos

Do NOT eat fish
No coma pescado
Não coma peixe

Do NOT eat lobster
No coma langosta
Não coma lagosta

Do NOT eat bottom feeding fish:
No coma pescado de fondo:
Não coma peixe de fundo:

- flounder
- lenguado
- solha
- scup
- sargo
- sargo
- tautog
- tautoga
- bodião da ostra
- eel
- anguila
- anguila

The tables on this page show Massachusetts regulations and U.S. EPA recommendations for eating fish, shellfish and lobster caught in three fish closure areas around New Bedford Harbor. **In two of the three closure areas, we have different advice for sensitive populations -- pregnant women, nursing mothers, children under age 12, and women who may become pregnant -- than for the general population.** This special advice is noted at the bottom of the tables for Areas 2 and 3. Safe seafood is an important part of a healthy diet. People should choose a variety of fish and shellfish from a variety of sources.

Closure Area 1

Inner Harbor:
North of the hurricane barrier and Ft. Phoenix Beach State Reservation
-- Includes Palmer Island --
Map of the upper and lower harbors (PDF) (1 pg, 3.3MB, about PDF)
Map of the three fish closure areas in the NBH area

If you catch...	then...
Any shellfish, lobster, or fish, including bottom feeders	Do not eat it

Closure Area I

Closure Area 2

Outer Harbor:
South of the hurricane barrier to Ricketsons Point and tip of Sconticut Neck (Wilbur Point)
-- Includes Clarks Cove --
Map of the upper and lower harbors (PDF) (1 pg, 2.2MB, about PDF)
Map of the three fish closure areas in the NBH area

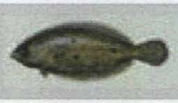
If you catch...		**then...**
Fish:		
Black sea bass		Eat no more than one meal per month
All bottom-feeding fish including:		
Eel		Do not eat it
Flounder		Do not eat it
Scup		Do not eat it
Tautog		Do not eat it
All other fish		U.S. EPA has no data yet so we cannot make a recommendation
Lobster		Do not eat it
Shellfish (clams, quahogs, mussels etc.)		Eat no more than one meal per month. **Exception** -- Shellfish caught in Clarks Cove: eat no more than one meal per week

NOTE: Pregnant women, nursing mothers, children under age 12, and women who may become pregnant should not eat fish, shellfish or lobster caught in Closure Area 2, except they can safely eat one, and only one, meal per month of shellfish caught in Clarks Cove.

Closure Area 2

Closure Area 3

Buzzards Bay:
South of Ricketsons Point and the tip of Sconticut Neck (Wilbur Point)
To Mishaum Point in Dartmouth and West Island South Point in Fairhaven
-- Includes area south of the West Island Causeway --
Map of the three fish closure areas in the NBH area

If you catch...		**then...**
Fish:		
Black sea bass		Eat no more than one meal per month
Bottom-feeding fish:		
Eel		There are no eating restrictions
Flounder		There are no eating restrictions
Scup		Do not eat it
Tautog		There are no eating restrictions
All other fish, including all other bottom-feeders		U.S. EPA has no data yet so we cannot make a recommendation
Lobster		Do not eat it
Shellfish (clams, quahogs, mussels etc.)		There are no eating restrictions

NOTE: Pregnant women, nursing mothers, children under age 12, and women who may become pregnant should not eat fish or lobster caught in Closure Area 3. They can safely eat one, and only one, meal per month of shellfish caught in Area 3

Closure Area 3

Partnering with Mass Dept. of Environmental Protection

As part of the NBH site monitoring, the Massachusetts Department of Environmental Protection has conducted annual fish and shellfish sampling to determine whether PCB concentrations in NBH fish and shellfish are declining as a result of cleanup activities. In general, PCB concentrations have indeed decreased from the 1980s to the present in most species, although concerns remain as discussed herein. Fish and shellfish sampling will continue throughout the cleanup efforts, and updates to this fact sheet will be issued as appropriate.

Top of Page

Assessment with Mass Dept. of Public Health

The Massachusetts Department of Public Health (MDPH) has also had extensive involvement with NBH in order to address a variety of health concerns. In 1979, MDPH promulgated state regulations prohibiting the consumption of any fish/shellfish in Area 1 of NBH; of bottom feeding fish (eel, scup, flounder, and tautog) or lobster in Area 2; and lobster in Area 3 (see attached map). These early efforts were followed by human epidemiological studies of PCB exposure via fish consumption by MDPH and others. *MDPH has additional advice for sensitive populations (pregnant women, nursing mothers, children under age 12, women who may become pregnant) that can be found at www.mass.gov/dph/fishadvisories. EPA supports this additional advice, and notes that its updated risk assessment (discussed below) recommends that sensitive populations avoid fish, shellfish and lobster from the three closure areas in NBH (see map on reverse) except that shellfish from Area 3 and Clark's cove may safely be consumed by these sensitive populations if limited to one meal per month.

Top of Page

Recommendations

As part of the Superfund process, EPA is required to con-duct risk assessments that will result in cleanup levels that the selected remedy for a given site must meet. These risk assessments use conservative (health-protective) assumptions to ensure that even sensitive populations will not have health concerns following completion of reme-diation activities. In the case of NBH and the risk assessment conducted on fish/shellfish in the closed areas of the harbor, EPA's updated evaluation indicates that some species not currently covered by the 1979 state regulations may present health concerns for recreational fishermen and shell fishermen (and/or their families/friends who consume their take) if these species are consumed in larger quantities than current epidemiological data suggest. EPA believes it is important that recreational fishermen and shell-fishermen be aware that the risk assessment suggests that: consumption of black sea bass be limited to one meal per month if they are obtained in Areas 2 and 3; that scup not be consumed from Areas 2 or 3; and that general guidelines for shellfish include limiting consumption to one meal a month in Area 2 (one meal per week in Clark's Cove). See map above for a summary of EPA's recommendations.

It is important to recognize the substantial benefits of fish consumption for everyone. Fish is one of the best sources of fatty acids which are helpful in reducing the risk of heart disease. In order to avoid exposure to a harmful level of contaminants, people should choose a variety of fish and shellfish from a variety of sources.

Top of Page

EPA Draft Determination for the Proposed South Terminal Project
New Bedford Harbor State Enhanced Remedy

Appendix C
Water Quality and Turbidity Performance Standards

APPENDIX A

State Enhanced Remedy – Performance Standards

I MADEP 401 Water Quality Program Standards: Dredge & Fill

1. Anti-degradation provisions of the Massachusetts Surface Water Quality Standards protect all waters, including wetlands. 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. Prior to the start of in-water work, the SER Project Manager (SER PM) shall be notified of any proposed change(s) in plans that may affect waters or wetlands.

3. Environmental Monitor. The contractor shall employ an "Environmental Monitor" (EM). An assistant to the EM shall be hired if needed. The EM shall have a minimum of five (5) years experience in wetlands protection, erosion and sedimentation control, water quality monitoring, site maintenance, site drainage, dredging operation management and general site construction. The EM shall verify the placement and performance of erosion/sediment/turbidity control measures and shall have the authority to halt construction for erosion control purposes or for other threats to public health, safety or the environment. The name and phone number(s) of the EM and his or her assistant, if needed, and back-up shall be provided to the Department and other governmental agencies charges with oversight of the project so that s/he may be contacted on a 24-hour basis, seven days a week to address any emergency situation. The EM shall be authorized to contact the Department directly for any matter involving wetland protection. The EM shall submit bi-weekly reports to the Department, following the commencement of construction and continuing until completion of work in resource areas. The bi-weekly reports shall summarize, by station location, the status of construction, the condition of the site, the weather conditions and shall report any erosion, sedimentation, discharge or pollution problems and how they were corrected, along with recommendations on how to prevent similar problems in the future. The EM shall immediately report any erosion, sedimentation or pollution problems to the Resident Engineer(s), who shall take immediate steps to correct those problems. The EM shall immediately report any unauthorized discharges of sediments to the Department and Resident Engineer(s) who shall take immediate steps to correct those problems. The EM shall submit annual reports for a minimum of five years to the DEP Greenbush Designee following completion of replication area construction and shall submit an outline of the report for approval by the Department prior to preparation of the first report.

4. All dredge and fill activities shall meet NOAA & MassDMF conditions to protect winter flounder spawning & the alewife fish run that passes through the harbor to the Acushnet Sawmill Pond spawning area.
5. A Storm Water Pollution Prevention Plan (SWPPP) for the entire project, proposing both non-structural and structural BMPs to limit erosion & sediment laden discharge during

land clearing filling and construction, shall be prepared and submitted to the Department for prior review and written approval prior to commencement of. The SWPPP shall emphasize measures to contain and prevent sediment laden water from being discharged from dewatering activities from areas within the bulkhead sheet pile that is to serve as a containment device. Further, the SWPPP shall meet the criteria established for such plans contained in the NPDES Construction General Permit. . All proposed dewatering shall be identified in the site specific SWPPPs and shall not exceed the following limits when discharged:

a) pH: pH shall be 6.5 to 8.5 for discharge to salt water bodies. The SWPPPs shall identify the specific measures to be taken to adjust the pH to acceptable limits [for example, carbon dioxide (CO2) bubbling when concrete pouring is also occurring].

6. As proposed, silt-curtains and absorbent booms shall be deployed to enclose the area being dredged and filled. The contractor's plan for deployment of the silt curtains/absorbent booms shall be submitted to the Department and SER PM for review prior to the start of in-water work. Should the deployment of silt-curtains prove not feasible or be unsuccessful, the SER PM will be notified prior to any dredging without silt curtains.

7. Water Quality Monitoring:

   a. **When the dredging and filling operation is contained within a silt-curtained area,** the following water-quality monitoring program shall be carried out daily for the first three days of activities commencing and once a week thereafter for dredging operations and during those times when dewatering activities are ongoing from the terminal fill operation :
      i. A reference location shall be established outside of and approximately 200-feet from the silt-curtained area and a monitoring location shall be established outside of and within 15-feet of the silt-curtain.
      ii. Turbidity shall be measured, using an optical backscatter sensor, at both the reference and monitoring locations, at established depths: near the water's surface, at the mid-point of the water column and near the bottom. The three values obtained shall be averaged, such that a single, representative turbidity value is calculated for the monitoring site and a single, representative value is calculated for the reference site.
      iii. Turbidity shall be measured at both the monitoring and reference site prior to the start of dredging, and once every two hours during dredging.
      iv. An exceedance of the project turbidity standard shall be attributed to project activities when the average turbidity at the monitoring site exceeds the average reference site turbidity plus the permissible turbidity increase, as outlined in the following table:

Reference Site Turbidity (NTUs)	Permissible Turbidity Increase
<10	Reference plus 20 NTUs
11-20	Reference plus 15 NTUs
>21	Reference plus 30% of reference

v. If, in two consecutive monitoring events, the average turbidity at the monitoring site exceeds the average turbidity at the reference site by more than the permissible turbidity increase, then water samples, composited over the entire water column, from both the monitoring and reference sites shall be collected and submitted for analysis of Total Suspended Solids, dissolved PCBs, arsenic, cadmium, copper, chromium, lead, mercury, nickel, and zinc. When samples are submitted to the laboratory, a 36-hour turn-round time shall be requested. Additionally, the Proponent, or their contractor, shall take operational action(s) designed to limit such exceedences, such as increasing the dredge cycle time, inspection and any necessary repair, of the silt curtains, deployment of an additional row of silt curtains or other mitigation measures. Turbidity monitoring shall continue on the schedule outlined in Section 6.a.iii, until compliance is reestablished.

vi. If compliance can not be reestablished within 48 hours, dredging shall cease and Department and any other interested local, state, or federal agency staff, in consultation with the Proponent, their contractors and/or consultants shall review the operational actions undertaken, the results of the analyses of the water samples and evaluate the biological significance of the available data and determine the requirements for additional mitigation, if any.

b. **Should the deployment of silt-curtains prove not possible or be unsuccessful,** the following water-quality monitoring program shall be carried out daily for the first three days of activities commencing and twice a week thereafter for dredging activities and during those times when dewatering activities are ongoing from the terminal fill operation:

i. A reference location shall be established approximately 200-feet up-current from the dredge and a monitoring location shall be established 200-feet down-current from the dredge.

ii. Turbidity shall be measured, using an optical backscatter sensor, at both the reference location and the monitoring location, at established depths: near the water's surface, at the mid-point of the water column and near the bottom. The three depth values obtained shall be averaged, such that a single, representative turbidity value is calculated for the reference location and a single, representative turbidity value is calculated for the monitoring location.

iii. Turbidity shall be measured at both the reference location and at the edge of the mixing zone prior to the start of dredging, and once every two hours of dredging.

iv. An exceedance of the project turbidity standard shall be attributed to project activities when the average turbidity at the edge of the mixing zone exceeds the reference site turbidity plus the permissible turbidity increase, as outlined in the following table:

Reference Site Turbidity (NTUs)	Permissible Turbidity Increase
<10	Reference plus 20 NTUs
11-20	Reference plus 15 NTUs
21-30	Reference plus 10 NTUs
>31	Reference plus 30% of reference

v. If, in two consecutive monitoring events, the average turbidity at the edge of the mixing zone exceeds the average turbidity at the reference site plus the permissible turbidity increase, then water samples, composited over the entire water column, from both the reference location and the edge of the mixing zone shall be collected and submitted for analysis of Total Suspended Solids, dissolved PCBs, arsenic, cadmium, copper, chromium, lead, mercury, nickel, and zinc. When samples are submitted to the laboratory, a 36-hour turn-round time shall be requested. Additionally, the Proponent, or their contractor, shall take operational action(s) designed to limit such exceedences, such as increasing the dredge cycle time, inspection and any necessary repair, of the silt curtains, deployment of an additional row of silt curtains or other mitigation measures. Turbidity monitoring shall continue on the schedule outlined in Section 6.b.iii, until compliance is reestablished.

vi. If compliance cannot be reestablished within 48 hours, dredging shall cease and the Department and any other interested local, state or federal agency staff, in consultation with the Proponent, their contracts and/or consultants shall review the operational actions undertaken, the results of the analyses of the water samples and evaluate the biological significance of the available data and determine the requirements for additional mitigation, if any.

8. As proposed, dredging of contaminated, silty sediment shall be done using a closed, environmental, clamshell bucket. Where pilings or other debris are found to interfere with environmental bucket closure or equipment operation, a conventional clamshell bucket may be used to extract the pilings/debris. Sediment removal during such activity shall be minimized to the greatest extent practicable. Should dredging with the environmental bucket become unfeasible or unsuccessful, the SER PM must be notified prior to any contaminated sediment dredging not using the environmental bucket, and the contractor must also continue to meet the project water quality standard performance standards.

9. Water discharged from the barge shall be appreciably free of suspended sediment and meet the water quality criteria established in Section 4 (above). Any free liquid

flowing from the barge in the harbor shall be passed through a sand media filter or equivalent filtration system (which must be approved by the project Resident Engineer) prior to discharge.

12 The Resident Engineer and EM shall be responsible for anticipating the need for and installation of additional erosion/sediment/turbidity controls and shall have the authority to require additional control measures to protect the resource areas beyond what is shown on the plans, if field conditions or professional judgment dictate that additional protection is necessary.

13. Emergency Response/Spill Prevention Plan: Included in said Plan shall be the contact responsible for shutting down BMPs discharging to the New Bedford Harbor in the event of a spill and maintenance practices to be employed to make sure gate valves or other shut down measures work appropriately to prevent spills from entering the adjacent waters.

14. During dewatering, if necessary, the discharge point shall be protected. Water from dewatering activities shall be filtered via the use of a portable sedimentation tank that removes suspended solids, temporary sedimentation basins, or other means prior to discharge.

15. Diesel-powered equipment shall be fitted with after-engine emissions controls such as oxidation catalysts or particulate filters.

16. Within 30 days of the completion of the initial dredging, a bathymetric, survey of the dredge footprint, depicting post-dredge conditions, shall be sent to the MADEP SER Project Manager.

17. Disposal of any volume of dredged material at any location in tidal waters is subject to approval by the Department and the Massachusetts Coastal Zone Management office.

18. A baseline condition report detailing existing conditions of all areas proposed to be transformed to salt marsh shall be submitted to the Department, An annual progress report shall be produced at the end of each year following construction of the salt marsh area for a period of five (5) years, and shall be submitted by the EM to the Department, no later than December 30 of each year. All reports shall be prepared in the same format so that a comparison can be made from each year to the next. The first annual report shall be prepared and submitted no later than December 30 of the first year following the implementation of the salt marsh creation. The existing conditions report and all annual reports shall include, in textual, tabular and graphic formats, percent of vegetative cover, a list of plant species, coverage of wetland plants as a percentage of all plants, and an evaluation of relative plant vigor (i.e. mortality rate of existing species and number or new species) and any changes observed in soils or hydrology. Additionally, the report shall include representative photographs of site conditions and recommendations for improvement. These reports shall also summarize agency consultations pertaining to the restoration project, the

remedial responses to those problems and appropriate recommendations for future project.

19. Any changes made to documents submitted shall be immediately forwarded to the Department for review and comment.

II MADEP Chapter 91 Waterways Standards:

1. Acceptance of these Waterways Conditions shall constitute an agreement by the Proponent to conform to all terms and conditions herein.

2. All subsequent maintenance dredging and transportation and disposal of this dredge material, during the term of this Project shall conform to all standards and conditions applied to the original dredging operation performed under this Project.

3. After completion of the work authorized, the Proponent shall furnish to the Department a suitable plan showing the depths at mean low water over the area dredged. Dredging under this Project shall be conducted so as to cause no unnecessary obstruction of the free passage of vessels, and care shall be taken to cause no shoaling. If, however, any shoaling is caused, the Proponent shall at his/her expense, remove the shoal areas. The Proponent shall pay all costs of supervision, and if at any time the Department deems necessary a survey or surveys of the area dredged, the Proponent shall pay all costs associated with such work.

4. The Proponent shall, at least three days prior to the commencement of any dredging in tide water, give written notice to the Department of the time, location, and amount of the proposed work.

Special Waterways Conditions

1. Dredge material shall be transported to suitable disposal facilities; unregulated dumping of dredge materials is not permitted.

2. The Proponent shall develop and implement a Navigation Plan to address and mitigate temporary impacts to navigation during dredging activities.

3. The Proponent shall provide and maintain in good working order appropriate United States Coast Guard (USCG) approved navigation aids to assist mariners in avoiding work areas as required by the USCG.

4. The Proponent shall maintain vehicular access to water-dependent users throughout construction activities. As part of the final design plan, the Proponent describes the means by which the public shall provide reasonable measure to provide on-foot public passage consistent with the need to avoid undue interference with the water=-dependent uses of the project.

5. The Proponent shall remove and properly dispose of all temporary structures no later than three (3) months after completion of the dewatering and amendment of the sediments. Temporary structures are defined as berms and dikes; lime silo; dewatering tanks, erosion and sediment control systems, pipes, and siltation curtains.

6. Modification to this Project: the SER PM, may review on an individual basis, modifications to construction activities and/or temporary structures which represent and insignificant deviation from original specifications, in terms of configuration, materials or other relevant design or fabrication parameters as determined by DEP within all areas of construction. Such review shall be in accordance with the following procedure:
    a. The Proponent shall submit a written request describing the proposed modifications to the work accompanied by plans, for prior review of the DEP. The DEP will consider comments submitted within ten (10) days of the DEP's receipt of the request. The DEP will send any significant modifications to the Resource Agencies for review and comment and to identify any future Performance Standards, if necessary. EPA will also have the opportunity to make a consistency determination if the change is significant, as necessary. The DEP will notify the Resource Agencies of any minor modifications.

7. After completion of the work authorized the Proponent shall furnish the Department a suitable plan showing the depths at mean low water over the areas dredged within 90 days of completion if each phase of the dredging.

EPA Draft Determination for the Proposed South Terminal Project
New Bedford Harbor State Enhanced Remedy

Appendix D
Commonwealth of Massachusetts ARAR Letters
August 27, 2010
February 10, 2010
June 18, 2010

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

One Winter Street Boston, MA 02108 • 617-292-5500

DEVAL L. PATRICK
Governor

TIMOTHY P. MURRAY
Lieutenant Governor

RICHARD K. SULLIVAN JR.
Secretary

KENNETH L. KIMMELL
Commissioner

To: EPA Region 1
From: Philip Weinberg, MassDEP, Office of Operations and Environmental Compliance PW
Re: South Terminal (Updated) ARARs Overview
Date: June 18, 2012

The Department of Environmental Protection is pleased to submit this updated these Applicable or Relevant and Appropriate Requirements (ARAR) in connection with the South Terminal project, which is comprehensively described in the report entitled Enhanced Remedy in New Bedford, South Terminal, January 18, 2012("SER Report" or "Report"). This Report, in turn, supplements and updates the Reports previously submitted to EPA on or about August 25, 2010 and February 10, 2012. This memorandum further reflects the Executive Office of Energy and Environment's "Response to USEPA Comments on the Commonwealth of Massachusetts January 18, 2012 Submission for the New Bedford Marine Commerce Terminal (NBMCT) (June 18, 2012) (" EPA Response Memo").

The project envisions the construction and operation of a marine terminal approximately within the Designated Port Area of the New Bedford Harbor at a site north of and proximate to the Harbor's Hurricane Barrier. The project also contemplates navigational dredging to accommodate vessels' access to the terminal. MassDEP has sent previous ARARs letters, the last being August 27, 1997, for the remedy at the New Bedford Harbor Superfund Site Operable Unit 1. The ARARs identified in this report will update the original ARARs and include ARARs relative to the South Terminal project as seen on Table 1.

The project's potential impacts associated with filling and dredging include:
Permanent Impacts

- Areas of Proposed Filling:
  - 1.94 acres of intertidal area – Recalculated Intertidal Area,
  - 4.06 acres of shallow, near-shore sub-tidal area; and
  - 0.18 acres of salt marsh will be filled during the construction of the facility.

This information is available in alternate format. Call Michelle Waters-Ekanem, Diversity Director, at 617-292-5751. TDD# 1-866-539-7622 or 1-617-574-6868
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- 0.67 acres of area that will be dredged, partially filled with a concrete blanket along the bottom as well as piles needed to support the pile-supported section of the quay, and shaded by the concrete platform.

- Areas of Dredging (Existing Depth Between -1 and -6 MLLW):
  - 7.02 acres of near-shore, subtidal area will be dredged from between -1 and -6 MLLW to between -30 and -32 MLLW (Quayside Areas – Increased Due to the Potential Extension of the Deep-Draft Dredging Area to the South and Due to Potential Widening of Deep-Draft Channel By 50 Feet).
  - 8.46 acres of near-shore, subtidal area will be dredged from -1 MLLW to -6 MLLW to -14 MLLW (Quayside Areas and Tug Channel).
- Shellfish Impacts
  - Based upon the revised area of impact as described above, the number of shellfish anticipated to be impacted has been revised. The total shellfish anticipated to be impacted by the project is now estimated at: 9,817,121.

Temporary Impacts

- Areas of Dredging (Existing Depth Between -1 and -6 MLLW):
  - 8.76 acres of near-shore, subtidal area will be dredged to -45 MLLW, filled and capped (CAD Cell).
  - 6.17 acres of near-shore, subtidal area will be dredged from -4 to -6 MLLW to between -6 and -7 MLLW (Gifford Street Channel Re-Alignment and Mooring Mitigation Areas – Reduced due to the reduction in size of the Northern Mooring Mitigation Area).
- Areas of Dredging (Existing Depth between -20 and -30 MLLW):
  - 8.29 acres of subtidal area will be dredged from -20 to -29 MLLW to -30 MLLW (South Terminal Channel – Increased Due to the Potential Extension of the Deep-Draft Dredging Area to the North).
  - 15 acres of subtidal area will be dredged to -30 MLLW (Maintenance Dredging of Federal Navigation Project –

- Blasting Impacts – To be minimized to the extent possible as discussed herein.

- Mitigation for impacts to winter flounder, shellfish and salt marsh Including:The proposed
  - Winter Flounder spawning habitat creation will be increased by 5 acres, from 17.73 acres to 22.73 acres.
  - The OU-3 Hot-Spot Capping Mitigation Area will be increased in size such that the following increases in habitat creation or enhancement area realized:

- The intertidal portion of the OU-3 Hot-Spot Capping Mitigation Area will be increased in size by approximately 1 acre from 3.47 acres to 4.47 acres of inter-tidal area that will be either created or enhanced.
- The sub-tidal portion of the OU-3 Hot-Spot Capping Mitigation Area will be increased approximately 4 acres from 10.91 acres to 14.91 acres.
- Creation/Enhancement of up to approximately 1.9 acres of successional marsh area will still be included within the mitigation package, as outlined within the Commonwealth's January 18, 2012 submittal.
- Completion of the Tern Monitoring Program as outlined within the Commonwealth's January 18, 2012 submittal.
- Shellfish mitigation as outlined within the Commonwealth's response to Question 7E to EPA's May 21, 2012 letter.

Terminal Design and Construction

310 CMR 10:00 Wetlands Regulations

All the activities associated with the project lie within a Designated Port Area (DPA), locations dedicated to marine industrial and commercial purposes.[1] Based on currently available information, there are no inland resource areas subject to jurisdiction under the Department's Wetland Regulations, 310 CMR 10.00. The Wetland Regulations at 310 CMR 10.26 establish the performance standards for activities proposed in wetland resource areas within a DPA. The regulation designates land under the ocean in a DPA as significant to the wetland interests of marine fisheries, storm damage prevention and flood control, and presumes that such land is not significant to other interests including salt marsh, land containing shellfish, coastal beaches, and tidal flats. Therefore, the performance standards applicable to those marine resource areas are not applicable to projects within the DPA absent unique conditions not present in the site of this DPA. Moreover, impacts to these areas from filling have been compensated for through mitigation discussed below.

Projects in the DPA must be designed and constructed using best practical measures to minimize adverse effects on: (a) fisheries through changes in water circulation and water quality; and (b) storm damage prevention or flood control caused by changes in the land's ability to provide support for adjacent coastal banks or engineering structures. There is nothing unique about the construction or location of the bulkhead to suggest that it would have an adverse impact on water circulation which is driven primarily by meteorology and tides in this locale. Dredging and filling activities may cause temporary impacts to water quality, which will be addressed through

[1] A locale is established as a DPA pursuant to the Coastal Zone Management Regulations at 301 CMR 25.00.

a through development of a comprehensive Stormwater Pollution Prevention Plan (SWPPP) as discussed in further detail in Appendix A.

Given the bulkhead's location in relation to the hurricane barrier, there is no reason to conclude that the terminal will have an adverse impact from storm damage or flooding to the coastal bank, or boat ramp or marine industrial bulkhead located on adjacent parcels. The Terminal will be constructed to minimize potential flood impacts. Regarding the need to provide for compensatory flood storage for the placement of fill in the harbor to construct the containment structure, the Department finds that the need for such compensatory flood storage is not warranted. Generally, in the Wetland Regulations at 310 CMR 10.57, compensatory flood storage is regulatory required in inland riverine flood producing conditions where displacement of flood waters in a confined landscape would result in the lateral displacement of flood flows and potentially injure adjacent properties. There is no regulatory requirement to provide such compensatory flood storage in the coastal zone/open ocean flood zones. The exception is for those FEMA areas such as Coastal Flood AH zones where such as confined area of shallow over-wash ponding potentially could have flood waters displaced by fill therefore needing flood storage compensation to prevent shifting flood waters onto adjacent property. Given that the New Bedford Harbor is designated as a FEMA Coastal Flood Zone A-E with a Base Flood Elevation of 5, and is not a confined, shallow or restrictive basin, the Department is of the opinion that compensatory flood storage is not needed or required under the Wetlands Protection Act.

The potential stormwater impacts to coastal wetland resources as a result of terminal construction will be addressed through compliance with the water quality performance discussed below. Based on information currently available, there are no upland state wetland resources areas impacted by construction activities. However, as additional site resource delineations are conducted and construction management plans developed, MassDEP will require said delineations and plans are reviewed by the Department and appropriate stormwater management design and best management practices are implemented to ensure compliance with the stormwater performance standards of the Wetland Regulations. 310 CMR 10.05(6)(k) – Stormwater Management

<u>314 CMR 9.00 Water Quality Certification</u>

The South Terminal's bulkhead is to be constructed with sheetpiling and backfilled with 150,000 cubic yards of clean sand generated by navigational dredging projects undertaken in the Harbor. The bulkhead will infill approximately 6.0acres of intertidal and near shore habitat and 0.18 acres of salt marsh and .67 acres of area of terminal supporting structures. The intertidal and subtidal areas of the proposed bulkhead are currently contaminated with lower levels of PCBs. An additional 34,000 cy of clean material generated from navigational dredging will be used to

grade the upland portions of the facility for the wind blade lay down area and ancillary staging and loading uses.

The Water Quality Certification Regulations at 314 CMR 9.06(1) require an alternative analysis that demonstrates no practicable alternative to the project will have a less adverse effect on the aquatic environment. The SER Report sets out the basis for the Department's conclusion that there is no other practicable location or configuration for the project that will meet its primary purpose in serving the off-shore renewable energy. The Report satisfies the regulation's alternative analysis performance standard. Furthermore, the South Terminal project will generate additional collateral environmental benefits to the Harbor clean-up and surrounding habitat in that it provides (a) a construction-related reuse for CAD generated material, (b) a location capable of providing future means to store and reuse CAD sediment, and (c) the mechanisms by which the proposed mitigation measures will eliminate exposure of the aquatic environment to PCB contamination. The terminal also allows the project to comply with the provision of 314 CMR 9.07(1)(e), which compels reuse or recycling of dredged material rather than its disposal.

The regulation at 314 CMR 9.06(2) requires that appropriate and practicable steps be taken to avoid and minimize potential adverse impacts to land under water or the intertidal zone. The Department has developed standard protocols to regulate construction activities in shoreline areas to avoid and minimize adverse impacts to water quality and benthic habitat through the use of time of year restrictions and best management practices. In regard to the bulkhead, most of the impacts to the intertidal areas will occur behind the sheet piling. The provisions in Appendix A describe the means by which the filling associated with the Terminal construction will meet the water quality standards as enforced through the water quality certification performance standards. As noted above, construction related stormwater impacts will be addressed through the SWPPP. There is nothing unique about this project that indicates that through site-specific application of these protocols the avoidance and minimization standard cannot be achieved.

When MassDEP previously determined which MassDEP regulations apply to the project, it was contemplated that the bulkhead could potentially incorporate anthropogenic, contaminated dredge spoils. As a consequence, it was determined that the terminal would be regulated as a Confined Disposal Facility (CDF) pursuant to 314 CMR 9.07(8). In light of the representation that the bulkhead construction and lay down area grading material will be composed only of clean sand, the CDF performance standards are no longer relevant. The bulkhead construction and site grading material may be regulated as the reuse of dredged material under the appropriate reuse alternatives set out in 314 CMR 9.07(9)(a) and (b). 314 CMR 9.07(9)(a) allows for the shoreline placement of dredged material proximate to the dredging activity that lies with a flood plain and identifies placement of material behind a bulkhead as valid reuse alternative. The SER report identifies the site ass within the FEMA mapped 100-year flood plain.

The use of clean, dredged sand for the purpose of grading the upland areas of the site is regulated pursuant to 314 CMR 9.07(9)(b). This provision provides for the placement of dredged material in an upland area for fill or reuse, provided the concentration of contaminants in the material (1) do not exceed the S-1 applicable at the receiving location, as specified in 310 CMR 40.0975, (2) is not a hazardous waste, and (3) will not adversely affect a potable water supply. Additional provisions require that contaminants in the material not be significantly different or greater than the receiving location's background conditions, the reuse occur in a DPA if practicable, and the material be appropriately dewatered and otherwise managed in accordance with applicable regulations at 314 CMR 9.07. The Report's representation that only clean sand would be employed makes it reasonably likely that the material would not exceed S-1 standards or the background conditions at the proposed reuse locations. Based on historic sampling data and standard sampling protocols, MassDEP would establish an appropriate construction sampling methodology to confirm that the material designated for upland reuse met the applicable compliance standard.

In addition to the foregoing, the construction of the terminal is also subject to the following additional Regulations:

Surface Water Quality Standards, 314 CMR 4.00, et seq.:

314 CMR 4.03 Application of Standards
314 CMR 4.04 Antidegradation Provision
314 CMR 4.05 Classes and Criteria

The project proponent has committed to implementing and otherwise complying with the Water Quality performance standards and Best Management Practices more particularly described in Schedule A. MassDEP asserts that by virtue of the project proponent's implementation of these performance standards and BMP's, the terminal construction activities will comply with the substantive requirements of the Water Quality program.

310 CMR 9.00 Waterways

The terminal is also regulated under the Waterways regulations, 310 CMR 9.00. The terminal's functions classify it as a water dependent-industrial facility under the criteria at 310 CMR 9.12: a facility related to the construction and storage of marine structures, a marine terminal for transfer between ship and shore of water-borne goods, and an ancillary activity to offshore renewable energy infrastructure. As a water dependent facility, the project is presumed to serve a proper public purpose (310 CMR 9.31). There is nothing in the record to indicate that this project is displacing an established, reasonably continuous water-dependent use in contravention to 310 CMR 9.36(4). Water dependent industrial structures within the tideland area of a DPA may be

constructed with fill, provided that neither pile supported, nor floating structures are a reasonable alternative. 310 CMR 9.32(1)(b)2.

The SER Report presents convincing information that the massive weight and pounds per square inch pressure exerted by the mobile cranes used to unload and stage the turbine components establish that a pile supported or floating structure are not practicable alternatives to meet the operational design requirements of the Terminal (See, Sec. 4.3.2).[2] This section incorporates information previously provided to the Department on May 6, 2011 to further analyze the relationship between the required weight bearing capacity of the terminal and its design. The Report describes how a typical mobile crane weighing 600 metric tons can, in the course of an unloading operation, generate in excess of 12,000 psf. Those estimates are consistent with the load designs of European ports that have supported off-shore wind installations. The vibration produced as the cranes move from the unloading to the staging area can also severely impact structures with fixed point load bearing, such as pile supported structures, disrupting the connection points and causing early failure.

The need for crane mobility and their operating loads require, as a practical necessity, a crushed stone surface, rather than a concrete operating surface, to prevent the cracking of the concrete deck due to settlement and wear and tear. To avoid cracking the deck on a pile supported structure, the project requires an additional three feet of fill that will further increase the load bearing demands on a pile structure and raise its elevation 7 feet more than the current bulkhead alignment. A pile supported structure built to carry these loads would require pilings of a dimension and density that would reasonably preclude navigating or walking under the structure, thereby virtually eliminating any public access opportunities that a standard pier pile supported structure might provide, and having sufficient density as to have the effect of being fill in terms of its effect on marine resources.

These factors combine to preclude reliance on a pile supported structure as a reasonable design choice. This conclusion is further supported by the Department's records, which indicate that these cranes weigh 12 times and 6 times more than the cranes at the largest cargo marine terminals operating in Boston and New Bedford, respectively. Floating structures are also incompatible with the primary purpose of the terminal, given the foregoing load bearing constraints and the need for a stable infrastructure to transfer and stage these heavy turbines. The terminal also meets the Engineering and Construction standards at 310 CMR 9.37.

The site investigation of the upland portion of the terminal site identified that major portions of the site were underlain at relatively near surface depths with a variety of waste materials. Certain test pits also showed the presence of hydric soils and invasive plants that can propagate in

[2] The EPA Response Memo updates the SER to describe a portion of the terminal that will be supported by a concrete blanket and pilings.

anaerobic conditions. The Department does not consider those areas jurisdictional wetlands. In addition, the SER Report noted that at least one area has been identified as the site of release regulated under M.G.L. c. 21E. The Department anticipates that as the project progresses a more detailed site assessment will be conducted pursuant to Massachusetts Contingency Plan regulations, 310 CMR 40.000, and the appropriate response actions will be implemented, if required.

The proposed site development design the Department reviewed in 2010 incorporated a temporary bridge between two parcels of land that traversed an intertidal salt marsh. The current design connects those parcels through an entirely different route outside of the intertidal area and salt marsh. Therefore, the discussion in the Department's August 25th memo on the temporary impacts associated with the bridge is no longer relevant.

In addition to the foregoing, the construction of the terminal is also subject to the following Waterways Regulations, at 310 CMR 9.00, et seq.:

9.12(2)(a)(9 and 14) - Water-dependent use
9.32(1)(a and b) - Categorical Restrictions on Fill and Structures
9.34 - Conformance with Municipal Zoning and Harbor Plans
9.35 - Standards to Preserve Water-Related Public Rights
9.35(2)(a) - Navigation
9.35(3)(a) - Fishing/fowling
9.35(3)(b) - On-foot passage
9.35(4) - Compensation
9.36 - Standards to Protect Water-Dependent Uses
9.37 - Engineering Standards
9.37(1)(c) Does not unreasonably restrict the ability to dredge any channels
9.40 - Standards for Dredging and Dredged Material Disposal
9.40(2) - Resource Protection Requirements
9.40(3) - Operational Requirements for Dredging
9.40(4) - Operational Requirements for Dredged Material Disposal
9.40(5) - Supervision of Dredging and Disposal Activity

The project proponent has committed to implementing and otherwise complying with the Waterways performance standards and Best Management Practices more particularly described in Schedule A. MassDEP asserts that by virtue of the project proponent's implementation of these performance standards and BMP's, the terminal construction activities will comply with the substantive requirements of the waterways licenses program.

310 CMR 7.00 Air Quality

In accordance with MassDEP Requirements and Guidelines, the contractor will be required to develop a final Construction Management Plan that will define the measures to be taken to

minimize air quality impacts. Best management practices will be required to be implemented through the contract documents and methodologies for meeting performance standard will be set out in the formal submittals from the contractor under the CMP. Such measures could include such things as keeping exposed soil surfaces treated or wet, covering soil piles and providing enclosed areas for fine materials that could easily be entrained into the air. Said plan should also examine the options to provide short term fence line monitoring for PM2.5 along the boundary with the nearest residential area and should consider the migration of toxics into the air from soil, specifically PCBs and fugitive dust. Landside supplies of unconsolidated materials will be covered when not in use. Dust suppression and control measures will be implemented as needed and base on air quality monitoring results and the weather.

The Dust, Odor, Construction and Demolition standard of 310 CMR 7.09 will be followed. This citation contains several requirements applicable to this project including;

- A requirement to notify the Department ten days prior to conducting any demolition on site.
- A requirements that any demolition be performed in a manner so as to prevent or minimize the creation of dust or odor including use of measures designed to prevent dust such as seeding, covering, paving or wetting soil surfaces.
- A requirement that no person shall handle , transport or store materials in manner that would create dust or odor.

Diesel Engines:
Any stationary emergency or standby engine installed at the site shall comply with the requirements of 310 CMR 7.02(8)(i) and 310 CMR 7.26(40) and (44) as applicable. Any engine that is mobile in nature shall comply with federal standards with regards to limitation on the sulfur content of fuel.

Construction equipment used for this project shall comply with federal off road diesel emission standards including the use of ultra low sulfur diesel fuel (15 ppm sulfur content) in all diesel engine powered equipment. All equipment shall meet the Tier1-3 emission standards for off-road diesel equipment and to the extent practicable; all diesel powered equipment shall meet the Tier 4 emission standards (the final deadline for which is 2015), per 40 CFR Part 89.

Contractors will be encouraged to use diesel oxidation catalyst retro-fitted vehicles and equipment, and project will be directed to DEP for retrofitting guidance.
The regulations also require specific opacity limits, based on equipment type. The regulation states that no person who owns operates or controls a marine vessel, spark-ignited internal combustion engine or non-stationary diesel engine shall cause, suffer, allow or permit visible emissions including smoke, 310 CMR 7.06.

To the extent any activities may include Groundwater/ Soil venting systems, Conveyors and dry material storage silos, and rock crushing/processing as part of the construction or reconstruction of the site, they shall comply with the requirements of 310 CMR 7.03.

Air Quality Monitoring

An air monitoring program will be conducted throughout the construction process. Appropriate measures such as proper dust suppression measures will be implemented during construction activities to prevent excessive emissions of particulate matter. Four air monitoring stations will be established around the NBMCT construction project site. Daily measurements of particulate matter (dust particles) in the air will be taken and evaluated. The results will be measured in micrograms of particle per cubic meter and will be augmented with the meteorological (MET) results for the average wind speed and direction.

The EPA Response Memo proposed to use the same criteria and coding system as used for the Aerovox demolition project to determine the level of mitigation action. Using this system, information will be made available to the surrounding communities and presented in a format that will likely be familiar to those community members concerned about air quality or interested in the data. (See, EPA Response Memo, p 48). MassDEP believes the Aerovox criteria and protocol are sufficiently similar to the project to be adopted, pending review of the final CMP.

310 CMR 7.15 Asbestos:
Should the project require demolition of any structures (even as small as an equipment shed), the structure to be demolished must be inspected and tested for the presence of asbestos prior to demolition. If asbestos is found within the structure, asbestos must be removed from the structure prior to demolition. Ten day notice to the Department and the Department of Standards is required prior to removal of asbestos and the asbestos removal must be performed by a DOS licensed professional.

310 CMR 7.10 Noise: Applies to construction and demolition equipment which characteristically emit sound but which may be fitted with equipment including mufflers and enclosures to surpass sound or may be operated in a manner so as to limit sound to periods of the day when it will not be disruptive to the public. The owner/ operators of the project and their consultant should develop a sound management plan to define the construction noise sources and the mitigation measures to be taken to minimize sound impact from those sources. The plan should cover all aspects of the construction and demolition project including equipment that may not be able to be fitted with noise suppression and should propose time of day limitations for said equipment.

310 CMR 8.01 Requirement – Standards for the abatement of air pollution incident emergencies. Pollution abatement controls may be required.

Action to be Taken – Dredging and CDF construction will be implemented so as to avoid air pollution emergencies. Engineering controls will be used as necessary.

Navigational Dredging

Navigational access to the terminal requires a combination of improvement and maintenance dredging in excess of 17 acres of intertidal and subtidal areas. In addition, some blasting may be required if the necessary channel depths cannot be achieved through conventional means. The water quality regulations require a "LEDPA"-type analysis for dredge projects (314 CMR 9.07(1)(a). The SER Report and Response Memo set out a sufficient rationale for the extent of the proposed dredging. The rationale is based upon a best information available analysis of the configuration and number of primary and support vessels that will be required to implement the project, consistent with the wind turbine facility's transportation and construction predicates.

314 CMR 9.00 Water Quality Certification

The water quality regulations also require that appropriate and practicable steps be taken to avoid or, if avoidance is not possible, minimize and thereafter mitigate adverse impacts to land under water and the intertidal zone. 314 CMR 9.07(1)(a). Dredging performance standards at 314 CMR 9.07(3) reiterate and expand upon the need to avoid and minimize impacts, including a conditional prohibition on dredging within the migration, spawning or juvenile development of aquatic species. Although this project involves improvement dredging, as compared to the maintenance dredging conducted under the prior three phases of SER-approved dredge projects, the performance standards imposed in those previous projects would be equally appropriate and applicable to the navigational dredging associated with this project. In addition to aligning the dredging scheduling in regard to the times of the year when resident and migratory species are in their vulnerable phases of their life cycles, the establishment of mixing zones, the use of silt curtains and environmental dredge buckets, real time dredge and dewatering related turbidity monitoring and response plans, and environmental monitors' oversight will act in concert to satisfy the "avoid and minimize" standard. The Waterways regulations, at 310 CMR 9.40(2) and (3), impose more explicit dredge performance standards, such as conditionally precluding dredging between March 15th and June 15th of any year, to avoid interference with fish runs, but which can be met within the parameters of the scheduling, design and operating conditions discussed above.

The EPA Response Memo describes the blast design parameters and means by which the potential impacts to the fishery resources will be assessed and blasting impacts mitigated. MassDEP that the protocols and mitigation measures described in the Memo will meet the applicable water quality performances subject to the additional following conditions to be incorporated in an approval of the dredge management plan.

1. No blasting shall occur during periods of flounder spawning or during the alewife spawning run if so determined by NOAA or MassDMF.
2. All blasting shall be conducted using inserted delays of a fraction of a second per hole, and
3. stemming, in which rock is placed into the top of the borehole to damp the shock wave reaching the water column, thereby reducing fish mortalities from blasting.
4. All blasting operations are contingent upon using sonar, and with a fisheries observer present who is approved by the Massachusetts Division of Marine Fisheries (and National Marine Fisheries).
5. There shall be no blasting during passage of schools of fish or when a marine mammal is present as determined by the fisheries observer.
6. Blasting activities occurring from February 15 to June 15 shall be conducted with fish startle system, sonar and an approved fisheries observer to avoid impacts to anadromous fish migration.
7. There shall be no disposal during passage of schools of fish as determined by the fisheries observer.
8. The dredge contractor shall provide adequate notice to the fishermen/lobstermen on anticipated significant dredge movements.
9. The dredge contractor shall maintain a short tow while inside New Bedford Harbor to minimize disruption of vessels.

In addition to the foregoing, the dredging and filling activities associated with navigational dredging and construction of the Terminal are subject to the following additional Regulations:

<u>Water Quality Regulations, 314 CMR 4.00, et seq.:</u>

314 CMR 4.03 Application of Standards
314 CMR 4.04 Antidegradation Provision
314 CMR 4.05 Classes and Criteria

The project proponent has committed to implementing and otherwise complying with the Water Quality performance standards and Best Management Practices more particularly described in Schedule A. MassDEP asserts that by virtue of the project proponent's implementation of these performance standards and BMP's, the navigational dredging activities will comply with the substantive requirements of the Water Quality program.

<u>Waterways Regulations, 310 CMR 9.00, et seq.</u>

9.12(2)(a)(9 and 14) - Water-dependent use
9.32(1)(a and b) - Categorical Restrictions on Fill and Structures
9.34 - Conformance with Municipal Zoning and Harbor Plans
9.35 - Standards to Preserve Water-Related Public Rights
9.35(2)(a) - Navigation

9.35(3)(a) - Fishing/fowling
9.35(3)(b) - On-foot passage
9.35(4) - Compensation
9.36 - Standards to Protect Water-Dependent Uses
9.37 - Engineering Standards
9.37(1)(c) Does not unreasonably restrict the ability to dredge any channels
9.40 - Standards for Dredging and Dredged Material Disposal
9.40(2) - Resource Protection Requirements
9.40(3) - Operational Requirements for Dredging
9.40(4) – Operational Requirements for Dredged Material Disposal
9.40(5) - Supervision of Dredging and Disposal Activity

The project proponent has committed to implementing and otherwise complying with the Waterways performance standards and Best Management Practices more particularly described in Schedule A. MassDEP asserts that by virtue of the project proponent's implementation of these performance standards and BMP's, the navigational dredging activities will comply with the substantive requirements of the waterways licenses program.

The Navigational Dredging is subject to the following Wetlands Regulations, 310 CMR 10.00, et seq.:

310 CMR 10.25 - Land Under Ocean
310 CMR 10.26 - Designated Port Areas
310 CMR 10.27 - Coastal Beach
310 CMR 10.30 - Coastal Bank
310 CMR 10.32 - Salt Marsh
310 CMR 10.34 - Land Containing Shellfish
310 CMR 10.35 - Banks of Land Under the Oceans, Ponds, Rivers, Lakes, or Creeks that Underlie an Anadromous/Catadromous Fish Run

The project proponent has committed to implementing and otherwise complying with the Wetlands performance standards and Best Management Practices more particularly described in Schedule A. MassDEP asserts that by virtue of the project proponent's implementation of these performance standards and BMP's, the navigational dredging activities will comply with the substantive requirements of the Wetlands program.

Mitigation for Unavoidable Impacts

The SER Report identifies a matrix of potential mitigation projects within and proximate to the terminal that replicate or improve the resource areas impacted by the project, including salt marsh, intertidal and the subtidal areas. The proposed mitigation will result in the creation of 17.73 acres of Winter Flounder spawning habitat, creation/enhancement of 3.47 acres of inter-tidal area and enhancement of 10.91 acres of near-shore, shallow, sub-tidal areas located in the outer harbor, immediately southwest of the Hurricane Barrier, creation/enhancement of up to

approximately 1.9 acres of a combination of successional marshareas (mudflat, low marsh, high marsh, and transitional area), completion of a Tern Monitoring program to provide additional information on the utilization of New Bedford Harbor by terns, and a combination of transplanting and/or seeding of shellfish (however, no shellfish will be transplanted from Fish Closure Area 1 to areas outside of Fish Closure Area 1). The selection principles applied in identifying the prospective mitigation measure are consistent with the criteria the Department applies in reviewing compensatory mitigation measures. The Department has consulted with the Division of Marine Fisheries who has confirmed that the areas and depths identified for the creation of flounder habitat are appropriate. The sub-tidal and inter-tidal habitat mitigation area is proposed at a location that was previously an intertidal area. Thus, it constitutes restoration of inter-tidal area, is desirable as a mitigation location, and has a high degree of likelihood of success. The Mass Department of Public Health has confirmed in writing that the shellfish transfer from the contaminated areas would not meet DPH regulatory requirements because of the levels of contamination in the shellfish. Therefore, the mitigation proposal was revised to indicate this restriction. The proponent now proposes as mitigation that shellfish be re-seeded or transplanted from uncontaminated areas. None of the proposed mitigation will displace an established water dependent use.

The concept of capping contaminated areas to improve benthic water quality and, in effect, create improved habitat, as proposed in the OU3 area, is a mitigation approach the Department recognizes as an acceptable mechanism to redress impacts from hazardous waste remediation projects, including dredging and filling projects.. The salt marsh mitigation area includes an area of PCB contaminated sediments located within a drainage swale. Further review and analysis provides persuasive evidence that the PCB contamination in the drainage swale was likely from discontinued CSO discharges to the area known as OU-3, and therefore would not be likely to provide future contamination of the restored salt marsh.

There are several prospective mitigation measures that currently lack a financial commitment to conduct or complete. The Department anticipates that prior to the commencement of the project's construction, further clarification of the funding and scheduling of the selected mitigation measures will be documented and implemented. As further details of the dredging design are formalized, the Department will exercise oversight in the adoption of the final group of mitigation measures, and review the final designs, engineering controls, monitoring and contingency plans to ensure that project's impacts to essential fish habitat are adequately addressed and impacts during the construction period of the project and the selected mitigation measures are minimized.

APPENDIX A

State Enhanced Remedy – Performance Standards

I MADEP 401 Water Quality Program Standards: Dredge & Fill

1. Anti-degradation provisions of the Massachusetts Surface Water Quality Standards protect all waters, including wetlands. 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. Prior to the start of in-water work, the SER Project Manager (SER PM) shall be notified of any proposed change(s) in plans that may affect waters or wetlands.

3. Environmental Monitor. The contractor shall employ an "Environmental Monitor" (EM). An assistant to the EM shall be hired if needed. The EM shall have a minimum of five (5) years experience in wetlands protection, erosion and sedimentation control, water quality monitoring, site maintenance, site drainage, dredging operation management and general site construction. The EM shall verify the placement and performance of erosion/sediment/turbidity control measures and shall have the authority to halt construction for erosion control purposes or for other threats to public health, safety or the environment. The name and phone number(s) of the EM and his or her assistant, if needed, and back-up shall be provided to the Department and other governmental agencies charges with oversight of the project so that s/he may be contacted on a 24-hour basis, seven days a week to address any emergency situation. The EM shall be authorized to contact the Department directly for any matter involving wetland protection. The EM shall submit bi-weekly reports to the Department, following the commencement of construction and continuing until completion of work in resource areas. The bi-weekly reports shall summarize, by station location, the status of construction, the condition of the site, the weather conditions and shall report any erosion, sedimentation, discharge or pollution problems and how they were corrected, along with recommendations on how to prevent similar problems in the future. The EM shall immediately report any erosion, sedimentation or pollution problems to the Resident Engineer(s), who shall take immediate steps to correct those problems. The EM shall immediately report any unauthorized discharges of sediments to the Department and Resident Engineer(s) who shall take immediate steps to correct those problems. The EM shall submit annual reports for a minimum of five years to the DEP Greenbush Designee following completion of replication area construction and shall submit an outline of the report for approval by the Department prior to preparation of the first report.

4. All dredge and fill activities shall meet NOAA & MassDMF conditions to protect winter flounder spawning & the alewife fish run that passes through the harbor to the Acushnet Sawmill Pond spawning area.
5. A Storm Water Pollution Prevention Plan (SWPPP) for the entire project, proposing both non-structural and structural BMPs to limit erosion & sediment laden discharge during

land clearing filling and construction, shall be prepared and submitted to the Department for prior review and written approval prior to commencement of. The SWPPP shall emphasize measures to contain and prevent sediment laden water from being discharged from dewatering activities from areas within the bulkhead sheet pile that is to serve as a containment device. Further, the SWPPP shall meet the criteria established for such plans contained in the NPDES Construction General Permit. . All proposed dewatering shall be identified in the site specific SWPPPs and shall not exceed the following limits when discharged:

a) pH: pH shall be 6.5 to 8.5 for discharge to salt water bodies. The SWPPPs shall identify the specific measures to be taken to adjust the pH to acceptable limits [for example, carbon dioxide (CO2) bubbling when concrete pouring is also occurring].

6. As proposed, silt-curtains and absorbent booms shall be deployed to enclose the area being dredged and filled. The contractor's plan for deployment of the silt curtains/absorbent booms shall be submitted to the Department and SER PM for review prior to the start of in-water work. Should the deployment of silt-curtains prove not feasible or be unsuccessful, the SER PM will be notified prior to any dredging without silt curtains.

7. Water Quality Monitoring:

   a. **When the dredging and filling operation is contained within a silt-curtained area,** the following water-quality monitoring program shall be carried out daily for the first three days of activities commencing and once a week thereafter for dredging operations and during those times when dewatering activities are ongoing from the terminal fill operation :
      i. A reference location shall be established outside of and approximately 200-feet from the silt-curtained area and a monitoring location shall be established outside of and within 15-feet of the silt-curtain.
      ii. Turbidity shall be measured, using an optical backscatter sensor, at both the reference and monitoring locations, at established depths: near the water's surface, at the mid-point of the water column and near the bottom. The three values obtained shall be averaged, such that a single, representative turbidity value is calculated for the monitoring site and a single, representative value is calculated for the reference site.
      iii. Turbidity shall be measured at both the monitoring and reference site prior to the start of dredging, and once every two hours during dredging.
      iv. An exceedance of the project turbidity standard shall be attributed to project activities when the average turbidity at the monitoring site exceeds the average reference site turbidity plus the permissible turbidity increase, as outlined in the following table:

Reference Site Turbidity (NTUs)	Permissible Turbidity Increase
<10	Reference plus 20 NTUs
11-20	Reference plus 15 NTUs
>21	Reference plus 30% of reference

v. If, in two consecutive monitoring events, the average turbidity at the monitoring site exceeds the average turbidity at the reference site by more than the permissible turbidity increase, then water samples, composited over the entire water column, from both the monitoring and reference sites shall be collected and submitted for analysis of Total Suspended Solids, dissolved PCBs, arsenic, cadmium, copper, chromium, lead, mercury, nickel, and zinc. When samples are submitted to the laboratory, a 36-hour turn-round time shall be requested. Additionally, the Proponent, or their contractor, shall take operational action(s) designed to limit such exceedences, such as increasing the dredge cycle time, inspection and any necessary repair, of the silt curtains, deployment of an additional row of silt curtains or other mitigation measures. Turbidity monitoring shall continue on the schedule outlined in Section 6.a.iii, until compliance is reestablished.

vi. If compliance can not be reestablished within 48 hours, dredging shall cease and Department and any other interested local, state, or federal agency staff, in consultation with the Proponent, their contractors and/or consultants shall review the operational actions undertaken, the results of the analyses of the water samples and evaluate the biological significance of the available data and determine the requirements for additional mitigation, if any.

b. **Should the deployment of silt-curtains prove not possible or be unsuccessful,** the following water-quality monitoring program shall be carried out daily for the first three days of activities commencing and twice a week thereafter for dredging activities and during those times when dewatering activities are ongoing from the terminal fill operation:

i. A reference location shall be established approximately 200-feet up-current from the dredge and a monitoring location shall be established 200-feet down-current from the dredge.

ii. Turbidity shall be measured, using an optical backscatter sensor, at both the reference location and the monitoring location, at established depths: near the water's surface, at the mid-point of the water column and near the bottom. The three depth values obtained shall be averaged, such that a single, representative turbidity value is calculated for the reference location and a single, representative turbidity value is calculated for the monitoring location.

iii. Turbidity shall be measured at both the reference location and at the edge of the mixing zone prior to the start of dredging, and once every two hours of dredging.

iv. An exceedance of the project turbidity standard shall be attributed to project activities when the average turbidity at the edge of the mixing zone exceeds the reference site turbidity plus the permissible turbidity increase, as outlined in the following table:

Reference Site Turbidity (NTUs)	Permissible Turbidity Increase
<10	Reference plus 20 NTUs
11-20	Reference plus 15 NTUs
21-30	Reference plus 10 NTUs
>31	Reference plus 30% of reference

v. If, in two consecutive monitoring events, the average turbidity at the edge of the mixing zone exceeds the average turbidity at the reference site plus the permissible turbidity increase, then water samples, composited over the entire water column, from both the reference location and the edge of the mixing zone shall be collected and submitted for analysis of Total Suspended Solids, dissolved PCBs, arsenic, cadmium, copper, chromium, lead, mercury, nickel, and zinc. When samples are submitted to the laboratory, a 36-hour turn-round time shall be requested. Additionally, the Proponent, or their contractor, shall take operational action(s) designed to limit such exceedences, such as increasing the dredge cycle time, inspection and any necessary repair, of the silt curtains, deployment of an additional row of silt curtains or other mitigation measures. Turbidity monitoring shall continue on the schedule outlined in Section 6.b.iii, until compliance is reestablished.

vi. If compliance cannot be reestablished within 48 hours, dredging shall cease and the Department and any other interested local, state or federal agency staff, in consultation with the Proponent, their contracts and/or consultants shall review the operational actions undertaken, the results of the analyses of the water samples and evaluate the biological significance of the available data and determine the requirements for additional mitigation, if any.

8. As proposed, dredging of contaminated, silty sediment shall be done using a closed, environmental, clamshell bucket. Where pilings or other debris are found to interfere with environmental bucket closure or equipment operation, a conventional clamshell bucket may be used to extract the pilings/debris. Sediment removal during such activity shall be minimized to the greatest extent practicable. Should dredging with the environmental bucket become unfeasible or unsuccessful, the SER PM must be notified prior to any contaminated sediment dredging not using the environmental bucket, and the contractor must also continue to meet the project water quality standard performance standards.

9. Water discharged from the barge shall be appreciably free of suspended sediment and meet the water quality criteria established in Section 4 (above). Any free liquid

flowing from the barge in the harbor shall be passed through a sand media filter or equivalent filtration system (which must be approved by the project Resident Engineer) prior to discharge.

12 The Resident Engineer and EM shall be responsible for anticipating the need for and installation of additional erosion/sediment/turbidity controls and shall have the authority to require additional control measures to protect the resource areas beyond what is shown on the plans, if field conditions or professional judgment dictate that additional protection is necessary.

13. Emergency Response/Spill Prevention Plan: Included in said Plan shall be the contact responsible for shutting down BMPs discharging to the New Bedford Harbor in the event of a spill and maintenance practices to be employed to make sure gate valves or other shut down measures work appropriately to prevent spills from entering the adjacent waters.

14. During dewatering, if necessary, the discharge point shall be protected. Water from dewatering activities shall be filtered via the use of a portable sedimentation tank that removes suspended solids, temporary sedimentation basins, or other means prior to discharge.

15. Diesel-powered equipment shall be fitted with after-engine emissions controls such as oxidation catalysts or particulate filters.

16. Within 30 days of the completion of the initial dredging, a bathymetric, survey of the dredge footprint, depicting post-dredge conditions, shall be sent to the MADEP SER Project Manager.

17. Disposal of any volume of dredged material at any location in tidal waters is subject to approval by the Department and the Massachusetts Coastal Zone Management office.

18. A baseline condition report detailing existing conditions of all areas proposed to be transformed to salt marsh shall be submitted to the Department, An annual progress report shall be produced at the end of each year following construction of the salt marsh area for a period of five (5) years, and shall be submitted by the EM to the Department, no later than December 30 of each year. All reports shall be prepared in the same format so that a comparison can be made from each year to the next. The first annual report shall be prepared and submitted no later than December 30 of the first year following the implementation of the salt marsh creation. The existing conditions report and all annual reports shall include, in textual, tabular and graphic formats, percent of vegetative cover, a list of plant species, coverage of wetland plants as a percentage of all plants, and an evaluation of relative plant vigor (i.e. mortality rate of existing species and number or new species) and any changes observed in soils or hydrology. Additionally, the report shall include representative photographs of site conditions and recommendations for improvement. These reports shall also summarize agency consultations pertaining to the restoration project, the

remedial responses to those problems and appropriate recommendations for future project.

19. Any changes made to documents submitted shall be immediately forwarded to the Department for review and comment.

II MADEP Chapter 91 Waterways Standards:

1. Acceptance of these Waterways Conditions shall constitute an agreement by the Proponent to conform to all terms and conditions herein.

2. All subsequent maintenance dredging and transportation and disposal of this dredge material, during the term of this Project shall conform to all standards and conditions applied to the original dredging operation performed under this Project.

3. After completion of the work authorized, the Proponent shall furnish to the Department a suitable plan showing the depths at mean low water over the area dredged. Dredging under this Project shall be conducted so as to cause no unnecessary obstruction of the free passage of vessels, and care shall be taken to cause no shoaling. If, however, any shoaling is caused, the Proponent shall at his/her expense, remove the shoal areas. The Proponent shall pay all costs of supervision, and if at any time the Department deems necessary a survey or surveys of the area dredged, the Proponent shall pay all costs associated with such work.

4. The Proponent shall, at least three days prior to the commencement of any dredging in tide water, give written notice to the Department of the time, location, and amount of the proposed work.

Special Waterways Conditions

1. Dredge material shall be transported to suitable disposal facilities; unregulated dumping of dredge materials is not permitted.

2. The Proponent shall develop and implement a Navigation Plan to address and mitigate temporary impacts to navigation during dredging activities.

3. The Proponent shall provide and maintain in good working order appropriate United States Coast Guard (USCG) approved navigation aids to assist mariners in avoiding work areas as required by the USCG.

4. The Proponent shall maintain vehicular access to water-dependent users throughout construction activities. As part of the final design plan, the Proponent describes the means by which the public shall provide reasonable measure to provide on-foot public passage consistent with the need to avoid undue interference with the water=-dependent uses of the project.

5. The Proponent shall remove and properly dispose of all temporary structures no later than three (3) months after completion of the dewatering and amendment of the sediments. Temporary structures are defined as berms and dikes; lime silo; dewatering tanks, erosion and sediment control systems, pipes, and siltation curtains.

6. Modification to this Project: the SER PM, may review on an individual basis, modifications to construction activities and/or temporary structures which represent and insignificant deviation from original specifications, in terms of configuration, materials or other relevant design or fabrication parameters as determined by DEP within all areas of construction. Such review shall be in accordance with the following procedure:
    a. The Proponent shall submit a written request describing the proposed modifications to the work accompanied by plans, for prior review of the DEP. The DEP will consider comments submitted within ten (10) days of the DEP's receipt of the request. The DEP will send any significant modifications to the Resource Agencies for review and comment and to identify any future Performance Standards, if necessary. EPA will also have the opportunity to make a consistency determination if the change is significant, as necessary. The DEP will notify the Resource Agencies of any minor modifications.

7. After completion of the work authorized the Proponent shall furnish the Department a suitable plan showing the depths at mean low water over the areas dredged within 90 days of completion if each phase of the dredging.

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

One Winter Street Boston, MA 02108 • 617-292-5500

DEVAL L. PATRICK
Governor

TIMOTHY P. MURRAY
Lieutenant Governor

RICHARD K. SULLIVAN JR.
Secretary

KENNETH L. KIMMELL
Commissioner

To: Matt Schweisberg, EPA Region 1
From: Philip Weinberg, MassDEP, Office of Operations and Environmental Compliance PMW
Re: South Terminal ARARs Overview.
Date: February 10, 2012

The South Terminal project is comprehensively described in the report entitled Enhanced Remedy in New Bedford, South Terminal, January 18, 2012("SER Report" or "Report"). This Report supplements and updates the Report previously submitted to EPA on or about August 25, 2010. The project envisions the construction and operation of a marine terminal of approximately 28.25 acres within the Designated Port Area of the New Bedford Harbor at a site north of and proximate to the Harbor's Hurricane Barrier. The project will be subject to three regulatory programs: Wetlands, 310 CMR 10.00; Waterways, 310 CMR 9.00; and Water Quality, 314 CMR 9.00. The project's components include:

1. Construction of a 1200 linear foot bulkhead that will fill in approximately 5.49 acres of shallow, near shore and intertidal habitat and 0.18 acres of salt marsh;
2. Improvement dredging to provide navigational access to the terminal resulting in permanent impacts of approximately 12.14 acres in near shore, subtidal habitat and 43.38 acres of temporary impact of which 19.6 acres is maintenance dredging of the Federal Navigation Project; and
3. Mitigation for impacts to winter flounder, shellfish and salt marsh.

Designated Port Area

All the activities associated with the project lie within a Designated Port Area (DPA), locations dedicated to marine industrial and commercial purposes.[1] The Wetland Regulations at 310 CMR 10.26 establish the performance standards for activities proposed in wetland resource areas within a DPA. The regulation designates land under the ocean in a DPA as significant to the wetland interests of marine fisheries, storm damage prevention and flood control, and presumes

[1] A locale is established as a DPA pursuant to the Coastal Zone Management Regulations at 301 CMR 25.00.

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that such land is not significant to other interests including salt marsh, land containing shellfish, coastal beaches, and tidal flats. Therefore, the performance standards applicable to those marine resource areas are not applicable to projects within the DPA absent unique conditions not present in the site of this DPA. Moreover, impacts to these areas from filling have been compensated for through mitigation discussed below.

Projects in the DPA must be designed and constructed using best practical measures to minimize adverse effects on: (a) fisheries through changes in water circulation and water quality; and (b) storm damage prevention or flood control caused by changes in the land's ability to provide support for adjacent coastal banks or engineering structures. There is nothing unique about the construction or location of the bulkhead to suggest that it would have an adverse impact on water circulation which is driven primarily by meteorology and tides in this locale. Dredging and filling activities may cause temporary impacts to water quality, which is discussed in further detail below. Similarly, given the bulkhead's location in relation to the hurricane barrier, there is no reason to conclude that the terminal will have an adverse impact from storm damage or flooding to the coastal bank, or boat ramp or marine industrial bulkhead located on adjacent parcels.

Terminal

The South Terminal's bulkhead is to be constructed with sheetpiling and backfilled with 150,000 cubic yards of clean sand generated by navigational dredging projects undertaken in the Harbor. The bulkhead will infill approximately 5.49 acres of near shore habitat and 0.18 acres of salt marsh. The intertidal and subtidal areas of the proposed bulkhead are currently contaminated with lower levels of PCBs. An additional 34,000 cy of clean material generated from navigational dredging will be used to grade the upland portions of the facility for the wind blade lay down area and ancillary staging and loading uses.

The Water Quality Regulations at 314 CMR 9.06(1) require an alternative analysis that demonstrates no practicable alternative to the project will have a less adverse effect on the aquatic environment. The SER Report sets out the basis for the Department's conclusion that there is no other practicable location or configuration for the project that will meet its primary purpose in serving the off-shore renewable energy. The Report satisfies the regulation's alternative analysis performance standard. Moreover, the regulations provide at 310 CMR 9.06(8) that, notwithstanding the requirement for a *Least Environmental Damaging Practical Alternative(* "LEDPA")-type analysis, the Department may approve a project that will otherwise improve the natural capacity of wetlands or any water of the Commonwealth. The South Terminal project will improve the Harbor's and its surrounding habitat's natural capacity in that it provides (a) a construction-related reuse for CAD generated material, (b) a location capable of providing future means to store and reuse CAD sediment, and (c) the mechanisms by which the

proposed mitigation measures will eliminate exposure of the aquatic environment to PCB contamination. The terminal also allows the project to comply with the provision of 314 CMR 9.07(1)(e), which compels reuse or recycling of dredged material rather than its disposal.

The regulation at 314 CMR 9.06(2) requires that appropriate and practicable steps be taken to avoid and minimize potential adverse impacts to land under water or the intertidal zone. The Department has developed standard protocols to regulate construction activities in shoreline areas to avoid and minimize adverse impacts to water quality and benthic habitat through the use of time of year restrictions and best management practices. In regard to the bulkhead, most of the impacts to the intertidal areas will occur behind the sheet piling. There is nothing unique about this project that indicates that through site-specific application of these protocols the avoidance and minimization standard cannot be achieved.

When MassDEP previously determined which MassDEP regulations apply to the project, it was contemplated that the bulkhead could potentially incorporate anthropogenic, contaminated dredge spoils. As a consequence, it was determined that the terminal would be regulated as a Confined Disposal Facility (CDF) pursuant to 314 CMR 9.07(8). In light of the representation that the bulkhead construction and lay down area grading material will be composed only of clean sand, the CDF performance standards are no longer relevant. The bulkhead construction and site grading material may be regulated as the reuse of dredged material under the appropriate reuse alternatives set out in 314 CMR 9.07(9)(a) and (b). 314 CMR 9.07(9)(a) allows for the shoreline placement of dredged material proximate to the dredging activity that lies with a flood plain and identifies placement of material behind a bulkhead as valid reuse alternative. The SER report identifies the site ass within the FEMA mapped 100-year flood plain.

The use of clean, dredged sand for the purpose of grading the upland areas of the site is regulated pursuant to 314 CMR 9.07(9)(b). This provision provides for the placement of dredged material in an upland area for fill or reuse, provided the concentration of contaminants in the material (1) do not exceed the S-1 applicable at the receiving location, as specified in 310 CMR 40.0975, (2) is not a hazardous waste, and (3) will not adversely affect a potable water supply. Additional provisions require that contaminants in the material not be significantly different or greater than the receiving location's background conditions, the reuse occur in a DPA if practicable, and the material be appropriately dewatered and otherwise managed in accordance with applicable regulations at 314 CMR 9.07. The Report's representation that only clean sand would be employed makes it reasonably likely that the material would not exceed S-1 standards or the background conditions at the proposed reuse locations. Based on historic sampling data and standard sampling protocols, MassDEP would establish an appropriate construction sampling methodology to confirm that the material designated for upland reuse met the applicable compliance standard.

The terminal is also regulated under the Waterways regulations, 310 CMR 9.00. The terminal's functions classify it as a water dependent-industrial facility under the criteria at 310 CMR 9.12: a facility related to the construction and storage of marine structures, a marine terminal for transfer between ship and shore of water-borne goods, and an ancillary activity to offshore renewable energy infrastructure. As a water dependent facility, the project is presumed to serve a proper public purpose (310 CMR 9.31). There is nothing in the record to indicate that this project is displacing an established, reasonably continuous water-dependent use in contravention to 310 CMR 9.36(4). Water dependent industrial structures within the tideland area of a DPA may be constructed with fill, provided that neither pile supported, nor floating structures are a reasonable alternative.

The SER Report presents convincing information that the massive weight and pounds per square inch pressure exerted by the mobile cranes used to unload and stage the turbine components establish that a pile supported or floating structure are not practicable alternatives to meet the operational design requirements of the Terminal (See, Sec. 4.3.2). This section incorporates information previously provided to the Department on May 6, 2011 to further analyze the relationship between the required weight bearing capacity of the terminal and its design. The Report describes how a typical mobile crane weighing 600 metric tons can, in the course of an unloading operation, generate in excess of 12,000 psf. Those estimates are consistent with the load designs of European ports that have supported off-shore wind installations. The vibration produced as the cranes move from the unloading to the staging area can also severely impact structures with fixed point load bearing, such as pile supported structures, disrupting the connection points and causing early failure.

The need for crane mobility and their operating loads require, as a practical necessity, a crushed stone surface, rather than a concrete operating surface, to prevent the cracking of the concrete deck due to settlement and wear and tear. To avoid cracking the deck on a pile supported structure, the project requires an additional three feet of fill that will further increase the load bearing demands on a pile structure and raise its elevation 7 feet more than the current bulkhead alignment. A pile supported structure built to carry these loads would require pilings of a dimension and density that would reasonably preclude navigating or walking under the structure, thereby virtually eliminating any public access opportunities that a standard pier pile supported structure might provide, and having sufficient density as to have the effect of being fill in terms of its effect on marine resources.

These factors combine to preclude reliance on a pile supported structure as a reasonable design choice. This conclusion is further supported by the Department's records, which indicate that these cranes weigh 12 times and 6 times more than the cranes at the largest cargo marine terminals operating in Boston and New Bedford, respectively. Floating structures are also incompatible with the primary purpose of the terminal, given the foregoing load bearing

constraints and the need for a stable infrastructure to transfer and stage these heavy turbines. The terminal also meets the Engineering and Construction standards at 310 CMR 9.37.

The site investigation of the upland portion of the terminal site identified that major portions of the site were underlain at relatively near surface depths with a variety of waste materials. Certain test pits also showed the presence of hydric soils and invasive plants that can propagate in anaerobic conditions. The Department does not consider those areas jurisdictional wetlands. In addition, the SER Report noted that at least one area has been identified as the site of release regulated under M.G.L. c. 21E. The Department anticipates that as the project progresses a more detailed site assessment will be conducted pursuant to Massachusetts Contingency Plan regulations, 310 CMR 40.000, and the appropriate response actions will be implemented, if required.

The proposed site development design the Department reviewed in 2010 incorporated a temporary bridge between two parcels of land that traversed an intertidal salt marsh. The current design connects those parcels through an entirely different route outside of the intertidal area and salt marsh. Therefore, the discussion in the Department's August 25th memo on the temporary impacts associated with the bridge is no longer relevant.

Navigational Dredging

Navigational access to the terminal requires a combination of improvement and maintenance dredging in excess of 17 acres of intertidal and subtidal areas to between- 20MMLW to -30MMLW as described and delineated in the SER Report and accompanying Appendix. The water quality regulations require a "LEDPA"-type analysis for dredge projects (314 CMR 9.07(1)(a). The SER Report sets out a sufficient rationale for the extent of the proposed dredging. The rationale is based upon a best information available analysis of the configuration and number of primary and support vessels that will be required to implement the project, consistent with the wind turbine facility's transportation and construction predicates. *Similar to the provision discussed earlier in connection the discharge of fill associated with the terminal*, the regulations at 314 CMR 9.07(1)((l) create an exception to the applicability of the alternative analysis requirement at 314 CMR 9.07(1)(a) and the other dredging performance standards where the dredge components of the project will restore or otherwise improve the natural capacity of the wetland or other water of the commonwealth. As noted, we believe various components of this project will serve such a purpose.

The water quality regulations also require that appropriate and practicable steps be taken to avoid or, if avoidance is not possible, minimize and thereafter mitigate adverse impacts to land under water and the intertidal zone. 314 CMR 9.07(1)(a). Dredging performance standards at 314 CMR 9.07(3) reiterate and expand upon the need to avoid and minimize impacts, including a

conditional prohibition on dredging within the migration, spawning or juvenile development of aquatic species. Although this project involves improvement dredging, as compared to the maintenance dredging conducted under the prior three phases of SER-approved dredge projects, the performance standards imposed in those previous projects would be equally appropriate and applicable to the navigational dredging associated with this project. In addition to aligning the dredging scheduling in regard to the times of the year when resident and migratory species are in their vulnerable phases of their life cycles, the establishment of mixing zones, the use of silt curtains and environmental dredge buckets, real time dredge and dewatering related turbidity monitoring and response plans, and environmental monitors' oversight will act in concert to satisfy the "avoid and minimize" standard. The Waterways regulations, at 310 CMR 9.40(2) and (3), impose more explicit dredge performance standards, such as conditionally precluding dredging between March 15th and June 15th of any year, to avoid interference with fish runs, but which can be met within the parameters of the scheduling, design and operating conditions discussed above.

Mitigation for Unavoidable Impacts

The SER Report identifies a matrix of potential mitigation projects within and proximate to the terminal that replicate or improve the resource areas impacted by the project, including salt marsh, intertidal and the subtidal areas. The proposed mitigation will result in the creation of 17.73 acres of Winter Flounder spawning habitat, creation/enhancement of 3.47 acres of inter-tidal area and enhancement of 10.91 acres of near-shore, shallow, sub-tidal areas located in the outer harbor, immediately southwest of the Hurricane Barrier, creation/enhancement of up to approximately 1.9 acres of a combination of successional marsh areas (mudflat, low marsh, high marsh, and transitional area), completion of a Tern Monitoring program to provide additional information on the utilization of New Bedford Harbor by terns, and a combination of transplanting and/or seeding of shellfish (however, no shellfish will be transplanted from Fish Closure Area 1 to areas outside of Fish Closure Area 1). The selection principles applied in identifying the prospective mitigation measure are consistent with the criteria the Department applies in reviewing compensatory mitigation measures. The Department has consulted with the Division of Marine Fisheries who has confirmed that the areas and depths identified for the creation of flounder habitat are appropriate. The sub-tidal and inter-tidal habitat mitigation area is proposed at a location that was previously an intertidal area. Thus, it constitutes restoration of inter-tidal area, is desirable as a mitigation location, and has a high degree of likelihood of success. The Mass Department of Public Health has confirmed in writing that the shellfish transfer from the contaminated areas would not meet DPH regulatory requirements because of the levels of contamination in the shellfish. Therefore, the mitigation proposal was revised to indicate this restriction, and accordingly satisfy DPH's concerns. The proponent now proposes as mitigation that shellfish be re-seeded or transplanted from uncontaminated areas. None of the proposed mitigation will displace an established water dependent use.

The concept of capping contaminated areas to improve benthic water quality and, in effect, create improved habitat, as proposed in the OU3 area, is a mitigation approach the Department recognizes as an acceptable mechanism to redress impacts from hazardous waste remediation projects, including dredging and filling projects. The salt marsh mitigation area includes an area of PCB contaminated sediments located within a drainage swale. Further review and analysis provides persuasive evidence that the PCB contamination in the drainage swale was likely from discontinued CSO discharges to the area known as OU-3, and therefore would not be likely to provide future contamination of the restored salt marsh.

There are several prospective mitigation measures that currently lack a financial commitment to conduct or complete. The Department anticipates that prior to the commencement of the project's construction, further clarification of the funding and scheduling of the selected mitigation measures will be documented and implemented. As further details of the dredging design are formalized, the Department will exercise oversight in the adoption of the final group of mitigation measures, and review the final designs, engineering controls, monitoring and contingency plans to ensure that project's impacts to essential fish habitat are adequately addressed and impacts during the construction period of the project and the selected mitigation measures are minimized.

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

DEVAL L. PATRICK
Governor

TIMOTHY P. MURRAY
Lieutenant Governor

IAN A. BOWLES
Secretary

LAURIE BURT
Commissioner

August 27, 2010

Matt Schweisberg
U.S. EPA Region 1
5 Post Office Square
Suite 100
Boston, Ma. 02109

Re: State Enhanced Remedy, New Bedford-South Terminal-MassDEP ARARs review

Dear Mr. Schweisberg:

On August 25, 2010, the Massachusetts Department of Environmental Protection submitted the State Enhanced Remedy in New Bedford, South Terminal report. The report was prepared in response to EPA's request that it be provided with information sufficient to evaluate the South Terminal project proposal for substantive compliance with federal environmental statutes, in particular the Least Environmentally Damaging and Practicable Alternatives ("LEDPA") analysis of section 404(b)(1) of the Clean Water Act .

The purpose of the attached memorandum is to supplement the SER report's analysis with an overview of MassDEP's applicable or relevant and appropriate requirements for the South Terminal project. The conclusion of the memo is that the South Terminal can be constructed and operated in conformance with the Department's regulations. This conclusion is based on the information provided in the report as well regulatory compliance protocols developed during the course of the three prior navigational dredging projects completed under the SER.

If you have any questions or requests regarding the memo, please contact me or Phil Weinberg.

This information is available in alternate format. Call Donald M. Gomes, ADA Coordinator at 617-556-1057. TDD# 1-866-539-7622 or 1-617-574-6868.

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Sincerely,

Gary Moran,
Deputy Commissioner for
Operations and Environmental Compliance

Cc: James T. Owens, III, EPA, Director, Office of Site Remediation and Restoration
David Dickerson, EPA Remedial Project Manager
Kenneth Kimmell, General Counsel, EOEEA
Deerin Babb-Brott-Assistant Secretary and Director, CZM
Phil Weinberg, Associate Commissioner for OEC, MassDEP

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

DEVAL L. PATRICK
Governor

TIMOTHY P. MURRAY
Lieutenant Governor

IAN A. BOWLES
Secretary

LAURIE BURT
Commissioner

To: Matt Schweisberg, EPA Region 1
From: Philip Weinberg, MassDEP, Office of Operations and Environmental Compliance
Re: South Terminal ARARs Overview
Date: August 27, 2010

The South Terminal project is comprehensively described in the report entitled Enhanced Remedy in New Bedford, South Terminal, dated August 25, 2010. The project envisions the construction and operation of a marine terminal of approximately 28 acres within the Designated Port Area of the New Bedford Harbor at a site north of and proximate to the Harbor's Hurricane Barrier. The project will be primarily subject to three regulatory programs: Wetlands, 310 CMR 10.00; Waterways, 310 CMR 9.00; and Water Quality, 314 CMR 9.00. As set forth below, the Department has concluded that the project will comply with the substantive requirements of each of these three regulatory programs.

The project's components include:
1. Construction of a 1200 linear foot bulkhead that will fill in approximately 6.34 acres of shallow, near shore and intertidal habitat and .18 acres of salt marsh;
2. Improvement dredging of approximately 11 acres in near shore, subtidal habitat to provide navigational access to the terminal; and 6.39 acres of maintenance dredging in deeper subtidal areas to facilitate navigational transit through the Harbor; and
3. Construction of a temporary, pile supported bridge spanning an intertidal area within the buffer zone of a salt marsh.

Designated Port Area

This information is available in alternate format. Call Donald M. Gomes, ADA Coordinator at 617-556-1057. TDD# 1-866-539-7622 or 1-617-574-6868.

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All the activities associated with the project occur within a Designated Port Area (DPA), locations dedicated to marine industrial and commercial purposes.[1] The Wetland Regulations at 310 CMR 10.26 establish the performance standards for activities proposed in wetland resource areas within a DPA. The regulation designates land under the ocean in DPA as significant to the wetland interests of marine fisheries, storm damage prevention and flood control, and presumes that such land is not significant to other interests and therefore the usual performance standards do not apply for resources areas including salt marsh, land containing shellfish, coastal beaches, and tidal flats. Projects in DPA must be designed and constructed using best practical measures to minimize adverse effects on: (a) fisheries through changes in water circulation and water quality; and (b) storm damage prevention or flood control caused by changes in the land's ability to provide support for adjacent coastal banks or engineering structures. The Department concludes that the project does minimize adverse effects on fisheries and storm damage prevention. Based on the project's design and location on the coast, the Department does not expect an adverse effect on water circulation. Similarly, the Department does not expect that the terminal will have an adverse impact from storm damage or flooding to the coastal bank or the boat ramp or marine industrial bulkhead located on adjacent parcels. There may be temporary impacts to water quality associated with the dredging, which is discussed in further detail below.

Terminal

The South Terminal's bulkhead is to be constructed with sheetpiling and backfilled with dredged sediment, predominantly clean sand generated in developing the Confined Aquatic Disposal (CAD) units to manage the PCB contaminated sediments dredged in the course of on-going remedial activities or navigational dredging projects undertaken in the Harbor. The bulkhead will infill approximately 6.3 acres of near shore habitat and .18 acres of salt marsh. The intertidal and subtidal areas the bulkhead will occupy are currently contaminated with lower levels of PCBs.

The Water Quality Regulations at 314 CMR 9.06(1) require an alternative analysis that demonstrates there is no practicable alternative to the project that will have a less adverse effect on the aquatic environment. The State Enhanced Remedy report sets out the basis for the Department's conclusion that there is no other practicable location or configuration for the project that will meet its primary purpose in serving the off-shore renewable energy. The report satisfies the regulation's alternative analysis performance standard. Moreover, the regulations provide at 314 CMR 9.06(8) that notwithstanding the requirement for a "LEDPA"-type analysis, the Department may approve a project that will otherwise improve the natural capacity of wetlands or any water of the Commonwealth. In providing a construction-related reuse for CAD generated material, a location capable of providing future means to store and reuse CAD sediment, and in the mechanisms by which the proposed mitigation measures will eliminate

[1] A locale is established as a DPA pursuant to the Coastal Zone Management Regulations at 301 CMR 25.00.

exposure of the aquatic environment to PCB contamination, the South Terminal will contribute toward improving the Harbor's and its surrounding habitat's natural capacity. The terminal also allows the project to comply with the provision of 314 CMR 9.07(1)(e) which compels reuse or recycling of dredged material rather than its disposal.

The regulation at 314 CMR 9.06(2) requires that appropriate and practicable steps be taken that will avoid and minimize potential adverse impacts to land under water or the intertidal zone. The Department has developed standard protocols to regulate construction activities in shorelines areas that ensure that through time of year restrictions and best management practices adverse impacts to water quality and benthic habitat are avoided or minimized. In regard to the bulkhead, most of the impacts will occur behind the sheet piling. The Department believes that the avoidance and minimization standard can be achieved with the use of appropriate BMPS during the placement of fill behind the sheet pile bulkhead which will contain sediment. The terminal constitutes a Confined Disposal Facility (CDF) regulated under 314 CMR 9.07(8). The terminal meets the siting criteria as it is not located near a sensitive receptor, would not cause an unacceptable traffic risk, will not have an adverse effect on a state listed rare or endangered species, as confirmed by the letter from the Natural Heritage Endangered Species Program, or create an unacceptable risk from operating emissions. The surface of the terminal is designed to be crushed stone which due to its permeability should reduce stormwater management concerns, and the terminal will be required to meet the stormwater performance standards to prevent erosion, reduce the discharge of pollutants and control run-off from a 24 hour, 25 year storm. 314 CMR 9.07(8)(d), as well as develop operating and maintenance plans to address spill prevention and control. Parking or lay down areas with impermeable surfaces will also be required to meet these standards, but overall the site's configuration should not present difficulty in demonstrating compliance.

The regulations do provide, however, that the final cover system minimize percolation of water and be designed and constructed to remain impervious over the life of the facility. The assumption behind these performance standards is that the material to be confined is sediment that is unsuitable for ocean disposal and contaminated to an extent necessary to prevent human exposure and leachate migration. In contrast, the terminal is proposed to take clean CAD sand for its structural backfill. Through the implementation of a sampling plan, the contaminant levels of the sediment can be verified to present no significant risk to the public health and environment as a result of the design or operation of the facility. Verification that the sediment that will be placed is free of significant contamination may obviate the need to meet the specific design criteria. Absent this verification, other engineering design criteria for cap, drain and final cover systems that meet the project's design criteria of having a crushed stone surface that can accommodate the mass and operating characteristics of the moveable cranes will need further consideration. The Department commits to reviewing the final design to ensure the underlying performance standard of preventing migration of contaminated material is met.

The terminal also proposes to use up to 50,000 cubic yards of clean CAD sand for upland site grading. This activity, as well as bulkhead backfilling utilizing clean sand, qualifies as shoreline placement and upland material reuse allowed in accordance with 314 CMR 9.07(9) as reuse of sediment within a DPA. As noted above, a sampling regime will be instituted to ensure the sediment meets the applicable contaminant limits.

The terminal is also regulated under the Waterways regulations, 310 CMR 9.00. The terminal's functions classify it as a water dependent-industrial facility under the criteria at 310 CMR 9.12: a facility related to the construction and storage of marine structures, a marine terminal for transfer between ship and shore of water-borne goods, and an ancillary activity to offshore renewable energy infrastructure. As a water dependent facility, the project is presumed to a serve a proper public purpose (310 CMR 9.31). Water dependent industrial structures within the tideland area of a DPA may be constructed with fill, provided that neither pile supported nor floating structures are a reasonable alternative. The SER report presents convincing information that the massive weight (600 tons) and resulting 4000 pounds s.f. of the mobile cranes establish the practical necessity of a crushed stone rather than a concrete operating surface. These two factors combine to preclude reliance on a pile supported structure as a reasonable design choice. This conclusion is further supported by the Department's records which indicate that these cranes weigh 12 times and 6 times more than the cranes at the largest cargo marine terminals operating in Boston or New Bedford respectively. For the same reasons as well as for the necessity of stability in transferring and staging the turbines, floating structures are also incompatible with the primary purpose of the terminal. The terminal also meets the Engineering and Construction standards at 310 CMR 9.37

The site investigation of the upland portion of the terminal site identified that major portions of the site were underlain at relatively near surface depths with a variety of waste materials. Certain test pits also showed the presence of hydric soils and invasive plants that can propagate in anaerobic conditions. The Department does not consider those areas jurisdictional wetlands. In addition, the SER report noted that at least one area has been identified as the site of release regulated under M.G.L. c. 21E. The Department anticipates that as the project progresses a more detailed site assessment will be conducted pursuant to Massachusetts Contingency Plan regulations, 310 CMR 40.000, and the appropriate response actions will be implemented, if required.

Temporary Land Bridge

In order to accommodate additional storage for wind turbine components, the project proposes to construct a temporary bridge connecting two parcels within the site. The bridge will span an intertidal area and require up to ten, 30" diameter pilings for load bearing support. The Wetland

Regulations at 310 CMR 10.32(3) prohibits any project within a salt marsh or on lands within 100' of a salt marsh from destroying or having an adverse affect on the productivity of the salt marsh. The bridge is within the 100' buffer zone. There is no basis to conclude that the location of the bridge outside of the marsh would adversely impact salt marsh productivity as it would not impede or interfere with the tidal movement and is designed to minimize shading. Moreover, in the application of the performance standard, the regulations establish an exception for small projects within the marsh, such as an elevated walkway or other structure that has no other adverse impact than blocking light exposure to the underlying vegetation for a portion of the day. 310 CMR 10.32(4). Were it required for the Department to invoke this exception (which it is not), the project's proposal meets the exception's performance standard.

Navigational Dredging

Navigational access to the terminal requires a combination of improvement and maintenance dredging in excess of 17 acres of intertidal and subtidal areas to between- 20MMLW to -30MMLW as described and delineated in the SER report and accompanying Appendix. The water quality regulations require a "LEDPA"-type analysis for dredge projects. 314 CMR 9.07(1)(a). The SER report sets out a persuasive rationale for the extent of the proposed dredging based upon a best information available analysis of the configuration and number of primary and support vessels that will be required to implement the project consistent with the wind turbine facility's transportation and construction predicates. Similar to the provision discussed earlier in connection with the terminal, the regulations at 314 CMR 9.07(1)(l) creates an exception to the applicability of alternative analysis requirement and other performance standards where the project will restore or otherwise improve the natural capacity of the wetland or other water of the commonwealth. As noted, we believe various components of this project will serve such a purpose.

The water quality regulations also require that appropriate and practicable steps be taken to avoid or, if avoidance is not possible, to minimize and thereafter mitigate adverse impacts to land under water and the intertidal zone. 314 CMR 9.07(1)(a). Dredging performance standards at 314 CMR 9.07(3)reiterate and expand upon the requirement to avoid and minimize impacts including a conditional prohibition on dredging within the migration, spawning or juvenile development of aquatic species. Although this project involves improvement dredging as compared to the maintenance dredging conducted under prior three phases of SER-approved dredge projects, the performance standards imposed in those latter projects would be equally appropriate and applicable to the navigational dredging associated with the project. In addition to aligning the dredging scheduling in regard to the times of the year when resident and migratory species are in their vulnerable phases of their life cycles, the establishment of mixing zones, the use of silt curtains and environmental dredge buckets, real time dredge and dewatering related turbidity monitoring and response plans, and environmental monitors'

oversight will act in concert to achieve the avoid and minimize standard. The Waterways regulations, at 310 CMR 9.40(2) and (3), imposes more explicit dredge performance standards, such as conditionally precluding dredging between March 15th and June 15th of any year in order to avoid interference with fish runs, but which can be met within the parameters of the scheduling, design and operating conditions discussed above.

Mitigation for Unavoidable Impacts

The SER report identifies a matrix of potential mitigation projects within and proximate to the terminal that replicate or improve the resource areas impacted by the project, including salt marsh, intertidal and the subtidal areas. The selection principles applied in identifying the prospective mitigation measure are consistent with the criteria the Department applies in reviewing compensatory mitigation measures. The concept of capping contaminated areas to improve benthic water quality and, in effect ,create improved habitat as proposed in the OU3 area is a mitigation approach the Department recognizes as an acceptable mechanism to redress impacts from hazardous waste remediation projects and those involving dredging and fill within locations containing contaminated sediments.

There are several prospective mitigation measures that currently lack a financial commitment to conduct or complete. The Department anticipates that prior to the commencement of the project's construction, further clarification of the funding and scheduling of the selected mitigation measures will be documented and implemented. As further details of the dredging design are formalized, the Department will exercise oversight in the adoption of the final group of mitigation measures, and review the final designs, engineering controls, monitoring and contingency plans to ensure that project's impacts to essential fish habitat are adequately addressed and impacts during the construction period of the project and the selected mitigation measures are minimized.

EPA Draft Determination for the Proposed South Terminal Project
New Bedford Harbor State Enhanced Remedy

Appendix E
Determination of Compliance -
Section 404 of the Clean Water Act (33 U.S.C. §1344)
Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. §403)
Wetland Executive Order 11990

ENVIRONMENTAL PROTECTION AGENCY
REGION I

SOUTH TERMINAL PROJECT, NEW BEDFORD HARBOR

DRAFT DETERMINATION OF COMPLIANCE WITH SECTION 404 OF THE CLEAN WATER ACT AND SECTION 10 OF THE RIVERS AND HARBORS ACT OF 1899

PROJECT PROPONENT: Commonwealth of Massachusetts

WATERWAY: New Bedford Harbor

1.0: Authority: This document constitutes EPA Region I's (the "Region") draft evaluation and compliance determination for the State Enhanced Remedy, New Bedford Harbor – South Terminal project proposed by the Commonwealth of Massachusetts. This draft determination proposes to find compliance with Section 404 of the Clean Water Act (33 U.S.C § 1344) and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. § 403), subject to the proposed conditions set forth herein.

1.1: Clean Water Act: Under Section 404 of the Clean Water Act, discharges of dredged or fill material into waters of the U.S. are prohibited except in compliance with the requirements of the § 404(b)(1) guidelines, which are set forth at 40 C.F.R. Part 230. Four of the key guidelines provisions are as follows:

Section 230.10(a) prohibits discharges into wetlands and other waters if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem (as long as the alternative does not have other significant adverse environmental consequences).

Section 230.10(b) prohibits discharges which would cause or contribute to violations of state water quality standards; violate toxic effluent standards under § 307 of the Clean Water Act; jeopardize the continued existence of an endangered or threatened species, or result in the likelihood of the destruction or adverse modification of such species' critical habitat; or violate requirements of marine sanctuary designations.

Section 230.10(c) prohibits discharges which would cause or contribute to significant degradation of waters of the U.S. Significant degradation may include individual or cumulative impacts to human health and welfare; fish and wildlife; ecosystem diversity, productivity and

stability; and recreational, aesthetic or economic values.

Section 230.10(d) prohibits discharges unless all appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem. Compensatory mitigation for unavoidable impacts to the aquatic ecosystem must satisfy the requirements of 40 C.F.R. §§ 230.91-230.98.

1.2: Rivers and Harbors Act of 1899: The obstruction or alteration (including dredging) of any navigable water of the United States is prohibited except as authorized after a finding that the activity in not contrary to the public interest and otherwise complies with applicable federal laws, pursuant to 33 C.F.R. Part 320.

2.0 Proposed Project

2.1 Project Description: The Commonwealth of Massachusetts proposes the development of an approximately 28-acre marine terminal capable of supporting offshore renewable energy development and other future uses. The facility would also provide a site for the disposal of navigational dredged material associated with the State Enhanced Remedy ("SER") during construction of the facility, and would support staging of additional dredged material for beneficial reuse during operation of the facility. The facility would be located at the South Terminal area in lower New Bedford Harbor. The proposal is described in detail in the document entitled State Enhanced Remedy in New Bedford, South Terminal and its appendices, dated January 18, 2012 and submitted by the Massachusetts Department of Environmental Protection ("MassDEP") on behalf of the Commonwealth (hereafter referred to as MassDEP 2012). The Commonwealth has updated and supplemented its January 18, 2012 submission with 4 additional submissions (including attachments), dated June 18, 2012 (hereafter MassDEP 2012a), June 29, 2012 (hereafter MassDEP 2012b), July 11, 2012 (hereafter MassDEP 2012c) and July 12, 2012 (hereafter MassDEP 2012d). The relationship between the proposal to construct a marine terminal and the SER is discussed more fully in EPA's July 16, 2012 Draft Determination for the South Terminal Project.

The project's components include:

1. Installation of a 1200 linear foot bulkhead in the Harbor, and placement of approximately 142,000 cubic yards of dredged material (clean sand) behind the bulkhead, resulting in the filling of intertidal habitat, shallow, near-shore sub-tidal habitat, and salt marsh. This filled structure, referred to as a confined disposal facility ("CDF"), will be adjacent to approximately 21.4 acres of upland that, together with the filled structure, will comprise the terminal facility;

2. Dredging of shallow, near-shore, sub-tidal habitat and deeper sub-tidal habitat to provide navigational access to and berthing at the terminal; to realign the Gifford Street Boat Ramp Channel and create new mooring areas (to mitigate impacts to recreational users from the

South Terminal dredging); and to conduct maintenance dredging in the Federal Navigation Project channel and turning basin: and

3. Dredging of shallow, near-shore, sub-tidal habitat to create a confined aquatic disposal ("CAD") cell, identified as "CAD Cell 3," which will then be filled with contaminated dredged material from the above-described navigational dredging.

4. Disposal of contaminated dredged material from the above-described navigational dredging into CAD Cell 3 and existing CAD cell 2, and disposal of clean dredged material to cap existing CAD Cell 1 and the "Borrow Pit."

5. Compensatory mitigation to address impacts to wetlands, intertidal habitat, subtidal habitat, and shellfish resources.

2.2 Summary of Estimated Areal Impacts in Federally Regulated Waters

Permanent Impacts

For areas to be fully or partially filled for construction of the CDF:

Freshwater wetlands	0.10 acres[1]
Intertidal area:	1.94 acres
Shallow, near-shore sub-tidal area:	4.73 acres
Salt marsh:	0.18 acres[2]
Total:	6.95 acres

For areas to be dredged:

Shallow, near-shore sub-tidal area (to be dredged from between -1 and -13 MLLW to -14 MLLW)(Quayside Areas and Tug Channel):	8.46 acres

[1] In addition, there is a 0.4 acre freshwater wetland on one of the properties that may become incorporated into the terminal site, in which event it too would be filled. See section 4.3.7.

[2] This area was delineated during the June 28, 2012 site investigation, and a report submitted to EPA on July 11, 2012. Due to the late date of the submission of this report, EPA has not had adequate time to complete its review and confirm revised areal estimates of the salt marsh areas and impacts. For purposes of this analysis we are assuming the 0.18 acre impact that the Commonwealth has previously identified in prior submissions and will be evaluating this further before making a final decision on the project.

Shallow, near-shore sub-tidal area (to be dredged from between -1 and -6 MLLW to -30 to -32 MLLW)(Quayside Areas):	7.02 acres[3]
Total:	15.48 acres
Total Permanent Impacts:	22.43 acres
Temporary Impacts Associated with Dredging	
Shallow, near-shore sub-tidal area (to be dredged from between -4 and -6 MLLW to -6 to -7 MLLW)(Gifford Street Mooring Basin and Channel):	6.17 acres
Shallow, near-shore sub-tidal area (to be dredged from between -4 and -6 MLLW to -45 MLLW)(CAD Cell):	8.76 acres[4]
Deeper, sub-tidal area (to be dredged from between -20 to -25 MLLW to -30 MLLW)(South Terminal Channel):	8.29 acres.[5]
Deeper, sub-tidal area (to be dredged from between -26 to -30 MLLW to -30 MLLW)(Maintenance Dredging of Federal Navigation Project):	15 acres[6]
Total:	38.22 acres

[3] This figure represents 3.68 acres that will definitely be dredged, and an additional 3.34 acres that are associated with a potential extension of the deep-draft quayside dredging area to the south and potential additional widening of the deep-draft channel. See MassDEP 2012a at pp. 2-4 and 9.

[4] This figure represents 6.3 acres that will definitely be dredged, and an additional 2.46 acres that would be dredged to accommodate additional excavate from the potential expansion of the deep-draft draft quayside dredging area and potential additional widening of the deep-draft channel. See MassDEP 2012b, pp. 3-4.

[5] This figure represents 7.01 acres that will definitely be dredged, and an additional 1.28 acres that are associated with a potential extension of the deep-draft quayside dredging area to the north. See MassDEP 2012a at pp. 3 and 10.

[6] Some or all of this dredging may not need to occur, depending on the draft of the vessels to be used at the site, so inclusion of this figure is a worst case scenario. See MassDEP 2012a at pp. 2-3, 4-5, and 10.

Temporary Impacts Associated with CAD Cell Filling and Capping

Capping Borrow Pit and CAD 1 with clean dredged material and disposal of contaminated dredged material into CAD cell 2	10.8 acres

2.3 Location: The project site is located adjacent to New Bedford Harbor in New Bedford, Massachusetts, immediately to the south of the existing South Terminal facility. A Site Locus Map is included as Figure 1 in MassDEP 2012. The latitude of this site is 41.622936. The longitude of this site is 70.915271. The site is located within the Cape Cod Watershed. The Hydrologic Unit Code for this site is 01090002.

2.4 Scope of Analysis: This CWA § 404 and RHA § 10 evaluation considers the effects on waters of the United States associated with the discharge of dredged and fill material into the CDF; the dredging to accommodate access to and berthing at the terminal and for the Gifford Street channel and mooring areas; the maintenance dredging of the Federal Navigation Project; and the dredging and filling associated with the CAD cells.

This evaluation does not consider the impacts associated with the offshore disposal of the material excavated from CAD Cell 3. Those impacts have been evaluated by the U.S. Army Corps of Engineers, which, on November 4 and 15, 2011, authorized the disposal of approximately 750,000 cubic yards of clean dredged sediments excavated from CAD Cell 3 at either the Cape Cod Bay Disposal Site or the Rhode Island Sound Disposal Site (both EPA Designated Ocean Disposal Sites).

2.5 Site Description: New Bedford Harbor is located on the northern shore of the Buzzards Bay and borders the communities of Fairhaven to the east, and New Bedford to the west. The New Bedford Hurricane Barrier seawall and floodgates (immediately south of Palmer Island) demarcates the outer harbor from the inner harbor and there is also a federal navigation channel which leads into the inner harbor. The Acushnet River flows into the northernmost part of the upper estuary and is the most significant freshwater inflow into the harbor. The inner harbor contains several marinas, a recreational fleet, historical attractions, commercial fishing fleets, and fish processing/cold storage facilities. Land usage along the shore is a mixture of residential, commercial and industrial uses.

New Bedford Harbor is highly contaminated with polychlorinated biphenyls (PCBs) and heavy metals from manufacturing discharges that occurred from 1940 to the late 1970s. The harbor sediments are contaminated in varying degrees from the upper Acushnet River into Buzzards Bay. Bioaccumulation of PCBs within the marine food chain has resulted in closing the area to

lobstering and fishing, and recreational activities and harbor development have been limited by the widespread PCB problem. The source of the contamination has been attributed to two electrical capacitor manufacturing facilities that operated between the 1940s and 1970s. One facility, Aerovox Corporation was located near the northern boundary of the site and the other facility, Cornell-Dubilier Electronics, Inc. is located just south of the New Bedford Hurricane Barrier. Based on the health concerns of the site, the Environmental Protection Agency (EPA) added the site to the National Priorities List in 1983 as a designated Superfund Site. EPA's selected remedy involves sediment removal by dredging and the containment of contaminated sediments. Full scale dredging began in 2004 and to date approximately 225,000 cubic yards of contaminated sediments have been remediated.

The upland portion of the project site is underlain by urban fill. The majority of the land that will be incorporated into the proposed terminal was once the site of a former mill complex. The mill was demolished in the 1930's. Currently, the land that covers the former mill complex contains areas of hummocky terrain typically indicative of remnant rubble or debris in the subsurface, and portions of the site (particularly the central, northern, and western portions) contain broken pieces of brick and mortar at or just below the ground surface. The Commonwealth has identified three areas on the upland portion of the site that require remediation to address PCB and petroleum-related contamination. One of these areas, southwest of the existing bulkhead extension, is a paved area associated with a release under 310 CMR 40.0000 (the Massachusetts Contingency Plan); the remedy for the release is an asphalt cap. There is also one 0.1 acre wetland pocket located on the upland portion of the site.

3.0 Aquatic Resource Functions and Values

3.1 Fresh Water Resources: A site investigation to characterize freshwater resources was conducted on June 28, 2012, and a report submitted to EPA on July 11, 2012. According to the report, fresh water resources are very limited at the project location, comprised of one small vegetated wetland located north of the existing paved area on parcel 49, approximately 4,600 square feet (0.1acres) in area.[7] This disturbed wetland has formed in a depressional area within the existing fill on site. Evidence of hydrology supporting this wetland is present. Soils consist of significantly disturbed urban fill. While no sampling data has been provided characterizing soils within this wetland, soil sampling conducted in the general vicinity of the wetland indicates that the wetland soils are likely to be contaminated with PCBs and metals (MassDEP 2012, Appendix 39, Table 1). Wetland vegetation consists primarily of *Phragmites australis* (common reed), an invasive species.

[7] The Commonwealth characterized this wetland as "isolated" and therefore not subject to federal jurisdiction. However, given that it is merely 153 feet from the high tide line the harbor, EPA believes this it is adjacent to (i.e., neighboring) a traditional navigable water and therefore subject to CWA jurisdiction.

Functions and values associated with this wetland include groundwater recharge/discharge, floodflow alteration, sediment/toxicant retention, and wildlife habitat. However, these wetland functions and values are limited due to the small size and degraded nature of the wetland system and the surrounding landscape.

3.2 Salt Water resources

3.2.1 Water Quality Classification: The South Terminal Project will be constructed in the New Bedford Inner Harbor. This water body is classified as "SB," with qualifiers noted in the Massachusetts Water Quality Standards for shellfishing (314 C.M.R. Part 4.00).[8]

The SB classified waters are coastal and marine waters that are designated as habitat for fish, other aquatic life and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation. The "shellfishing" qualifier indicates that New Bedford Inner Harbor is also designated for shellfish harvesting with depuration.

The New Bedford Inner Harbor (MA95-42) is listed as an impaired water on Massachusetts' 2010 Clean Water Act § 303(d) list. http://www.mass.gov/dep/water/resources/10list3.pdf. The pollutants associated with the impairments are listed as priority organics, metals, nutrients, organic enrichment/low dissolved oxygen, fecal coliform, oil and grease, taste, odor and color, and objectionable deposits.

Twelve water column samples collected in December 2010 from four locations (at three different depths) in the vicinity of the South Terminal project area, confirm levels of pollutants above Massachusetts water quality criteria. Specifically, PCBs, bis(2-ethylhexyl)phthalate, copper, and lead concentrations exceeded Massachusetts water quality standards.

3.2.2 Tidal Wetlands, Finfish, Shellfish, Benthic Community:

Wetlands: Federally jurisdictional tidal wetlands at the project location consist of an emergent salt marsh system, situated directly within and adjacent to the proposed location of the CDF. This area was delineated during the June 28, 2012 site investigation, and a report submitted to

[8] The Massachusetts Water Quality Standards also list New Bedford Inner Harbor with a "CSO" qualifier, indicating that the water body has been impacted by the discharge of combined sewer overflow (CSO) (314 CMR 4.06(1)(d)(10). The City of New Bedford has a long term CSO control plan and has been working to reduce CSO discharges through wastewater collection system improvement projects.

EPA on July 11, 2012. Due to the late date of the submission of this report, EPA has not had adequate time to complete its review and confirm revised areal estimates of the salt marsh areas, including a newly identified south salt marsh area (Salt Marsh 2). Areal estimates in the recent report indicate a smaller area of salt marsh present at Salt Marsh 1 than had been previously described by the Commonwealth. For the purposes of the draft determination, the previously submitted estimate of the areal extent of Salt Marsh 1 is being used for assessment of impacts, combined with the areal estimate for the newly identified Salt Marsh 2 presented in the July 11, 2012 report. Areal estimates will be revised after EPA has completed review and confirmation of the new wetland delineation. For the purposes of the draft determination, the salt marsh resources present are estimated to be approximately 1.06 acres in area. Soil sampling indicates that the wetland soils are contaminated with PCBs and metals (MassDEP 2012, Appendix 36, Tables 2A and 2E). Wetland vegetation present includes *Spartina alternaflora*, and trace amounts of *Salicornia virginiana*.

Functions and values associated with this system include groundwater discharge, flood flow alteration, fish and shellfish habitat, shoreline stabilization, and wildlife habitat.

Other federally jurisdictional resource areas that will be impacted by the proposed project include intertidal and subtidal aquatic habitats, which provide critical habitat supporting the life cycles of numerous species, as described below.

Finfish: The finfish community of inner New Bedford Harbor is generally reflective of the greater Buzzards Bay system. Fish use this system both as year round residents and as seasonal transients. The most common or dominant species found in Buzzards Bay are listed in Table 3A below.

Table 3A: Dominant finfish species of Buzzards Bay (Howes and Goehringer, 1996)

Residents		Non-residents	
Common name	Scientific name	Common name	Scientific name
Sheepshead minnow	*Cyprinidon variegus*	Alewife	*Alosa pseudoharengus*
Atlantic herring	*Clupea harengus*	Blueback herring	*Alosa aestivalis*
Winter flounder	*Pseudopleuronectes americanus*	Atlantic menhaden	*Brevoortia tyrannus*
Mummichog	*Fundulus heteroclitus*	Tautog	*Tautoga onitis*

Striped killifish	*Fundulus majalis*	Black sea bass	*Centropristis striata*
Four-spined stickleback	*Apeltes quadracus*	Bluefish	*Pomatomus saltatrix*
scup	*Stenotomus chrysops*	Butterfish	*Peprilus triacanthus*
Atlantic silverside	*Menidia menidia*	Striped bass	*Morone saatilis*

As part of a Draft Environmental Impact Report ("DEIR"), Massachusetts Coastal Zone Management (MACZM) conducted finfish sampling in New Bedford Inner Harbor for a 12 month period between 1998 and 1999 (MACZM, 1999). Fish were collected in near shore locations in 50 foot beach seines with 3/16th inch mesh. Trawl sampling was also conducted with a 30 foot otter trawl with 2 inch stretch mesh in the body and a 1 inch stretch mesh in the cod end. Multiple stations were sampled from Popes Island south to the hurricane barrier.

Results of the beach seine showed that Atlantic silversides was the most abundant species present comprising almost 44% of the catch (Table 3B). Striped killifish, cunner, mummichog and winter flounder all represented significant percentages of the catch (Table 3B). "Other species" comprised about 18% of the catch these included black sea bass, northern puffer, northern kingfish, bluefish, Atlantic menhaden, and a handful of other species that may be only represented by 1 or 2 individuals.

Table 3B: Percent of fish caught in beach seine samples from New Bedford Harbor from June 1998 to May 1999 (MACZM, 1999)

Species	Percent of total catch
Atlantic silverside	43.6
Striped killifish	16.0
Cunner	7.5
Mummichog	8.7
Winter flounder	6.3
Other species	17.9

Trawl sampling was conducted utilizing a 400 meter tow length and was conducted over a depth range of 6.5 to 33 feet. As expected, the results of the trawl survey reflected a slightly different composition of species mix than the beach seines. Scup was the dominant species taken comprising almost a quarter of the catch (Table 3C). Cunner comprised 20.8% of the catch, while winter flounder, black sea bass and northern pipefish also represented a significant portion of the total (Table 3C). "Other species" represented 28.2% of the catch and consisted of Atlantic herring, Atlantic silversides, bay anchovy, butterfish, seaboard goby, windowpane flounder and mummichog.

Table 3C: Percent of fish caught in trawl samples from New Bedford Harbor from June 1998 to May 1999 (MACZM, 1999)

Species	Percent of total catch
Scup	23.4
Cunner	20.8
Winter flounder	12.5
Black sea bass	9.1
Northern pipefish	6.0
Other species	28.2

Diadromous fish activity: Diadromous fish are species that regularly move between fresh and salt water. Four species of anadromous (species that live in salt water, but breed in freshwater) fish are known to inhabit Buzzards Bay. These are American shad, blueback herring, rainbow smelt and alewife (Howes and Goehringer, 1996). MACZM sampling in 1998-1999 found alewife in the fall sampling, and rainbow smelt in the spring and the summer (MACZM, 1999). White perch was collected in the spring, while blueback herring and American shad were not observed during the sampling (MACZM, 1999).

Endangered species: The National Marine Fisheries Service recently listed the Atlantic sturgeon (*Acipenser oxyrinchus oxyrincus*) as an endangered species. On June 19, 2012, NMFS wrote to EPA advising that because Atlantic sturgeon undertake large-scale marine migrations and will forage anywhere any available habitat exists, this species may be present in the vicinity of New Bedford Harbor. EPA is currently seeking additional technical assistance from NMFS and is in pre-consultation analysis with it to determine the potential for adverse effects to the species and measures to avoid or minimize such effects.

Benthos: The term benthos refers to organisms that live in or on the seafloor. A wide suite of invertebrates reside within the sediments and collectively are known as infauna. A lesser number of invertebrates live on the seafloor and are generally known as epifauna. In addition to those two classes of organisms, shellfish will be discussed as a separate category due to their commercial importance.

Benthic infauna: New Bedford has a long history as being an industrial port and this history is reflected in the high concentrations of a wide suite of chemicals in the sediments of New Bedford Inner Harbor. The chemical quality of the sediments has had a direct and indirect effect on the benthic infaunal community in this system. In some locations, high sediment concentrations of pollutants may preclude the presence of some sensitive species. Indirect effects include adverse effects from extensive dredging in some areas due to the need to remediate the sediments, and beneficial effects from the complete lack of disturbance in other areas because the taking of shellfish has been banned.

Sampling sponsored by MACZM in 1999 was conducted in New Bedford Inner Harbor to characterize the general condition of the benthic community. The survey utilized the REMOTS® sediment-profile imaging system. This system generates a vertical cross section of the seafloor to a depth of about 20 cm. Biological condition inferences can be reasonably drawn from the images produced by this system. This system has been extensively used all over the world.

This survey showed, in general, that much of the benthic infaunal community in New Bedford Inner Harbor is comprised of a variety of small opportunistic polychaete worm species, such as *Streblospio benedicti* and *Mediomastus ambiseta* (MACZM, 1999). These species are shallow burrowers and tend to be indicative of frequently disturbed or stressed habitats. The survey did find areas that possessed not only these small polychaetes, but larger worms, such as *Nephtys incisa* and *Nereis virens* and large quantities of shellfish. The details of the shellfish resource will be discussed in a separate section below.

Benthic epifauna: Very little if any directed study of the benthic epifaunal community in New Bedford Inner Harbor exists. It is reasonable to assume that the normal assemblage of benthic epifaunal species that are common in Buzzards Bay likely occur within New Bedford Inner Harbor. Epifauna tend to be either more resilient or have less exposure than infauna, because they are not fully immersed in the sediments. In addition, their larval stages tend to be pelagic, so on a routine basis, new recruits from many of these species are likely washed into this area. Howes and Goehringer (1996) reported a wide assemblage of epibenthic organisms occurring in Buzzards Bay, the common ones are listed in Table 3D. It is reasonable to expect that some or many of these species are present in New Bedford Inner Harbor.

Table 3D: Common epibenthic species found in Buzzards Bay (Howes and Goehringer, 1996).

Species	Class/phylum	Species	Class/phylum
Semibalanus balanoides	Crustacea	*Balanus balanus*	Crustacea
Carcinus maenas	Crustacea	*Cancer irroratus*	Crustacea
Pagurus longicarpus	Crustacea	*Ampelisca spinipes*	Crustacea
Byblis serrata	Crustacea	*Littorina littorea*	Gastropoda
Littorina obtusata	Gastropoda	*Littorina saxatilis*	Gastropoda
Mytilus edulis	Bivalvia	*Modiolus modiolus*	Bivalvia
Crepidula fornicate	Gastropoda	*Retusa canaliculata*	Gastropoda
Uniciola irrorata	Crustacea	*Tellina teners*	Bivalvia
Cylichna orzya	Gastropoda	*Busycon canaliculatum*	Gastropoda
Homarus americanus	Crustacea	*Limulus polyphemus*	Arthropoda

Shellfish: New Bedford Inner Harbor has been administratively closed to shellfishing since 1979. A survey conducted by the Massachusetts Division of Marine Fisheries (MADMF) in the late 1990s showed a large abundance of commercial shellfish throughout New Bedford Inner Harbor. Quahogs (*Mercenaria mercenaries*) were the dominant species found throughout the Harbor, but soft shell clam (*Mya arenaria*), bay scallop (*Aequipecten irradians*), blue mussel (*Mytilus edulis*) and American oyster (*Crassostrea virginica*) were also noted as present.

In May 2010, the Commonwealth conducted a shellfish survey in the project area. The methodology of this survey was reviewed and approved by MADMF. Quahogs were the dominant shellfish present within the proposed project area. Quahog densities varied within the project area from 0 to 6.6 individuals per square foot. As part of this survey, quahogs were classified as seed, littleneck, cherrystone or chowder clams based on their size. Seed quahogs are any clam less than 50 mm in width, littlenecks are 51-60 mm in width, cherrystones are 60-70 mm in width and chowder clams are 71 mm or greater in width. Based on the results of this survey it is estimated that there are almost 10 million quahogs in the project area (Table 3E).

Table 3E: Quahog abundance by size classification within the New Bedford State Enhanced Remedy Project Footprint (MassDEP, 2012)

Seed	Littleneck	Cherrystone	Chowder
1,142,475	2,262,003	3,070,499	3,342,544
		Total	9,817,521

Marine Mammals and sea turtles: Humpback whales, Kemp's Ridley, Loggerhead and Leatherback turtles all may occasionally be present in Buzzards Bay. Due to depth and lack of desirable habitat, these species are unlikely to occur with Inner New Bedford Harbor (NMFS, June 19, 2012). Harbor and gray seals occur within Buzzards Bay, but they are found predominantly around the Elizabeth Islands chain and are unlikely to stray into Inner New Bedford Harbor (Buzzards Bay Comprehensive Conservation and Management Plan, 2012).

3.3 Avian Resources

To characterize the avian resources within the project area, the Commonwealth has pooled a variety of data sources, including historic dedicated surveys, and observations from Massachusetts Audubon and avid amateur birders in the area. "Priority species" have been identified by a joint commission of state and federal resource managers that work along the Atlantic flyway (Puerto Rico to Canada). Table 3F lists "Priority species" that have been observed in New Bedford. Occurrence of other bird species in the project area is infrequent (MassDEP, 2012). Potential use of the project site by roseate terns will be discussed in Section 5.3 below and in Appendix K.

Table 3F: Bird species observed within or near proposed New Bedford State Enhanced Remedy Project Area (MassDEP, 2012)

American black duck	American oystercatcher	Baltimore oriole	Black crowned night heron
Blue winged warbler	Canada goose	Chimney swift	Eastern kingbird
Eastern towhee	Gadwell	Gray catbird	Great crested flycatcher
Killdeer	Least tern	Mallard	Nelson's sparrow

Northern flicker	Saltmarsh sparrow	Snowy egret	Spotted sandpiper
Willet	Willow flycatcher	Wood duck	

CLEAN WATER ACT SECTION 404(b)(1) GUIDELINES ANALYSIS

4.0 Alternatives (40 C.F.R. § 230.10(a))

4.1 Introduction: Forty C.F.R. § 230.10(a) prohibits a discharge of dredged or fill material if there "is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem so long as the alternative does not have other significant adverse environmental consequences." 40 C.F.R. § 230.10(a). This fundamental requirement of the § 404 program is often expressed as the regulatory standard that a permit may only be issued for the "least environmentally damaging practicable alternative" or LEDPA.

An alternative is practicable if it is "available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes." Moreover, "...an area not presently owned by the applicant which could be reasonably be obtained, managed, or utilized in order to fulfill the basic purpose of the proposed activity may be considered." 40 C.F.R. § 230.10(a)(2). (The Region's analysis of the South Terminal Project generally uses the term "basic" when discussing the project purpose, recognizing that the regulations use the terms "overall" and "basic" interchangeably.)

A project proponent bears the burden of demonstrating that its preferred alternative is the LEDPA. This demonstration may be made either by showing that no other alternatives are practicable, by showing that no other alternatives are less damaging to the aquatic ecosystem, or both. For this project, the Commonwealth has primarily based its alternatives analysis on issues related to the practicability of alternative sites. With one exception, the submission does not contain information that would allow a comparison of impacts to the aquatic ecosystem between the proposed project and each of the various alternatives.

4.2 Basic Project Purpose: EPA has determined that the basic project purpose is to develop a marine terminal that will provide infrastructure capable of supporting the development of offshore renewable energy facilities as well as other future uses (such as container shipping, break-bulk cargo shipping, bulk cargo shipping, short-seas shipping). A secondary purpose is to provide a site for the disposal of, and staging for beneficial reuse of, material dredged from navigational dredging associated with the State Enhanced Remedy ("SER").

4.2.1 Water Dependency: The construction of a marine terminal is considered to be a water dependent activity because it requires access to or proximity to waters of the U.S. in order to meet the basic project purpose. The project's secondary purpose -- disposal and storage of dredged material -- is not a water dependent activity.[9]

4.3 Basic Project Purpose Criteria: The Commonwealth's site feasability criteria and alternatives analysis relies on a report prepared by Tetra-Tech EC, Inc. on behalf of the Massachusetts Clean Energy Center, entitled "Port and Infrastructure Analysis for Off-Shore Wind Energy Development," (MassDEP 2012, Appendix 2), as well as on supplemental information provided by Siemens, a leading offshore wind energy manufacturer. [10] Id., Appendices 3 and 4; MassDEP 2012a, Appendix D.

Tetra-Tech screened potential marine port sites against ten "hard" criteria which represent "basic requirements without which a facility could not support a renewable energy terminal." MassDEP 2012 at 18-19. Some of the criteria were subsequently refined or modified after input to the Commonwealth from Siemens, based on its experience installing off-shore wind turbines in Europe (since there are no existing off-shore wind farms in the United States). Id. at 19-23. The Commonwealth identified the following key criteria that were significant for distinguishing among alternatives for purposes of determining the practicability of each alternative in light of the basic project purpose: horizontal clearance of at least 130 feet to accommodate expected widths of international vessels; jack-up barge access (which requires a stable harbor bottom); overhead clearance of at least 250 feet to accommodate the height of cranes and spuds of the installation vessels; total wharf and yard upland area of at least 28 acres; berthing space of at least 1,200 linear feet to accommodate one international vessel and two jack-up barges at any one time; site control and availability; and proximity to future offshore facilities.[11] Id. at 23-27. The ability to reuse dredged material for disposal and future staging was also a factor evaluated for each alternative, although it was not dispositive. Id. at 27.

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[9] For discharges associated with a non-water dependent project, the regulations at § 230.10(a) presume that practicable, less environmentally damaging alternatives exist unless clearly demonstrated otherwise. 40 C.F.R. § 230.10(a)(3).

[10] Siemens has entered an agreement with Cape Wind Associates to be the turbine supplier for the 130 turbine wind farm proposed for installation at Horseshoe Shoals off of Nantucket Island. The Commonwealth hopes that its proposed terminal will be the staging area for the Cape Wind development.

[11] There were additional criteria, such as access to deep water navigation, that all of the alternatives satisfied and therefore were not discussed in detail as part of the alternatives analysis.

The Region has tentatively determined that the Commonwealth has made an adequate demonstration that many of the above-referenced criteria are essential to satisfy the basic project purpose, as discussed further below in the context of specific alternatives.

4.4 Alternatives Evaluated: The Commonwealth evaluated the following alternative sites using the refined feasibility criteria: Port of Davisville, Quonset Business Park, Quonset Point, Rhode Island (RI); Dry Dock #4, Marine Industrial Park, South Boston, MA; Fall River State Pier, Fall River, MA; Union Wharf and Fairhaven Shipyard, Fairhaven, MA; North Terminal and Pope's Island, New Bedford, MA; and South Terminal, New Bedford MA (the preferred alternative) (*cites*). The Commonwealth concluded that all of the sites other than its preferred alternative are not practicable for one or more reasons, and that its preferred alternative therefore is the LEDPA. Id. at 27-54. The Region has evaluated the information provided by the Commonwealth and tentatively agrees that South Terminal is the LEDPA for the reasons set forth below.

4.4.1 Alternative I – Port of Davisville, Quonset Point, Rhode Island: To be practicable, an alternative must be available to the project proponent. The Port of Davisville is owned by the State of Rhode Island and operated by the Rhode Island Economic Development Corporation. Id., Appendix 2 at 5-28. Much of the upland portion of the port, including the two main piers, is already fully utilized for an existing auto import operation, reportedly the fifth busiest auto importer in North America, and growing. Indeed, the port is now the 7th largest car importer in North America. http://www.wpri.com/dpp/news/local_news/south_county/north-kingstow-port-of-davisville-celebrates-milestone. There is no realistic basis to believe that the piers and upland being used for the auto import operation could be purchased or leased by the Commonwealth to develop a marine terminal to support off-shore wind energy development, and the Commonwealth has no eminent domain authority in Rhode Island. The Region has tentatively determined that this area is not available and therefore not practicable.

The Commonwealth also evaluated a 27.5 acre area at the Port located just south of Pier 1, which is one of the two piers used for the auto import operation. MassDEP 2012 at 29. This is referred to as the "Magnolia Street Area" and depicted in Appendix 6, p. 6. In its January 18, 2012 submission, the Commonwealth reported that of this area, a 14.5 acre parcel was under agreement, and that the holder of the option had stated that it was not interested in granting a long term lease to the Commonwealth. Id. at 29-30. The Commonwealth subsequently provided information showing that the parcel is not available. See MassDEP 2012a at 15 and Attachment I. Based on the Commonwealth's submissions, it seems clear that the minimum acreage necessary to accommodate a marine terminal to support off-shore wind energy development is at least 20 acres, and possibly as large as 28 acres. MassDEP 2012, Appendices 3 and 4. Hence, the remaining available 13 acres at this site would not be large enough to be a feasible alternative. In addition, neither pier at the port to the north is available, as discussed above. Therefore the Region has tentatively determined that this site is not practicable in light of the

basic project purpose.

Finally, the Commonwealth evaluated a 45 acre undeveloped area between the Magnolia Street area and Quonset Airport. While there is ample backland area adjacent to the shoreline, there would be extensive environmental impacts associated with developing this parcel into a marine terminal capable of supporting offshore renewable energy development. Because of the unavailability of the piers at the Port of Davisville, access to this area would require the construction of a bulkhead which, to create sufficient berthing space, would involve filling 6 acres of salt marsh and approximately 15.7 acres of intertidal and shallow sub-tidal area. From an acreage standpoint, these impacts are substantially greater than the filling of 0.18 acre of salt marsh and 6.67 acres of intertidal and shallow subtidal area associated with the Commonwealth's preferred alternative. In addition, to create an adequate boat basin, turning basin, and access channel, approximately 32.75 acres of shallow sub-tidal habitat would need to be dredged, compared to between 18.31 and 21.65 acres of shallow sub-tidal habitat and between 7.01 and 8.29 acres of deeper subtidal areas that would be dredged for the Commonwealth's preferred project. [12] Id. at 31-32; MassDEP 2012a at 16-17. If the berthing area were shifted to the south to avoid the salt marsh, the length of the channel and associated dredging impacts would increase. Given the greater areal extent of the impacts associated with development of this site, particularly in the valuable salt marsh, intertidal, and shallow subtidal areas, EPA has tentatively determined that development of this parcel to meet the basic project purpose would not be less environmentally damaging to the aquatic ecosystem compared to the Commonwealth's preferred alternative. Therefore, the Region has tentatively determined that it is not the LEDPA and declines to reach any judgment about its practicability.

4.4.2 Alternative II – Dry Dock #4, Boston, Massachusetts: This site is located in the Marine Industrial Park in South Boston. The Commonwealth identified a number of reasons why, in its judgment, the site is not a practicable alternative. The first is that there is only 13-14 acres of land currently available. In order to obtain the necessary acreage, a long established and well known landmark, Harpoon Brewery, would need to agree to sell its premises or the Commonwealth would have to exercise eminent domain. A willing sale is not a likely scenario, and eminent domain proceedings could take years.

An additional issue is that the geologic nature of the sediments that underlay Boston Harbor are not sufficiently stable to support the equipment that would be employed for off-shore wind facility construction. Jack-up barges will be used to transport the constructed turbines from the terminal to the off-shore installation site. When the barges are being loaded, they are supported

[12] Although the South Terminal Project also involves the potential for up to 15 acres of maintenance dredging in the Federal Navigation Project, this dredging is expected to result in only minimal temporary impacts.

by 3 or 4 "spuds" (up to 250-foot long legs) that are planted on the ocean floor. In order to support the weight of the barge and the turbines, the ocean floor in front of the bulkhead must be of a uniform, hard consistency. MassDEP 2012 at 20, 34-36; MassDEP 2012a at 18. According to information provided by the Commonwealth, the ocean floor in Boston Harbor consists of fine-grained organic soil underlain by Boston Blue Clay. MassDEP 2012 at 34; MassDEP 2012a at 19. Blue clay does not provide the stability necessary to support the jack up barges. MassDEP 2012 at 36-37; MassDEP 2012a at 18-19 and Attachment K.

As discussed in section 4.4.1 above, the Commonwealth's submissions have demonstrated that the minimum acreage necessary to accommodate a marine terminal to support off-shore wind energy development is at least 20 acres, and possibly as large as 28 acres. Because the available acreage at Dry Dock #4 is only 13-14 acres, and because the Region tentatively agrees that the Harpoon Brewery parcel is not available to increase the site to a feasible size, the Region tentatively agrees that this site is not practicable.

Even if there were a way to acquire sufficient land, the Region tentatively has determined that this site also is not practicable to meet the basic project purpose because of the presence of unsuitable substrate. The Commonwealth's submissions demonstrate that in order to function safely, the jack-up barges that will be used to transport wind turbines to an offshore facility must be planted on a firm substrate so that they will not tip over or sink. The Boston Blue Clay that underlies Boston Harbor is too soft to reliably support jack-up barges without the risk of accidents and therefore renders the site impracticable.[13]

The Commonwealth has identified additional issues with this site. The first relates to the need for Federal Aviation Administration approval to operate the facility at this location due to its proximity to Logan Airport, and the potential incompatibility between the height of the turbines when loaded onto the barges traveling to the installation site and height restrictions that the FAA might establish. The second issue relates to the distance between this site and the locations of two currently proposed offshore wind farm developments: Nantucket Sound (for the Cape Wind project), and off the coast of Rhode Island (for the proposed Deepwater Wind project). The third relates to potential increased impacts on the federally endangered right whale due to additional vessel traffic in shipping lanes frequented by the whales. Because the Region has tentatively determined that this site is not practicable for the reasons discussed above, we have not reached any conclusions about the effect of these factors on the practicability of this alternative.

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[13] An additional site in Boston Harbor considered in the Tetra-Tech report, the Coastal Oil terminal site, is similarly impracticable in light of the presence of blue clay. See MassDEP 2012a at 19, 50, and Attachment K.

4.4.3 Alternative III – Fall River State Pier, Fall River, Massachusetts: There are several issues related to the practicability of this site. The first two relate to the size and availability of the facility. The upland area at the pier is only approximately 9 acres. It is currently in active use for offloading break-bulk and container ship cargo, for roll-on roll-off cargo, for cargo storage, and as a berthing and terminal location for cruise ships. MassDEP 2012 at 40 and Appendix 9. Because 9 acres is too small to accommodate a marine terminal to support off-shore wind energy development, additional property would also need to be obtained. The only parcel large enough to provide sufficient land is an approximately 29 acre parcel currently used for chemical manufacturing, storage, and distribution. Product is shipped to/from this site via rail, truck, or ships (using existing docks with deep water berths). See http://www.boremco.com/chemical-product-distribution.htm. Under state law, the existing water dependent users at both the pier area and the 29 acre parcel would have to be relocated to alternative locations having physical attributes, including proximity to the water, and associated business conditions, equal to or better than the existing location. 310 C.M.R. 9.36(4). The process of freeing the land would take years and it may be impossible to find alternative locations to move the existing water dependent users to.

As discussed in section 4.4.1 above, the Commonwealth's submissions have demonstrated that the minimum acreage necessary to accommodate a marine terminal to support off-shore wind energy development is at least 20 acres, and possibly as large as 28 acres. Because the acreage at the Fall River State Pier is only 9 acres, and because the Region tentatively agrees that neither the State Pier nor the 29-acre Boremco parcel is available in the foreseeable future due to the current presence of water dependent users, the Region tentatively agrees that this site is not practicable.

A third issue relates to height restrictions at this location. As discussed in the Commonwealth's submissions, one of the essential siting criteria is the absence of height restrictions that would constrain the construction or transportation of wind turbines. Crawler cranes, which are used at the turbine assembly site to unload and load the delivery and installation vessels, respectively, and for pre-assembly of the wind turbines, have boom heights that exceed 250 feet. MassDEP 2012 at 24 and Appendix 3, p. 2. The jack-up barges that will transport the turbines to the installation site have 150 – 250 foot legs (depending on the depth of the waters at the installation site) that extend above the barges when they are mobile. [14] MassDEP 2012, Appendix 2 at 3-25 to 3-26. Finally, the industry trend is toward transport of fully, rather than partially, pre-assembled turbines; the fully assembles units would extend 250 feet above the transport barge.

[14] It may be possible for the legs to be lowered temporarily to allow the barge to pass below a bridge of a channel if the channel is deep enough. Appendix 2 at 3-25.

MassDEP 2012, Appendix 3, p. 2; Appendix 4, p. 2; MassDEP 2012a, Attachment D. The Fall River Pier site presents two separate height constraints. First, the 135-foot high Braga Bridge is located over approximately 20% of the pier. MassDEP 2012 at 39. Its height would render much of the pier area inaccessible to the large crawler cranes that are necessary for transporting, stacking, assembling, loading, and unloading the wind turbine components. The Region has tentatively concluded that the presence of the bridge over this area makes the site impracticable from a logistical standpoint. In addition, the Mt. Hope Bridge, located south of the site, is only 135 feet high and would impose a significant vertical clearance constraint on the transport of the turbines to installation sites. Id. at 40. The Region has tentatively concluded that the height of this bridge also makes the site impracticable from a logistical standpoint.

4.4.4 Alternative IV – Union Wharf and Fairhaven Shipyard, Fairhaven Massachusetts: The combined wharf and upland areas for these two contiguous parcels totals approximately 9.14 acres. Id. at 45. If a CDF were constructed between these parcels, the total available area would only be approximately 12 acres, well below the size necessary to support off-shore wind energy development. Expansion to the west is not feasible because of the presence of the Federal Navigation Project. MassDEP 2012 at 45. Expansion to the north or south, as well as use of the existing 9.14 acres of wharfs and upland, would mean that the existing water dependent users, which include commercial offshore fishing vessels, commercial boat repair, near-shore lobster boats, and fish processing and packing, would have to be relocated to alternative locations having physical attributes, including proximity to the water, and associated business conditions, equal to or better than the existing location. Id.; see also 310 C.M.R. 9.36(4). The process of freeing the land would take years and it may be impossible to find alternative locations to move the existing water dependent users to. Additional acreage is not available to the east due to the residential neighborhoods located immediately to the east of the wharf and shipyard, and the adjacent roads are not suitable to transport large wind energy components.

For all of these reasons, the Region has tentatively determined that this site is not a practicable alternative.

4.4.5 Alternatives V and VI– North Terminal and Pope's Island, New Bedford, Massachusetts: Both of these sites are affected by similar issues. North Terminal is a marine industrial site located on the west side of upper New Bedford Harbor, just north of the Route 6 New Bedford-Fairhaven Bridge that spans the Harbor. It is occupied by a number of businesses, including shipyards, boat repair facilities, and marine bulk transfer businesses. Pope's Island is located in the middle of the Harbor and is traversed by the Route 6 Bridge. There is a 198-slip public marina on the south side of the island, and a variety of shipyards, marinas, boat repair facilities and marine supply businesses are located on the north side.

Vessel access to the area north of Route 6 is through a swing-span bridge, constructed in 1906, which, when open, provides two approximately 95-foot wide passages (one for boats traveling north and the other for boats traveling south). The horizontal clearances of the bridge cannot accommodate the vessels that would be used to support off-shore wind energy development. The international vessels, which will deliver the turbine components to the terminal, are 98-115 feet wide; and the jack-up barges, which will take the constructed turbines to the installation site, are approximately 100 feet wide. MassDEP 2012 at 20. Efforts over the past decade to reconstruct this bridge and provide great horizontal access have been unsuccessful, and existing plans have not moved beyond the conceptual stage. Id. at 47. All of North Terminal and the majority of Pope's Island are and will continue to be inaccessible to the necessary vessels unless and until a new bridge is built.

The Region has tentatively concluded that the bridge access issue alone means that the North Terminal site is infeasible and therefore not a practicable alternative. In addition, use of this site would require the displacement of existing water dependent users through the exercise of eminent domain, requiring the relocation of such users to comparable locations. Id. at 49-50. Similar to some other alternatives discussed above, the Region tentatively agrees that this site is not available in the foreseeable future due to the current presence of water dependent users, and for this additional reason the Region tentatively agrees that this site is not practicable.

While the northern portion of Pope's Island could potentially provide sufficient land for a terminal to support off-shore wind energy development, it is not accessible because of the bridge access issue discussed above. The southern portion of the island is accessible, but it is less than 10 acres in size, and use of additional parcels on the northern portion would be prevented by the presence of U.S. Route 6, which bisects the island. In addition, use of this site for the terminal would require multiple water dependent users to be displaced and relocated to comparable locations. Id. at 48-49. The Region has tentatively determined that these issues render the Pope's Island site impracticable.[15]

4.4.6 Alternative VII – State Pier, New Bedford, Massachusetts: State Pier is a marine industrial terminal located on the west side of lower New Bedford Harbor, south of the Route 6 New Bedford-Fairhaven Bridge. The immediate backland at this site is only 7-8 acres, which is too small to accommodate a terminal to support offshore renewable energy development. MacArthur Drive, to the west, presents a significant road barrier to use of

[15] The Commonwealth also stated it would need to create larger CDFs at these two sites than the one proposed at South Terminal in order to provide sufficient acreage, potentially resulting in greater impacts to the waters of the U.S. However, there is insufficient information in the submission to enable the Region to reach conclusions about whether the resulting aquatic impacts from terminal construction at these sites would be greater or less than what is proposed for South Terminal.

additional parcels to the west. Adjacent land uses to the north and south include several other wharfs and piers which support commercial fishing activities. The State Pier itself is used for many purposes, including ferry operations, cargo offloading and storage operations, cruise ship operations, and as a staging location for emergency vehicles. Use of the State Pier and any of the adjacent parcels (to provide additional backland space) would require the relocation of the existing water dependent users pursuant to 310 C.M.R. 9.36(4). The process of freeing the land would take years; and, according to the Commonwealth, relocation is unlikely to be feasible without the construction of a new marine terminal elsewhere in the Harbor. MassDEP 2012 at 53. Therefore, EPA has tentatively determined that the State Pier site is not a practicable alternative.

4.4.7 Alternative VIII – South Terminal, New Bedford, Massachusetts: South Terminal is located on the west side of lower New Bedford Harbor, just north of the Hurricane Barrier. The proposed facility would be constructed primarily on the site of the former Potomska Mill complex. The main portion of the facility would be comprised of approximately 11 contiguous acres of existing upland and 6.85 acres of additional land created by construction of a CDF in adjacent waters. An additional 8 acres of ancillary upland south of the main portion would be used for wind blade lay-down. In addition, two different configurations of an additional 2.4 acres are under consideration by the Commonwealth. Configuration A would add an additional 1.1acres contiguous to the main portion of the facility, and the remainder would be contiguous to the 8 acres of ancillary parcels to the south. Configuration B would add an additional .75 acres contiguous to the main portion, and 1.65 acres to the west of the 8 acres of ancillary parcels. MassDEP 2012a at 8 and Attachment D, pp. 2-3. The parcels of existing upland that would comprise terminal facility are owned by the New Bedford Redevelopment Authority, the Commonwealth, and several private owners with which the Commonwealth is engaged in negotiations to obtain the necessary property rights. MassDEP 2012a at 8-9. The Commonwealth anticipates completion of those negotiations in the near future and does not anticipate the need to relocate any water dependent users. Id.

There are no vertical or horizontal access issues at the South Terminal site. The entrance to the hurricane barrier just south of the site is 150 feet wide and therefore can accommodate the international vessels (98-115 feet wide) and the jack-up barges (100 feet wide) that will be used during the wind turbine construction process. MassDEP 2012 at 20 and 73. No bridges restrict vertical clearance, and any height restrictions associated with operation of the New Bedford Airport do not extend south of Pope's Island and therefore would not affect this site. Id. at 74; Appendix 27. The substrate located at the base of the dredge footprint consists of materials that are sufficient to provide stable support for jack-up barges. Id. at 74; Appendix 26.

The Commonwealth proposes to fill approximately 0.1 acres of freshwater wetlands, 0.18 acres of salt marsh, 1.94 acres of intertidal habitat, and 4.07 acres of shallow subtidal habitat in order

to construct a CDF adjacent to the existing upland. The CDF would be created by constructing a bulkhead and backfilling the intertidal, shallow subtidal, and saltmarsh areas with clean sand dredged from the proposed access channel. The construction of the CDF in waters of the U.S. is necessary both to ensure that the project site is of sufficient size to accommodate a marine terminal capable of supporting offshore renewable energy development, and to provide an area of sufficient load bearing capacity for assembly and transfer of turbines adjacent to the bulkhead. MassDEP 2012a, Attachment D, pp. 2-3. The Commonwealth provided persuasive information to justify construction of a solid fill structure rather than a pile-supported structure. MassDEP 2012 at 79-85. A pile-supported structure would not be sufficient to support the extremely heavy loads and vibration that will be associated with the construction cranes and the turbine components themselves. Id. The Commonwealth has taken steps to minimize the solid fill by redesigning the structure so that an additional 0.67 acres of shallow subtidal habitat, which the Commonwealth had originally planned to completely fill, will now be incorporated into a pile-supported apron adjacent to the wharf and will be only partially filled with riprap on the bottom. The wharf will provide approximately 1,200 linear feet of berthing space, sufficient to accommodate one international vessel and two jack-up barges at any one time, consistent with one of the siting criteria.

In order to provide vessel access to this site and to mitigate for the alteration of the nearby Gifford Street boat ramp channel and moorings, the Commonwealth proposes to conduct new dredging of up to approximately 21.65 acres of shallow sub-tidal habitat and 8.29 acres of deeper subtidal areas. If necessary to accommodate the draft of vessels that will utilize the terminal, the Commonwealth would also conduct maintenance dredging of up to 15 acres of deeper subtidal areas in the Federal Navigation Project channel. The Commonwealth also proposes to dredge up to 8.76 acres of shallow, near-shore subtidal area to create a confined aquatic disposal cell ("CAD") to allow for disposal of contaminated navigational dredged material. Finally, the Commmonwealth proposes to cap the existing Borrow Pit and CAD 1 with clean dredged material and dispose of contaminated dredged material into CAD cell 2, resulting in 10.8 acres of temporary impacts.

EPA has tentatively determined that the South Terminal site is practicable in light of the basic project purpose, provided that the Commonwealth is able to successfully complete negotiations with property owners in order to obtain control of the terminal site. EPA has further tentatively determined that the South Terminal site represents the LEDPA, based on the tentative determinations discussed above that the other alternatives are either not practicable or are not less environmentally damaging.

5.0 Evaluation of Impacts Related to Water Quality Standards, Toxic Effluent Standards,

Endangered or Threatened Species, and Marine Sanctuaries (40 C.F.R. § 230.10(b))

Section 230.10(b) prohibits discharges which would cause or contribute to violations of state water quality standards developed pursuant to § 303 of the Clean Water Act; violate toxic effluent standards promulgated by EPA under § 307 of the Clean Water Act; jeopardize the continued existence of endangered or threatened species listed under the Endangered Species Act or result in the likelihood of the destruction or adverse modification of designated critical habitat for such species; or violate requirements established to protect any designated marine sanctuaries pursuant to the Marine Protection, Research, and Sanctuaries Act.

5.1 Water Quality Impacts: State water quality standards are comprised of designated uses, numerical and narrative criteria to maintain these uses, and antidegradation provisions to ensure that, among other things, existing water quality and uses be maintained and protected.

Construction of the South Terminal Project will involve completely filling approximately 6.18 acres of waters to create uplands (i.e., confined disposal facility); partially filling approximately 0.67 acres of waters (i.e., riprap scour protection and mitigation areas); and deepening approximately 44.94 acres of waters (i.e., navigation channel dredging and mooring area dredging). There will also be temporary impacts associated with dredging a confined aquatic disposal (CAD) cell and filling several CAD cells.

5.1.1 Water Column Impacts: The activities which have the potential to affect water column quality in New Bedford Harbor during construction include:

- Disturbance, due to 1) dredging of contaminated sediments from the harbor floor and 2) disposal of contaminated sediments into CAD cells, could temporarily cause an increase in toxics, including heavy metals and organic compounds;
- Disturbance, due to dredging, of any sediments from the harbor floor could temporarily cause an increase in suspended solids and turbidity, phosphorus, and a decrease in dissolved oxygen, due to the resuspension of organic matter and nutrients; and disturbance (turbidity) due to CAD cell capping.
- The driving of sheet piles to construct the confined disposal facility will produce locally elevated turbidity levels until their installation is complete due to the unavoidable disturbance of sediments during that work.
- High turbidity water generated by the dewatering of dredged material to be used as fill in upland areas (above Mean High Water) could be discharged directly to the New Bedford Harbor;
- Storm water runoff from excavation, stockpiling and fill areas could cause an increase in suspended solids and turbidity, phosphorus, and toxics, including heavy metals and organic compounds;

- Storm water runoff from construction vehicle washing, maintenance and storage refueling areas could contribute oil, grease and fuel and foaming; and
- If blasting is necessary to remove shallow rock from the navigational channel there would be a short term increase in turbidity in the water column due to the disturbance of sediments and rock.

Specific best management practices measures intended to ensure that the dredging and filling activities will not cause or contribute to water quality standards violations, including criteria exceedances and impairment of uses, have been proposed by the Commonwealth. They include the following:

- Dredging, capping, and disposal of contaminated sediments into CAD cells will occur within partitioned areas to prevent the migration of sediments from the dredging area to the rest of the harbor.
- Control of erosion and migration of excavated, dredged and stockpiled materials through the use of a variety of best management practices designed to maintain material stability, including silt fencing and covering of stockpiled materials.
- Water decanted off dredged material settling basins will be treated by settling and sand filtration or equivalent treatment technology.
- The placement of a silt curtain about the CAD cell during construction to prevent contaminated sediments from migrating beyond the work area.
- Implementation of storm water control measures consistent with EPA's 2012 Construction General Permit for storm water discharges associated with construction activities including the collection and treatment of runoff in the construction zone.

EPA has tentatively determined that the proposed project will not result in water column impacts that would cause or contribute to violations of Massachusetts' water quality standards provided that construction activities are carried out in accordance with the following:

- Storm water management practices consistent with the 2012 Construction General Permit[16] and with the best management practices requirements of 314 C.M.R. § 9.06(6), 310 C.M.R. § 10.05(6)(k) and the Massachusetts Stormwater Handbook; and
- dredging and disposal practices consistent with the Performance Standards in Appendix C.

5.1.2 Habitat, Fishery, and Shellfish Impacts: EPA's water quality

[16] National Pollutant Discharge Elimination System General Permit for Discharges from Construction Activities, effective February 16, 2012.

antidegradation regulation at 40 C.F.R. § 131.12(a)(1) requires that existing water uses be maintained and protected. Massachusetts' water quality standards contain a similar requirement (314 C.M.R. § 4.04).

In the context of the loss of a use due to discharges of dredged or fill material, EPA interprets this provision to be satisfied as long as the discharge does not result in significant degradation of the aquatic ecosystem as defined under 40 C.F.R. § 230.10(c)[17]. In this case, there will be a permanent loss of nearly seven acres of aquatic habitat as a result of the construction of the South Terminal confined disposal facility ("CDF"), as well as temporary and permanent impacts to 53.7 acres of intertidal and subtidal habitat, and the loss of over 9 million shellfish, due to dredging associated with the project. As discussed in section 6 below, EPA has tentatively determined that these impacts would not cause or contribute to significant degradation of the aquatic ecosystem in violation of § 230.10(c), provided that adequate compensatory mitigation is implemented.[18] Therefore, the project would not violate the federal and state antidegradation provisions.

Based on the foregoing, EPA has tentatively determined that the proposed project will not cause or contribute to violations of water quality standards.[19]

5.2 Toxic Effluent Standards: EPA has not promulgated any Toxic Effluent Standards pursuant to § 307 of the Clean Water Act that would be applicable to this project; hence discharges associated with this proposed project will not violate toxic effluent standards. The potential for water quality impacts associated with potentially toxic chemicals such as PCBs, PAHs, metals, etc., have been evaluated to ensure that state water quality standards will be met. See Section 5.1 above.

5.3 Endangered and Threatened Species: EPA has determined that the endangered roseate tern (*Sterna dougallii*) may be in the project area. EPA engaged in informal consultation with the U.S. Fish and Wildlife Service and has completed a final Biological Assessment (BA) of the potential effects of the construction and long-term operation of the project on the roseate tern, attached as Appendix K. For the reasons discussed in the final BA, EPA has concluded that

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[17] EPA, *Questions & Answers on: Antidegradation*, page 5, 1985.

[18] As discussed in section 6 below, EPA's conclusion regarding significant degradation under 40 C.F.R. § 230.10(c) also takes into account the secondary and cumulative impacts.

[19] MassDEP's Office of Operations and Environmental Compliance reached a similar conclusion as discussed in a June 18, 2012 memorandum to EPA provided that the performance measures outlined in that memorandum and its Appendix A are adhered to.

the proposed NBH-South Terminal project may affect the roseate tern, but is unlikely to adversely affect the species. EPA will be transmitting the final Biological Assessment to FWS and will request concurrence from FWS prior to making a final decision on the project.

EPA has also identified the endangered Atlantic sturgeon (*Acipenser oxyrinchus oxyrincus*) as a species which has the potential to occur in the area and may be adversely affected by the proposed action. On June 19, 2012, National Marine Fisheries Service informed EPA that, because Atlantic sturgeon undertake large-scale marine migrations and will forage anywhere any available habitat exists, this species may be present in the vicinity of New Bedford Harbor. EPA is currently seeking additional technical assistance from NMFS and is in pre-consultation analysis with it. In that process, EPA and NMFS are discussing time of year restrictions, project sequencing options and mitigative dredging techniques which could greatly lessen or eliminate any potential adverse effects to the species. Prior to the issuance of a final decision on the impacts of the project, EPA will enter informal consultation with NMFS, which will include preparation of a Biological Assessment, and will seek concurrence with EPA's findings regarding the potential impacts to the sturgeon from the construction and operation of the project. See Appendix I for additional information.

5.4 Marine Sanctuaries: There are no designated marine sanctuaries in or directly adjacent to the South Terminal project area.

6.0 Evaluation of Significance of Impacts, Including Secondary and Cumulative Impacts, to Waters of the U.S. (40 C.F.R. § 230.10(c) (including factual determinations under 40 C.F.R. §§ 230.11 and 230.20 - 230.77)

Section 230.10(c) prohibits discharges which would cause or contribute to significant degradation of waters of the U.S. Significant degradation may include individual or cumulative impacts to human health and welfare; fish and wildlife; ecosystem diversity, productivity and stability; and recreational, aesthetic or economic values. Findings are to be based on the factors and considerations set forth in subparts B through G of the § 404(b)(1) guidelines.

6.1 Physical and Chemical Characteristics of the Aquatic Ecosystem (Subpart C)

6.1.1 Substrate Impacts: The existing benthic substrate within the South Terminal project area is typically composed of coarser sandy sub-soils overlain by a layer of finer Polychlorinated Biphenyl ("PCB") and heavy metal contaminated sediments. As part of this project, benthic substrates will be filled to become upland; filled to become a shallower aquatic ecosystem (mitigation); filled in conjunction with CAD cell capping and dredged material disposal; dredged and armored; or just dredged.

All totaled, approximately 0.18 acres of salt marsh, 0.1 acres of freshwater wetlands, and approximately 6.67 acres of intertidal and sub-tidal benthic habitat will be completely filled as part of the construction of the South Terminal/Confined Disposal Facility. Another 0.67 acres of sub-tidal benthic habitat will be dredged and armored as part of this work.

In addition, filling will occur in conjunction with creating and/or enhancing 4.47 acres of intertidal habitat, 22.73 acres of winter flounder spawning habitat, and 14.91 acres of near-shore, shallow, sub-tidal habitat. Approximately 10.8 acres will be affected by capping two existing CAD cells and disposing of contaminated dredged material into a third existing CAD cell. All of these impacts will be temporary and a significant improvement in sediment quality by isolating the contaminated sediments from the environment.

Finally, approximately 53.7 acres of sub-tidal benthic habitat will be dredged and deepened as part of plans to maintenance dredge portions of the existing New Bedford Harbor Federal Navigation Project ("FNP"), to provide adequate navigational access to the South Terminal site, to realign the Gifford Street Boat Ramp Channel, to deepen areas within the North and South Mooring Areas, and to construct a confined aquatic disposal ("CAD") cell (into which contaminated navigational dredged material will be placed).

6.1.2 Suspended Particulate/Turbidity Impacts: In-water construction activities (i.e., filling and dredging) associated with the South Terminal Project will result in temporary suspended particulate/turbidity impacts to adjacent areas. These turbidity impacts could temporarily affect light penetration and chemical processes within adjacent benthic habitat area and result in burial of adjacent benthic areas. The Commonwealth has proposed to sequence construction activities and to maintain adequate sedimentation/erosion controls during the construction phase of this project in order to minimize turbidity impacts into adjacent waters of the United States, including jurisdictional wetlands. With adequate sedimentation/erosion controls installed and maintained, EPA believes that turbidity impacts associated with the South Terminal Project will be short-term and minor.

6.1.3 Water Column Impacts: Although the dredging and filling activities associated with the South Terminal project have the potential to impact water quality in the project vicinity, EPA has tentatively determined that such impacts can be minimized with the diligent application of best management practices, such as those proposed by the Commonwealth and discussed above in Section 5.1.

6.1.4 Alteration of Current Patterns and Water Circulation: The proposed construction of the South Terminal/Confined Disposal Facility as well as the dredging of associated navigational channels will affect current patterns and water circulation. The new solid fill areas and deeper navigation channels will alter current patterns to adjacent areas. Circulation

will improve to some localized areas and be obstructed to others. Due to the presence of the New Bedford Hurricane Barrier directly downriver of the South Terminal project area, EPA believes that this project will have limited impacts on wider current and water circulation patterns.

6.1.5 Alteration of Normal Water Fluctuations/Hydroperiod: The proposed construction of the South Terminal/Confined Disposal Facility as well as the dredging of associated navigational channels could affect normal water fluctuations. The new solid fill areas and deeper navigation may improve or obstruct water fluctuations/flushing of localized adjacent areas. Due to the presence of the New Bedford Hurricane Barrier directly downriver of the South Terminal project area, EPA believes that these water fluctuations/flushing impacts will be minor and limited to the project area and adjacent properties.

6.1.6 Alteration of Salinity Gradients: No alteration of salinity gradients is expected as a result of the South Terminal Project.

6.2 Biological Characteristics of the Aquatic Ecosystem (Subpart D)

6.2.1 Effect on Threatened/Endangered Species: EPA is currently in informal consultation with FWS regarding the roseate tern (see Section 5.3 above) and is seeking FWS's concurrence with EPA's determination that the proposed NBH-South Terminal project may affect the roseate tern, but is unlikely to adversely affect the species. EPA has recently begun discussions with NMFS to determine whether there would be potential adverse effects from the proposed project on the Atlantic sturgeon. Prior to the issuance of a final decision on the impacts of the project, EPA will enter informal consultation with NMFS, which will include preparation of a Biological Assessment, and will seek concurrence with EPA's findings regarding the potential impacts to the Atlantic sturgeon from the construction and operation of the project. See Appendix I and Appendix K for additional information.

6.2.2 Effect on Fish, Crustaceans, Mollusks, and Other Aquatic Organisms in the Food Web: The South Terminal project area serves as habitat for a variety of benthic infaunal species (worms and shellfish), benthic epifaunal species (crustaceans, gastropods, and mollusks), and plankton species that serve as prey species for fish species and other consumers in the food web (for more details see Section 3.2 above). New Bedford Harbor substrates also provide spawning and nursery habitat for economically-important fishery species such as winter flounder (*Pseudopleuronectes americanus)*, windowpane flounder (*Scopthalmus aquosus)*, scup (*Stenotomus chrysops)*, and black sea bass (*Centropristus striata).* (For more details see Appendix H).

As part of the South Terminal/Confined Disposal Facility Project approximately 0.18 acres of salt marsh and 6.67 acres of intertidal and sub-tidal benthic habitat will be permanently impacted

by filling. Another approximately 53 acres of subtidal habitat will be temporarily impacted by the placement of fill. This total includes fill placed as part of the mitigation plan to create and enhance winter flounder spawning habitat, intertidal area and shallow subtidal habitat. It also includes acreage associated with the capping of CAD cell 1 and the "Borrow Pit" and the placement of contaminated dredged material into CAD cell 2. An additional 53.7 acres of sub-tidal benthic habitat will be deepened associated with the dredging of adjacent navigation channels and mooring areas. These various dredging and filling activities will result in either the removal (by dredging) or burial (by filling) of many of the benthic prey species. The benthic infaunal community will be removed with the dredge sediment or buried, so polychaetes, bivalves and burrowing amphipods will be lost within the footprint of proposed work. Epibenthic invertebrates with limited mobility (snails, sea stars, sand dollars, etc.) will also suffer significant mortality from the dredging. More mobile epibenthic invertebrates (crabs, lobsters, shrimp, etc.) will likely suffer some mortality as well, but their mobility will allow some individuals to leave or avoid the construction area.

Potential impacts to winter flounder and shellfish populations should be specifically noted. Regionally the number of winter flounder has greatly reduced in recent years. Winter flounder, which typically spawn in water depths between 0.3 to 4.5 meters deep, will be disproportionately impacted by the proposed South Terminal Project. The filling of subtidal areas and the deepening of navigational channels to below preferred spawning depths will result in the permanent loss of approximately 20.21 acres of winter flounder spawning and nursery habitat. EPA views this potential loss of habitat as critical and as such, these impacts need to be minimized and mitigated. In addition, the Commonwealth has estimated that the filling and dredging activities associated with the South Terminal Project will impact 9-10 million shellfish. All waters upstream of the New Bedford Harbor Hurricane Barrier are part of the Fish Closure Area #1. Fish, lobsters, and shellfish have accumulated high levels of PCBs in their tissues and as a result are not safe for human consumption. Thus, any consideration of relaying/transferring these shellfish to beds that are open has been eliminated. One of the preferred prey items of winter flounder are clam siphons, so the loss of this large number of shellfish represents a potential impact to the foraging opportunities for winter flounder. EPA views the potential loss of this quantity of shellfish to be substantial, and these impacts need to be minimized and mitigated with an appropriate shellfish reseeding program.

Overall, filling and dredging activities will generally lead to short term negative impacts to the local food web. Over time, less mobile benthic species (worms, gastropods, mollusks, etc.) will recolonize appropriate portions of the construction area. More mobile benthic species (crabs, lobsters, shrimp, etc.) as well as juvenile and adult fish will leave the construction area and forage in adjacent unimpacted areas. As soon as the construction ceases, these more mobile creatures will return to the area. In cases where the South Terminal Project will have disproportionate impacts on winter flounder or shellfish habitat, EPA will require minimization and appropriate mitigation to avoid significant impacts.

6.2.3 Effect on other Wildlife (Mammals, Birds, Reptiles, and Amphibians): Impacts from the South Terminal Project on other wildlife species, such as to mammals, birds, reptiles, and amphibians are expected to be minor and short-term. Since these species are more mobile, they will be able to avoid most of the impacts from this project. They will be able to forage and/or spawn in adjacent unimpacted habitat areas.

6.3 Potential Impacts on Special Aquatic Sites (Subpart E)

6.3.1 Sanctuaries and Refuges: There are no designated sanctuaries and/or refuges within the South Terminal project area.

6.3.2 Wetlands: A total of 0.18 acres of salt marsh wetlands will be permanently filled as part of the creation of the confined disposal facility/marine terminal. Also, approximately 0.88 acres of salt marsh may be adversely affected by secondary impacts from the construction and operation of the facility. In addition, one small freshwater wetland on Parcel 49 of the site, approximately 0.1 acre in area, will be filled.[20]

Tidal wetlands: Federally jurisdictional tidal wetlands at the project location consist of an emergent salt marsh system, situated directly within and adjacent to the proposed location of the CDF. This area was delineated during the June 28, 2012 site investigation, and a report submitted to EPA on July 11, 2012 (MassDEP 2012c). Due to the late date of the submission of this report, EPA has not had adequate time to complete its review and confirm revised areal estimates of the salt marsh areas, including a newly identified south salt marsh area (Salt Marsh 2). Areal estimates in the recent report indicate a smaller area of salt marsh present at Salt Marsh 1 than had been previously described by the Commonwealth. For the purposes of the draft determination, the previously submitted estimate of the areal extent of Salt Marsh 1 is being used for assessment of impacts, combined with the areal estimate for the newly identified Salt Marsh 2 presented in the July 11, 2012 report. Areal estimates will be revised after EPA has completed review and confirmation of the new wetland delineation. For the purposes of the draft determination, the salt marsh resources present are estimated to be approximately 1.06 acres in area. Soil sampling indicates that the wetland soils are contaminated with PCBs and metals

[20] On July 12, 2012, the Commonwealth informed EPA that there is a 0.4 acre freshwater wetland on one of the properties that may become incorporated into the terminal site. MassDEP 2012d. There is insufficient information available for EPA to determine the potential impacts of filling this wetland or appropriate mitigation at this time. EPA will evaluate this issue further once the Commonwealth determines whether the parcel will be incorporated into the site, and will ensure appropriate mitigation is developed consistent with the requirements discussed herein before making a final decision on the project.

(MassDEP 2012, Appendix 36, Tables 2A and 2E). Wetland vegetation present includes *Spartina alternaflora*, and trace amounts of *Salicornia virginiana*.

Functions and values associated with this system include groundwater discharge, flood flow alteration, fish and shellfish habitat, shoreline stabilization, and wildlife habitat.

Freshwater wetlands: A site investigation to characterize freshwater resources was conducted on June 28, 2012, and a report submitted to EPA on July 11, 2012. According to the report, fresh water resources are very limited at the project location, comprised of one small vegetated wetland located north of the existing paved area on Parcel 49, approximately 4,600 square feet (0.1 acre) in area. [21] The proposed project will result in filling this wetland.

This disturbed wetland has formed in a depressional area within the existing fill on site. Evidence of hydrology supporting this wetland is present. Soils consist of significantly disturbed urban fill. While no sampling data has been provided characterizing soils within this wetland, soil sampling conducted in the general vicinity of the wetland indicates that the wetland soils are likely to be contaminated with PCBs and metals (MassDEP 2012, Appendix 39, Table 1). Wetland vegetation consists primarily of *Phragmites australis* (common reed), an invasive species.

Functions and values associated with this wetland include groundwater recharge/discharge, floodflow alteration, sediment/toxicant retention, and wildlife habitat. However, these wetland functions and values are limited due to the small size and degraded nature of the wetland system and the surrounding landscape.

Wetland mitigation: The Commonwealth submitted a Conceptual Mitigation Plan to provide compensatory mitigation for unavoidable direct and secondary impacts to the various resources affected by the project. MassDEP 2012 at 313-339 and referenced appendices. The Conceptual Mitigation Plan proposes to provide compensatory mitigation for the project's impacts to wetlands through wetland restoration and enhancement in the vicinity of the existing tidal tributary adjacent to the Hurricane Barrier (the Successional Marsh mitigation work). In addition, a pedestrian/bike path is proposed adjacent to the wetland restoration area, to provide public access and some educational benefit.

The existing tidal tributary currently provides few ecological services, and is degraded by sediments contaminated with PCBs, SVOCs and metals, as well as the presence of invasive plant

[21] As noted in footnote 7 above, EPA considers this wetland to be adjacent to a traditional navigable water and therefore subject to federal jurisdiction.

species and trash. The proposed mitigation will entail the removal of contaminated sediments and replacement with clean substrate from the CAD cell #3 excavation. A new low flow channel will be constructed to maintain transport of tidal flow and storm water.[22] The rip rap and fill on the western side of the channel will be removed, and the area regraded to support low marsh, high marsh and transitional tidal wetland vegetation. These areas will be planted with *Spartina alternaflora* (low marsh); *Spartina patens, Solidago sempervirens, Iva frutescens, Morella pensylvanica, Hibiscus moschuetos* (high marsh); and *Panicum virgatum , Iva frutescens, Ammophila brevigulata, and Prunus maritima* (transitional zone).

The Commonwealth also proposes to install a hooded catch basin or a trash screen at a local storm water outfall to reduce trash inflow from that source. EPA recommends that both improvements be installed. While the trash screen would be effective at removing larger trash and debris, the hooded catch basin would have the added benefit of reducing the potential discharge of oil and other floatable contaminants in the storm water. It is important that both of these infrastructure improvements be regularly maintained to assure their effectiveness.

Pending submission and review of additional information, EPA has tentatively concluded that the proposed wetland restoration and enhancement project and infrastructure improvements will provide adequate compensatory mitigation to address the lost or impaired functions and values of the 0.1 acre freshwater wetland and 0.18 acre salt marsh areas to be filled by the proposed project. It will result in the removal of contaminated sediments and a potential source of pollutants. It will result in the removal of fill and rip rap, replacing it and restoring the area with natural wetland substrates. It will also remove invasive plant species and replace them with a more diverse and desirable assemblage of native species.

Wetlands functions and values that would be replaced or enhanced include: groundwater discharge; floodflow alteration; fish and shellfish habitat; sediment/toxicant retention; floodflow alteration; shoreline stabilization; and, enhanced wildlife habitat. Additional wetland functions and values provided by the wetland restoration and enhancement project include production export and recreational and educational components.

Lastly, the proposed infrastructure improvements will contribute to improved water quality, and help prevent degradation of the restoration area.

As noted above, the Commonwealth's most recent reports regarding on-site wetland resources

[22] The Corps of Engineers is reviewing the channel design to assure there will be no adverse effect on the operation of the Hurricane Barrier. EPA will coordinate with the Corps to make sure any concerns are addressed before EPA's final decision on the project.

and impacts were submitted to EPA on July 11, 2012 (MassDEP 2012c) and July 12, 2012 (MassDEP 2012d), leaving inadequate time for complete review prior to the issuance of the draft determination. EPA will conduct additional review of these reports and any required supplemental information before making a final decision on the project, which may result in the need for modifications to the proposed Compensatory Mitigation Plan, including the Invasive Species Management Plan. Also, based on these reviews, additional monitoring of the site's existing salt marsh areas may be necessary to ensure that no secondary impacts to these resources are occurring as a result of the construction and operation of the facility, and to inform the implementation of any necessary corrective actions.

6.3.3 Mudflats: The amount of existing mudflat areas within the South Terminal project area could not be verified based upon the documentation within the Commonwealth's subject application (MassDEP 2012). However, EPA assumes that a small portion of the existing intertidal shoreline areas include unvegetated intertidal mudflats. A total of 1.94 acres of intertidal shoreline will be impacted as part of the construction of the South Terminal Project. Intertidal shoreline areas will be permanently filled as part of the construction of the South Terminal/Confined Disposal Facility. Intertidal shorelines and mudflats typically provide similar functions and values (benthic habitat, fish foraging habitat, etc.). Therefore, EPA believes that the Commonwealth's intertidal shoreline mitigation proposals (see Section 7.3 below) will create and/or enhance functions and values similar to mudflats.

6.3.4 Vegetated Shallows: EPA is unaware of any eelgrass beds or other vegetated shallow areas within the South Terminal project area.

6.3.5 Coral Reefs: There are no coral reefs within the South Terminal project area.

6.3.6 Riffle and Pool Complexes: The South Terminal project area is located within an estuarine portion of New Bedford Harbor. Therefore, there are no riffle and pool complexes within the project area.

6.4 Human Use Characteristics (Subpart F)

6.4.1 Effects on Municipal and Private Water Supplies: There are no local water supply wells or reservoirs located within the South Terminal project area.

6.4.2 Recreational and Commercial Fisheries Impacts: According to the New Bedford Harbor Development Commission, the New Bedford Commercial Fishing Fleet currently is comprised of approximately 500 vessels, 120 of which are transient vessels. Due to current fishing restrictions, commercial fishing vessels average 15 trips per year. Therefore, the

New Bedford Commercial Fishing Fleet averages around 7,500 trips per year (MassDEP 2012 at 275).

In addition, there are approximately 1,500 recreational and charter vessels in New Bedford Harbor. If each of these vessels takes a trip once every other week between May and October, each vessel would average 12 trips per year and there would be a total of approximately 18,000 trips per year for the New Bedford recreational fleet (MassDEP 2012 at 274).

All of the dredging and filling activities associated with the construction of the South Terminal Project will take place within the Lower New Bedford Harbor, upriver of the New Bedford Harbor Hurricane Barrier. All waters upstream of the New Bedford Harbor Hurricane Barrier are part of EPA's Fish Closure Area #1. Fish, lobsters, and shellfish caught in this area are not safe for human consumption. Therefore, construction within this area will not negatively affect existing recreational and commercial fishing areas within the Lower New Bedford Harbor. In addition, the frequency of construction vessel traffic to and from the South Terminal site through the New Bedford Harbor Hurricane Barrier is expected to be minor and to not substantially affect navigational access to the port.

Some mitigation work associated with the South Terminal Project will occur outside of the New Bedford Hurricane Barrier (see Section 7.3). This proposed work includes filling associated with the creation of the 22.73 acre winter flounder spawning habitat and the 4.47 acre intertidal shoreline area as well as the enhancement of the 14.91 acre near-shore, shallow, sub-tidal area; and the reseeding of shellfish. These mitigative measures will be located in areas without substantial fisheries resources outside of the main navigation channels or in areas temporarily closed to shellfishing. These mitigation projects should not substantially affect recreational or commercial fisheries users.

6.4.3 Effects on Water Related Recreation: The construction of the South Terminal/Confined Disposal Facility will involve filling a portion of the existing Gifford Street channel. In addition, the dredging of the navigational channel to access South Terminal will displace some existing boat moorings. The project design for the South Terminal Project includes plans to realign the channel accessing the Gifford Street boat ramp and to dredge two subtidal areas in order to create/enhance adjacent recreational mooring areas. This work will have a long-term positive impact to local recreational users.

The Gifford Street boat ramp parcel has been designated as one of the ancillary properties for South Terminal. This site will be actively used as a lay down area for storing wind turbine components, when the South Terminal facility is supporting the construction of offshore wind turbine projects. The Gifford Street boat ramp will have limited access during these times. However, when the South Terminal facility is used as a more conventional marine terminal, the

Gifford Street boat ramp will be reopened for full recreational boating access.

Construction vessel traffic to and from the South Terminal site through the New Bedford Harbor Hurricane Barrier is expected to be minor and to not substantially affect general recreational patterns in this area. The Commonwealth has indicated that New Bedford Harbor is generally considered to be severely under-utilized by boat traffic (MassDEP 2012 at 276).

6.4.4 Aesthetic Impacts: During the construction phase of the South Terminal Project, construction equipment will have a short-term negative aesthetic impact on the project area. Over the course of this project, the South Terminal project site will be converted from a demolished mill property to an active marine terminal, similar in appearance to adjacent waterfront properties. Whether these aesthetic changes are positive or negative impacts is a subjective judgment.

6.4.5 Effects on Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves: The New Bedford Whaling National Historical Park is a collection of upland and waterfront properties that abuts the South Terminal project area. Principal waterfront parcels associated the national historical park include the Wharfinger Building on Pier 3; the Tonnessen Park, the Coast Guard Park, and the Schooner Ernestina on or adjacent to the State Pier; as well as the Bourne Counting House adjacent to Merrill's (Homer's) Wharf. All of these properties are located at the north end of the South Terminal project area. Construction proposed for areas adjacent to these properties is limited to maintenance dredging of the New Bedford Harbor Federal Navigation Project ("FNP"). This work is not expected to have a substantial impact on the New Bedford Whaling National Historic Park.

6.5 Secondary Impacts on Aquatic Resources (40 C.F.R. § 230.11)

Secondary impacts are effects on an aquatic ecosystem that are associated with a discharge of dredged or fill materials, but do not result from the actual placement of the dredged or fill material (40 C.F.R. § 230.11(h)). A number of potential secondary impacts are discussed below.

6.5.1 Storm Water Runoff: Secondary impacts from storm water runoff associated with the construction of the South Terminal Project include the following:

- Storm water runoff from excavation, stockpiling and fill areas could cause an increase in suspended solids and turbidity, phosphorus, and toxics, including heavy metals and organic compounds.

- Storm water runoff from construction vehicle washing, maintenance and storage refueling areas could contribute oil, grease and fuel and foaming.

The Commonwealth has proposed to manage construction consistent with requirements in EPA's 2012 Construction Storm Water General Permit and the Massachusetts Stormwater Handbook, as described in Section 5.1 above. Specific measures proposed to minimize water quality impacts due to secondary impacts include:

- Storm water in the project area, which currently infiltrates and flows overland (sheet flow) towards the harbor will be temporarily collected in temporary detention basins to remove suspended solids. Detention basins will allow infiltration, with overflow discharging to the harbor.

- Existing storm water drainage pipes, which carry street runoff and limited runoff from the project area, will be modified, strengthened and/or replaced to ensure the continued function of existing storm water infrastructure during and after construction.

Since the design for the terminal, for its initial purpose of an offshore renewable energy support terminal, anticipates that 90% of the completed terminal will be covered with crushed stone or other pervious cover, EPA expects little or no increase in storm water runoff volume following construction. Nevertheless, compliance with design standards included in the Massachusetts Stormwater Handbook, as required by 310 C.M.R. 10.00, will ensure that best management practice technologies are part of the storm water management system for whatever volume of storm water is generated by this facility.

If the terminal is repurposed at a later date, re-design of the site with additional paved areas or buildings will be subject to usual state and local oversight and permitting.

6.5.2 Dredging: The largest quantity of secondary impacts will result from the proposed dredging associated with the construction of South Terminal. As proposed, 53.7 acres of seafloor will be disturbed by dredging. Over 7 acres of winter flounder spawning habitat will be eliminated by deepening the seafloor beyond their preferred spawning depths. Another 8.46 acres of winter flounder spawning habitat will be dredged and routinely impacted by tug and vessel traffic at the terminal. The vast majority (>75%) of the projected shellfish impacts will occur within the dredge footprint. The replacement of these lost resources is discussed in detail in the Compensatory Mitigation section of this document, Section 7.3.

In addition to habitat loss, dredging has the potential to create adverse impacts on water quality and associated effects from elevated turbidity on fish benthic species. To minimize these impacts, the Commonwealth has proposed performance standards consistent with its 401 Water Quality Certification regulations for dredging (Appendix A of MassDEP's June 18, 2012 ARARs letter). Among other things, these performance standards provide for the use of protective measures such as silt curtains, and the "environmental" bucket on the dredge to minimize water quality impacts. They also establish turbidity levels that must be satisfied. Based on prior dredging conducted in this system using similar control technologies, total

suspended solids (TSS) concentrations downstream and outside of the silt curtains were generally below 50 mg/l, and corresponding turbidity measurements were approximately 20 NTUs. Massachusetts' performance standards allow incremental changes in turbidity levels compared to background conditions. Both the performance standards and actual data from prior dredging projects within this system produced TSS concentrations well below what could be considered an acute threshold. Larval river herring may well be the most sensitive life stage of the most sensitive species to suspended sediment exposure. In laboratory experiments, larval herring did not experience any significant mortality after a 16 hour exposure to 200 mg/l of suspended sediment (Griffin et al., 2012). This magnitude of exposure and duration is likely greater than anything they could be exposed to in New Bedford Inner Harbor, so EPA believes that dredging with the aforementioned control techniques can be done with limited impacts to the water column. Monitoring will be conducted during construction to ensure that the Commonwealth's dredging performance standards are met.

6.5.3 Proliferation of Invasive Species: The construction of this marine terminal will result in the placement of new solid fill within the marine environment. The bulkhead of the terminal and the numerous pilings all represent new hard substrate that will over time support marine growth. International vessels represent an important vector for the spread of non-native or invasive species (Keller et al., 2011). Non-native species will be carried in ballast water, and can also be transported on the hull and the ship superstructure (Keller et al., 2011). Even though the Commonwealth has indicated that the international vessels are unlikely to need to carry ballast and no ballast water discharges will be allowed in the harbor, the potential for transport on the ship structure itself combined with new hard substrate at the terminal site represents an elevated risk of the spread of invasive species. To minimize this risk, EPA is proposing to require the Commonwealth to conduct an annual survey of the bulkhead and a subset of the pilings for the presence of non-native species. If a new invasive species (a species that has not been previously documented in New England) is found during one of the surveys, the Commonwealth would be required to consult the necessary experts on the new organism to determine the ecological risk posed by the species and to devise a control plan. Assuming that the new introduced species poses an ecological risk and the control plan is adequate, the Commonwealth would be required to implement the plan. Subsequently, the monitoring frequency would be increased/adjusted to assess the success of the control plan.

In addition, there is a potential for invasive species to intrude into the successional marsh compensatory mitigation area. EPA has reviewed the Commonwealth's proposed Invasive Species Management Plan ("ISMP") (MassDEP 2012a, Attachment P), and believes that a modified ISMP, in conjunction with the requirements of the Compensatory Mitigation Plan described in Section 7.3, would be adequate to control the spread of invasive plant populations within the proposed wetland restoration area that could prevent successful mitigation of impacts to wetlands. Such modified ISMP must be incorporated as part the Commonwealth's Compensatory Mitigation Plan, which will be a condition of EPA's authorization.

6.5.4 Vessel Related Impacts: EPA believes that the vessels that will be involved in either construction or use of this facility have the potential to cause a variety of secondary impacts on aquatic resources:

Ballast water intake: The Commonwealth projects that the offshore wind development project anticipated to be the first user of the marine terminal will receive 26 international vessels within a 12 month period delivering components for wind turbine construction (MassDEP 2012). After offloading, these vessels will take on water from New Bedford Inner Harbor to use as ballast to stabilize the ship for the return trip across the Atlantic Ocean. The uptake of ballast water results in the entrainment of fish eggs and larvae associated with that volume of water. The Commonwealth estimates that each vessel will take on between 200,000 and 300,000 gallons of water for ballast (MassDEP 2012b). This would result in an annual removal of between 5,200,000 and 7,800,000 gallons per year. This volume of water represents less than 1% of the total volume of New Bedford Inner Harbor and thus likely represents a negligible potential impact to planktonic larvae and eggs within New Bedford Inner Harbor.

Discharge of bilge water: Large commercial vessels routinely carry bilge water, which is generally contaminated with a variety of contaminants including oil, degreasers and other cleaners. The Commonwealth has stated that no bilge water will be discharged from vessels docked at the terminal (MassDEP 2012). The Commonwealth states that if bilge water needs to be offloaded, it will be safely transferred to tanker trucks of licensed hazardous waste handlers (MassDEP 2012). Thus, EPA believes this represents a negligible potential secondary impact.

Increased boating traffic: Section 6.5.6.2 of the Commonwealth's January 2012 submission (MassDEP 2012) provides a vessel traffic analysis for existing and proposed maritime uses within New Bedford Harbor. This vessel traffic analysis documents that currently there are approximately 30,555 trips in and out of New Bedford Harbor per year. The main navigation users of New Bedford Harbor include recreational and charter vessels (18,000 trips per year), commercial fishing vessel fleet (7,500 trips per year), harbor work boats (2,000 trips per year), Government vessels (1,500 trips per year), and ferry ships (1,300 trips per year). Post-construction the South Terminal will likely add around 22 cargo ship trips and 65 jack-up barge trips per year when the facility is used to support off-shore wind energy projects and around three cargo vessel trips per week when the facility is used as a marine terminal. The addition of these 87 and 156 trips constitute a 0.28% and 0.5% increase in marine traffic entering and leaving New Bedford Harbor. The Commonwealth indicates that New Bedford Harbor is generally considered a severely under-utilized harbor. Therefore, EPA believes that the proposed increase in boating traffic associated with the South Terminal Project represents a negligible secondary impact.

Interference with other adjacent boating users: The proposed South Terminal project area is adjacent to the Gifford Street boat ramp. This boat ramp serves as an access point for trailered recreational vessels, and a number of recreational boats are moored in this general area. During

the construction of the South Terminal Project and when the facility is used to support off-shore wind energy projects, use of the Gifford Street boat ramp will be greatly curtailed. The Gifford Street boat ramp site has been identified as an ancillary part of the overall South Terminal Project. Wind turbine components such as windmill blades will be stored on this parcel. The Commonwealth has designed the South Terminal Project to include a realignment of the Gifford Street Navigation Channel as well as improvement dredging of adjacent mooring areas. This work will allow recreational crafts to navigate around commercial vessels moored at the South Terminal facility (MassDEP 2012). When the South Terminal facility converts to a normal marine cargo terminal, use of the Gifford Street boat ramp will be restored. Based upon this information, EPA believes that the interference with other adjacent boating users associated with the South Terminal Project will be a negligible secondary impact.

Increase in oil spill risk: Section 6.5.6.1 of the Commonwealth's January 2012 submission package (MassDEP 2012) provides an oil spill analysis for existing and proposed maritime uses within New Bedford Harbor and for regional navigation networks. Like the vessel traffic analysis discussed above, the oil spill analysis is principally based upon the number of trips made by various classes of vessels. However, the different classes of vessel are weighted differently using a "gallons of petroleum exposure" ("GPE") measure. The GPE measure approximates the total volume of petroleum that could be released at one time for a specific vessel. Along this line, vessels will with larger petroleum tanks have a larger GPE measure. The Commonwealth's oil spill analysis documents that the current New Bedford Harbor Oil Spill Threat is 1,777,039,500 GPE. The vessel classes which contribute most to the oil spill threat include large non-tank vessels (1,725,000,000 GPE), oil tankers and tank barges (43,250,000 GPE), and the commercial fishing fleet (7,500,000 GPE). When the South Terminal facility is used to support off-shore wind energy projects, approximately 2,787,500 GPE will be added to the oil spill threat [(22 annual cargo vessel trips X 75,000 gallons per vessel [or 1,650,000 GPE]) + (65 annual jack-up barge (via tug) trips X 17,500 gallons per tug [1,137,500 GPE])]. This will result in a 0.156% increase in the New Bedford Harbor oil spill risk. When the facility is used as a marine terminal approximately 11,700,000 GPE will be added to the oil spill threat [156 annual cargo vessel trips X 75,000 gallons per vessel]. This will result in a 0.65% in the New Bedford Harbor oil spill risk. Similar increases in oil spill risks are expected to regional navigation networks transited by these vessels. Based upon the small scope of potential increases in oil spill risk over existing conditions, EPA believes that the South Terminal Project will have a negligible secondary impact on oil spill risk.

6.6 Cumulative Impacts on the Aquatic Ecosystem (40 C.F.R. § 230.11(g)):

Cumulative impacts are the changes in an aquatic ecosystem that are attributable to the collective effect of a number of individual discharges of dredged or fill material. Although the impact of a particular discharge may constitute a minor change in itself, the cumulative effect of numerous such piecemeal changes can result in a major impairment of the water resources and interfere with the productivity and water quality of existing aquatic ecosystems.

In evaluating potential cumulative impacts from the South Terminal Project on the aquatic ecosystem, EPA concentrated its review on past and potential impacts to the Upper and Lower New Bedford Harbor from discharges of dredged and fill material ("filling") that have occurred in these areas since 1990 as well as those likely to occur in the foreseeable future. In conducting this evaluation, we reviewed projects associated with the New Bedford Harbor Superfund Project and associated phases of the State Enhanced Remedy, as well as public and private fill projects authorized by the U.S. Army Corps of Engineers as part of its Section 404 permitting process.

6.6.1 New Bedford Harbor Superfund Project: The 1998 Record of Decision ("ROD") defined a selected clean-up remedy for Polychlorinated Biphenyl ("PCB") contaminated sediment within the Upper and Lower New Bedford Harbor areas and an interim remedy for two areas of localized contamination in Outer New Bedford Harbor, south of the New Bedford Hurricane Barrier. The 1998 ROD identified cleanup levels for the harbor areas and discussed disposal options to permanently isolate the contaminated sediment from human and environmental receptors. The preferred disposal alternative recommended in the 1998 ROD involves the construction of four confined disposal facilities ("CDF"). A total of three CDFs (CDFs A-C) were proposed in New Bedford Upper Harbor and one CDF (CDF D) was proposed in New Bedford Lower Harbor. These CDFs would be constructed by creating enclosed containment cells and filling portions of New Bedford Harbor. PCB-contaminated sediment would be permanently isolated within these containment cells and appropriately capped. Based upon the conceptual CDF design drawings in the 1998 ROD, the construction of the four proposed CDFs would have filled at least 52 acres of New Bedford Harbor (CDF A – 11 acres of open water fill, CDF B – 10 acres of open water fill, CDF C – 12 acres of open water fill, and CDF D – 19+ acres of open water fill).

Since finalizing the 1998 ROD, EPA has continued to work to identify cost effective ways to dispose of PCB-contaminated sediments. The EPA has issued four Explanations of Significant Differences ("ESD"), which modify the remedy. As a result of the ESDs, one of the four CDFs –CDF D (the largest) -- was eliminated and the contaminated material that was to be contained in this CDF is now disposed of offsite or in a confined aquatic disposal ("CAD") cell.[23] The onsite processing and off-site disposal does not involve filling waters of the U.S. To date, EPA has only constructed only one CDF facility, the Sawyer Street CDF. This pilot CDF facility has been used for the temporary disposal of contaminated dredged sediments. As part of the construction of the Sawyer Street CDF, approximately 3.0 aces of waters of the United States were filled. Future dredging of PCB-contaminated sediment as part of the New Bedford Harbor Superfund Project may involve dredged material disposal alternatives such as the future construction of

[23] See Lower Harbor CAD Cell, Fourth Explanation of Significant Differences for New Bedford Harbor Superfund Site OU1, March 2011, Final at www.epa.gov/nbh.

CDFs or CAD cells. Such disposal alternatives would involve filling impacts, but it is difficult at present to estimate the manner, size, and location of such filling.

6.6.2 State Enhanced Remedy: At the Commonwealth's request, after public review and comment, EPA integrated navigational dredging and disposal into its 1998 ROD decision as a state enhanced remedy ("SER") pursuant to the provisions of Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA") and the National Oil and Hazardous Substance Pollution Contingency Plan ("NCP"). PCB-contamination levels in the sediment in these navigational dredging areas are typically below the clean–up levels defined in the 1998 ROD, but they are unsuitable for offshore disposal. In January 2010, the Commonwealth requested inclusion of this proposed South Terminal Project in the SER. EPA review of that request is the subject of this Draft Determination.

Both dredging and disposal projects can be reviewed under the SER process. In the past, the Commonwealth has reviewed a range of potential disposal options for the unsuitable navigational dredged material. In the 2000 New Bedford Fairhaven Municipal Harbor Plan, a total of six potential CDF sites were identified within the Upper and Lower New Bedford Harbor area (see MassDEP 2012, Figure 9). These six proposed CDFs, as shown on Figure 9, would fill approximately 189 acres of the Lower New Bedford Harbor. They included 1) the Railroad CDF, a modified version of CDF D, (12 acres of open water impacts); 2) Popes Island North CDF (21 acres of open water impacts); 3) Popes Island South CDF (16 acres of open water impacts); 4) State Pier CDF (23 acres of open water impacts); 5) the two Fairhaven South CDFs (46 acres of open water impacts); and 6) Seawall West, a previous configuration for the South Terminal area (71 acres of open water impacts).[24] To date, only CAD cells have been used to contain unsuitable navigational dredged material. In constructing CAD cells, areas of harbor bottom are excavated to create a containment cell. Unsuitable dredged material is then placed in the containment cell and after some time is allowed for dredged material settlement, a cap is installed at an elevation slightly below adjacent harbor bottom.

During Phases II and III of the SER, the Commonwealth used a pre-existing borrow pit and constructed CAD Cells #1 and #2 to dispose of navigational dredged PCB-contaminated sediment. All of these CAD cells are located to the north of Pope's Island in the Lower New Bedford Harbor. CAD Cell #3, proposed as part of this South Terminal Project, is located in this same area. The siting of these CAD cells as well as future CAD cells was the subject of the 2003 Dredged Material Management Plan, Final Environmental Impact Report for New Bedford and

[24] Except for this proposed South Terminal project and those projects already included in the completed Phase II and Phase III SER work plans, EPA's conclusions and findings in this Draft Determination are not an endorsement of nor an integration into the New Bedford Harbor State Enhanced Remedy of any particular project listed in the New Bedford/Fairhaven Municipal Harbor Plans.

Fairhaven, ("DMMP") issued by the Massachusetts Office of Coastal Zone Management.[25] Disposal of unsuitable dredged material into CAD cells involves filling impacts, but these impacts are considered temporary, because the cells' caps will eventually be recolonized with benthic organisms similar to those on adjacent harbor bottom areas. No long-term impacts to the water column are expected with capped CAD cells.

Finally, the May 2010 New Bedford Fairhaven Municipal Harbor Plan discusses the possible beneficial re-use of "clean" dredged material for the rehabilitation of bulkheads and Waterfront Development Shoreline Facilities ("WDSF") within New Bedford and Fairhaven. In constructing WDSFs, clean dredged material may be used to create solid fill piers to replace dilapidated wharfs and/or bulkheads. The facilities would be considered permanent fills since they involve converting waters of the United States to non-jurisdictional upland areas. WDSF fills are meant to support expanded and/or rehabilitated waterfront uses, similar to the earlier CDF plans. However, the WDSF fills are proposed to be smaller than the CDFs since they are designed to retrofit the existing waterfront uses rather than to dispose of a set volume of dredged material.

The Executive Summary concept plan for the May 2010 New Bedford Fairhaven Municipal Harbor Plan identifies potential WDSF sites at South Terminal (4 acres of open water impacts), New Bedford State Pier (< 1 acre of open water impacts), North Terminal (12 acres of open water impacts), Popes Island Terminal (4 acres of open water impacts) sites in New Bedford, as well as at the Union Wharf site (<1 acre of open water impacts) in Fairhaven, Massachusetts. Both the North Terminal and the Popes Island Terminal WDSF projects appear to rely on the replacement of the Route 6 Bridge to be practicable. Therefore, only the New Bedford State Pier and the Union Wharf WDSF projects appear to represent potential cumulative impacts, although at the present time it is not possible to determine whether either project is likely to occur in the foreseeable future.

6.6.3 Corps of Engineer's Permitted Projects in Upper and Lower New Bedford Harbor: In an attempt to objectively evaluate the cumulative impacts associated with recent filling projects in New Bedford Harbor not associated with the Superfund Program and the SER, EPA reviewed Section 404 permits issued by the U.S. Army Corps of Engineers ("Corps") for fills within New Bedford Harbor. Our file review indicated that since 1990 the Corps has issued a total of twenty Section 404 fill authorizations within the Upper and Lower New Bedford Harbor in New Bedford, Fairhaven, and Acushnet, Massachusetts.

[25] The DMMP may be found in the Administrative Record for this Draft Determination and at www.mass.gov/cam/dredgereports/2003/feirnm-f.htm.

These twenty Section 404 fill projects included shoreline stabilization work, construction of boat ramps, installation of intake/outlet pipes, environmental restoration projects, coal tar remediation work, and installation of submarine cables for the Route 6 Bridge. The total impact for these twenty projects was between 1-2 acres of waters of the United States. For the most part, these projects involved minor fill activities (< 1,000 square feet of fill). Larger impact (> 5,000 square feet of fill) projects were limited to coal tar remediation work, environmental restoration projects, and a few of the bulkhead projects.

6.6.4 Summary: In conducting a cumulative impacts analysis for the South Terminal Project, EPA reviewed Section 404 projects authorized by the Corps of Engineers over the past twenty years, as well as past filling associated with the New Bedford Harbor Superfund Project and the State Enhanced Remedy. We also considered filling projects likely to be completed in the foreseeable future. Based upon this review, we determined that larger fill projects within New Bedford Harbor have been associated with dredged material disposal work (i.e., CAD cells and CDFs) related to the New Bedford Harbor Superfund Project or the associated State Enhanced Remedy. Recently, the trend in designing cost-effective dredged material disposal projects has been to either avoid permanent filling impacts (with CAD cells) or to minimize the size of CDFs and/or WDSFs. Additional fill projects that would be subject to Corps permitting under Section 404 are likely to continue to be few and minor in scope. Based upon this information, EPA has tentatively determined that the cumulative effect of fills that we have reviewed herein do not, collectively, represent a major impairment of the aquatic ecosystem.

7.0 Mitigation (40 C.F.R. §§ 230.10(d), 230.70-77 and 230.90-99; 33 C.F.R. Part 332)

For a proposed project to comply with § 230.10(d) of the 404(b)(1) Guidelines, impacts to waters of the U.S. must be avoided and minimized to the extent practicable, and all appropriate and practicable steps must be taken to compensate for unavoidable impacts.

7.1 Avoidance/Minimization: EPA has determined that the basic project purpose for this project is to develop a marine terminal that will provide infrastructure capable of supporting the development of offshore renewable energy facilities as well as other future uses (such as container shipping, break-bulk cargo shipping, bulk cargo shipping, short-seas shipping). As a water-dependent activity, some impacts to waters of the United States are unavoidable. The Commonwealth developed feasibility criteria in order to identify key parameters that are essential for a marine terminal site to be practicable for supporting the development of off-shore renewable energy facilities (see Section 4.3 above for more details; see also MassDEP 2012, MassDEP 2012a, and MassDEP 2012b). EPA's tentative determination that the South Terminal alternative is the least environmentally damaging practicable alternative ("LEDPA") is set forth in Section 4 above.

The Commonwealth worked with agencies with expertise in the construction of offshore wind energy projects and the regional shipping industry as well as with the Northeast Marine Pilots Association and the New Bedford Tug Operators to ensure that the design for the South Terminal Project is effective in supporting offshore renewable energy facilities as well as other marine terminal uses. Existing site-specific resources such as the New Bedford Harbor Federal Navigation Project ("FNP") were used to enhance commercial navigation access while minimizing impacts to waters of the United States.

As the design for the South Terminal Project has progressed, the Commonwealth has suggested measures to minimize adverse impacts to waters of the United States. For example, the current design for the South Terminal docking area incorporates a section of pile-supported wharf channelward of the proposed bulkhead. Since construction cranes do not need to access this waterside section of the South Terminal, it was possible to incorporate a pile-supported structure rather than a solid-fill wharf in this area. While this existing subtidal area will be deepened, armored with scour protection, and substantially shaded by the overhead pile-supported wharf, it will not be completely filled. This modification resulted in a 0.67 acre reduction in the overall impacts associated with the South Terminal project. The Commonwealth also made adjustments to the original terminal design in order to avoid construction impacts to the adjacent paleosol formation.

EPA has tentatively determined that the Commonwealth has designed the footprint of the South Terminal Project in a manner that minimizes the impacts to the aquatic environment to the extent practicable in light of the basic project purpose.

7.2 Measures to minimize adverse impacts: There are a number of measures that the Commonwealth will be implementing during the construction of the South Terminal Project in order to minimize adverse impacts on aquatic resources within New Bedford Harbor. Refer to the DRAFT conditions section (Section 20) of this decision document for details on these additional measures to be taken.

7.3 Compensatory Mitigation: The Commonwealth submitted a Conceptual Mitigation Plan (MassDEP 2012; MassDEP 2012a) to provide compensatory mitigation for unavoidable direct and secondary impacts to the various resources affected by the project. EPA's evaluation of the Conceptual Mitigation Plan is described below.

7.3.1 Winter Flounder Spawning Habitat: Inshore stocks of winter flounder have a preferred spawning depth of < 5 m (Pereira et al., 1999). The Commonwealth proposes to place clean sand excavated from the CAD cell dredging to fill in an area to the south of the hurricane barrier to reduce the existing depths (MassDEP 2012a, Appendix A,, Draft Plan Sheets P-5.1 and X-5.1). The intent is to change the depth of areas that are >5m to final depths that are within the preferred depth range of winter flounder spawning. The Commonwealth proposes to

create new winter flounder spawning habitat over 22.73 acres of the seafloor, to compensate for the loss of winter flounder habitat associated with dredging and with filling to construct the CDF. The proposed project will result in between 16.2 and 20.21 acres of impact to winter flounder habitat (MassDEP 2012a).[26] As a result, the Commonwealth has committed to a slightly greater than 1 to 1 replacement ratio of winter flounder spawning habitat (MassDEP 2012a). An additional benefit resulting from this work is the isolation of existing contaminants present in the sediments at this location. Currently, PCB concentrations range from 1 to 8 ppm throughout this area, so placement of clean sand will eliminate exposure of elevated levels of PCBs to the biological community.

This placement of fill represents a temporary impact to the marine environment. As soon as the filling stops, mobile crustaceans will return to the newly filled footprint. Lobsters, crabs and shrimp use chemoreception to detect prey and they are drawn to the "odor" of disturbed sediments. It is believed that they view the presence of disturbed sediments as an opportunity to forage for exposed and defenseless benthic infauna. The benthic infaunal community will begin colonizing the newly exposed sediments during the next spawning event. Typically, opportunistic shallow burrowing polychaetes are the first organisms to colonize an area. The paradigm for benthic community ecology follows that the quick reproducing small polychaetes comprise the initial or Stage I benthic community Rhoads and Germano, 1986). The Stage II community features slightly larger polychaetes and some small shellfish that typically are slightly deeper burrowers than what is found in Stage I (Rhodes and Germano, 1986). The final step in the successional process is the Stage III community. This community is characterized by large deep burrowing bivalves and larger polychates (Rhoads and Germano, 1986). Full recovery to a Stage III successional community will likely take 3-7 years (Rhoads and Germano, 1986). The finfish community will begin using the area once the placement of sand has been completed. Winter flounder and other species that may utilize the bottom for spawning will be able to use the bottom within the mitigation footprint shortly after the sand has been placed.

During construction, the Commonwealth will conduct a bathymetric survey to ensure that the appropriate depths are achieved. In addition, the bathymetric survey will be repeated annually for 5 years post-construction to determine if the newly placed fill is eroding from the site. Monitoring of the biological success of this mitigation effort will occur through a targeted sampling of winter flounder eggs. Winter flounder eggs will be collected using an epibenthic sled in multiple locations within the project footprint and at several control stations. Sampling will begin prior to construction to establish a baseline and continue for 5 years post construction. The data will be statistically analyzed for differences between sampling locations and through time.

[26] The extent of impacts will depend on whether the potential extension of the deep draft dredging area to the south and the potential widening of the deep draft channel (discussed above in Section 2) occur.

The bathymetric survey is intended to assess the stability of the newly created habitat, while the monitoring of winter flounder eggs assesses whether the created habitat is supporting the intended functions. EPA proposes to include a requirement that if, after 5 years the bathymetric survey detects a significant loss of habitat due to sediment erosion/migration, the Commonwealth must place additional material to ensure that winter flounder spawning habitat is replicated in a 1 to 1 ratio.

Winter flounder that spawn in the New Bedford Harbor/Buzzards Bay areas are considered part of the Southern New England/Mid-Atlantic inshore stock. This stock has been decimated and currently the population is estimated to be at 10% of what is needed to support a commercial fishery (ASMFC, 2009). There is currently a commercial fishing moratorium on this species, and recreational fishing has been virtually eliminated as well (ASMFC, 2009). Due to the dire condition of this formerly commercially important species, EPA views the protection of habitats critical to its survival as essential. Recovery of winter flounder stocks will not occur without protection of spawning and nursery habitat. The Commonwealth's mitigation proposal will replace at a slightly greater than 1 to 1 ratio the quantity of winter flounder habitat impacted by the proposed project. EPA expects that the quality of the newly created spawning habitat may be superior to what it is replacing as it will be built with clean material free from any PCB contamination. EPA has tentatively determined that this mitigation proposal adequately offsets the unavoidable impacts to winter flounder spawning habitat.

7.3.2 Intertidal habitat creation and near-shore, shallow, sub-tidal enhancement: The Commonwealth has proposed to place clean sand excavated from the CAD cell dredging in an area referred to as the OU-3 Hot-Spot (MassDEP 2012a, Appendix A,, Draft Plan Sheet P-5.2 and X-5.1). In the nearshore segment of the project, seafloor depths will be raised to create or enhance 4.47 acres of intertidal habitat, to compensate for the 1.94 acres of intertidal habitat that will be filled to construct the CDF. In addition, clean sand will be placed in this area to enhance shallow subtidal habitat of 14.91 acres to compensate for filling and dredging impacts to subtidal habitat. This action will also serve to remediate the sediments within that acreage. Currently, PCB concentrations in these sediments range from 1-8 ppm. Remediation of these sediments will eliminate exposure of elevated levels of PCBs to the biological community. As described in greater detail above, this fill placement would result in a temporary adverse impact to the marine environment. Overall, however, there would be an overall beneficial effect from the proposed habitat creation and enhancement.

The Commonwealth will conduct bathymetric surveys during construction to assure that the appropriate elevations are achieved. This is particularly critical for the creation of intertidal habitat, where misjudging depths by mere inches will result in subtidal habitat, not the preferred intertidal habitat. In addition, bathymetric surveys will be conducted annually for 5 years post construction to examine patterns of sediment erosion or accretion. EPA proposes to include a requirement that if, after 5 years there have been significant changes to the newly created habitat

(especially the created intertidal area), the Commonwealth must supplement the area with additional clean sand to ensure that the area of habitat created is equivalent to the amount of habitat lost.

Near shore shallow sub-tidal and intertidal habitats serve as important refuge areas for many species of fish and invertebrates (Whitlatch, 1982). Juvenile winter flounder and a host of other fish species use these shallow areas to avoid predation from larger fish that cannot access these shallow habitats (Pereira et al., 1999; Whitlatch, 1982). Due to the ecological importance of these habitats, EPA has tentatively determined that equivalent compensation is appropriate. The Commonwealth's proposal will compensate for these impacted habitats in a slightly greater than 1 to 1 ratio (MassDEP 2012a). EPA expects that the newly created habitat will be of superior quality than the area it is replacing, because it will be free of PCBs and other contaminants. EPA has tentatively determined that this proposed mitigation will adequately address the proposed unavoidable impacts to intertidal and near shore shallow sub-tidal habitats.

7.3.3 Shellfish mitigation: The Commonwealth has pledged to replace the shellfish resource lost by the construction of this project. It proposes to seed 9,817,121 quahogs, equivalent to the estimated loss number, in multiple locations south of the hurricane barrier. The exact locations have yet to be selected, and this would be carried out over a 3-5 year period. The seed clams that the Commonwealth proposes to use are in the 20-25 mm width range, and they have an expected 40% survival rate (MassDEP 2012). After each area of seafloor is seeded, the Commonwealth would administratively close that area for 3 years to allow the seeded clams to mature.

Shellfish are a commercially important species and serve a number of important ecological roles as well. Clams are prolific filter feeders that can improve water quality through their normal feeding activities (Doering and Oviatt, 1986). Doering and Oviatt (1986) observed that quahogs can filter up to 5 liters (1.32 gallons) of water per hour, though the actual rate can vary with clam size and water temperature. At this filtration rate, the projected number of quahogs impacted by the project could filter more than 300 million gallons of water a day. This represents a substantial ecological service. In addition, the siphons of hard clams are important prey items for winter flounder and other demersal fish species (Pereira et al., 1999). Nearly 10 million shellfish represent a substantial prey base for demersal fish.

EPA has tentatively determined that the Commonwealth's proposal does not adequately compensate for the ecological value of the lost shellfish resources. The seed clams are smaller than the clams that will be lost and thus do not filter as much water, nor do they represent an equivalent prey value for demersal fish as the individuals that will be lost. Accounting for the 40% survival rate of the seed clams, EPA has tentatively concluded that 24,542,803 seed quahogs should be placed in multiple transplant locations to offset an equivalent number of individuals that will be lost to construction. The figure of 24,542,803 is derived by multiplying the number of clams lost by 2.5. This approach accounts for the 40% survival rate (MassDEP,

2012) that is to be expected for seed clams of this size. Recognizing that cost and availability of seed clams may be an issue, EPA has tentatively determined to allow the Commonwealth to conduct this work over a 10 year period.

7.3.4 Wetland mitigation: The Conceptual Mitigation Plan proposes to provide compensatory mitigation for the project's impacts to wetlands through wetland restoration and enhancement in the vicinity of the existing tidal tributary adjacent to the Hurricane Barrier. In addition, a pedestrian/bike path is proposed adjacent to the wetland restoration area, to provide public access and some educational benefit.

The existing tidal tributary currently provides few ecological services, and is degraded by sediments contaminated with PCBs, SVOCs and metals, as well as the presence of invasive plant species and trash. The proposed mitigation will entail the removal of contaminated sediments and replacement with clean substrate from the CAD cell excavation. A new low flow channel will be constructed to maintain transport of tidal flow and storm water.[27] The rip rap and fill on the western side of the channel will be removed, and the area regraded to support low marsh, high marsh and transitional tidal wetland vegetation. These areas will be planted with *Spartina alternaflora* (low marsh); *Spartina patens, Solidago sempervirens, Iva frutescens, Morella pensylvanica, Hibiscus moschuetos* (high marsh); and *Panicum virgatum , Iva frutescens, Ammophila brevigulata, and Prunus maritima* (transitional zone).

The Commonwealth also proposes to install a hooded catch basin or a trash screen at a local storm water outfall to reduce trash inflow from that source. EPA recommends that both improvements be installed. While the trash screen would be effective at removing larger trash and debris, the hooded catch basin would have the added benefit of reducing the potential discharge of oil and other floatable contaminants in the storm water. It is important that both of these infrastructure improvements be regularly maintained to assure their effectiveness.

EPA has tentatively concluded that the proposed wetland restoration and enhancement project and infrastructure improvements will provide adequate compensatory mitigation to address the lost or impaired functions and values of the 0.1 acre freshwater wetland and 0.18 acre salt marsh areas to be filled by the proposed project. [28] It will result in the removal of contaminated

[27] The Corps of Engineers is reviewing the channel design to assure there will be no adverse effect on the operation of the Hurricane Barrier. EPA will coordinate with the Corps to make sure any concerns are addressed before EPA's final decision on the project.

[28] On July 12, 2012, the Commonwealth informed EPA that there is a 0.4 acre freshwater wetland on one of the properties that may become incorporated into the terminal site. MassDEP 2012d. There is insufficient information available for EPA to determine the potential impacts of filling this wetland or appropriate mitigation at this time. EPA will evaluate this issue further once the Commonwealth determines whether the parcel will be incorporated

sediments and a potential source of pollutants. It will result in the removal of fill and rip rap, replacing it and restoring the area with natural wetland substrates. It will also remove invasive plant species and replace them with a more diverse and desirable assemblage of native species.

Wetlands functions and values that would be replaced or enhanced include: groundwater discharge; floodflow alteration; fish and shellfish habitat; sediment/toxicant retention; floodflow alteration; shoreline stabilization; and, enhanced wildlife habitat. Additional wetland functions and values provided by the wetland restoration and enhancement project include production export and recreational and educational components.

Lastly, the proposed infrastructure improvements will contribute to improved water quality, and help prevent degradation of the restoration area.

The Conceptual Mitigation Plan proposes that the wetlands mitigation area will be inspected by a wetland scientist on a monthly basis during the period from April through October for the first three years after construction, and during May and September of the fourth and fifth years after construction. The presence and species diversity of plants will be monitored, as well as the presence of invasive species. According to the Conceptual Mitigation Plan, invasive species will be removed by hand, or if necessary, other control methods will be evaluated.

In addition to the Conceptual Mitigation Plan, the Commonwealth submitted an Invasive Species Management Plan (ISMP) (MassDEP 2012a, Attachment P). EPA believes that a modified ISMP, in conjunction with the requirements of the Compensatory Mitigation Plan, would be adequate to control the spread of invasive plant populations within the proposed wetland restoration area that could prevent successful mitigation of impacts to wetlands. The ISMP, modified as described below, must be incorporated as part the Commonwealth's Compensatory Mitigation Plan, which will be a condition of EPA's authorization.

First, the ISMP proposes monitoring and reporting to occur after the first, third and fifth years of restoration. This schedule must be modified to require monitoring and reporting on an annual basis for five years at a minimum. The ISMP monitoring and reporting should be coordinated with the monitoring and reporting requirements of the Compensatory Mitigation Plan. Subsequent monitoring and reporting may be required, depending upon the success of the compensatory mitigation and the need for corrective measures in the event of unsuccessful compensatory mitigation.

Secondly, the ISMP states that "removal of all invasive plant species around the periphery of the restoration area is not feasible." The ISMP does not provide adequate information to support this

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into the site, and will ensure appropriate mitigation is developed consistent with the requirements discussed herein before making a final decision on the project.

statement. More detailed information must be submitted for review on the types, location and areal extent of invasive species in the vicinity of the proposed compensatory mitigation project. Because the presence of peripheral invasive species is likely to undermine the success of the proposed mitigation, and because invasive species removal is common practice, the Commonwealth must provide clear explanation and justification for its proposal to not include removal of existing invasive species as part of its ISMP.

Lastly, the Commonwealth's most recent reports regarding on-site wetland resources and impacts were submitted to EPA on July 11, 2012 (MassDEP 2012c) and July 12, 2012 (MassDEP 2012d), leaving inadequate time for complete review prior to the issuance of the draft determination. EPA will conduct additional review of these reports and any required supplemental information before making a final decision on the project, which may result in the need for modifications to the proposed Compensatory Mitigation Plan, including the ISMP. Also, based on these reviews, additional monitoring of the site's existing salt marsh areas may be necessary to ensure that no secondary impacts to these resources are occurring as a result of the construction and operation of the facility, and to inform the implementation of any necessary corrective actions.

7.3.5 Requirements for Final Mitigation Plan: Under 40 C.F.R. § 230.94(c)), an approved Mitigation Plan covering all components of the proposed compensatory mitigation is required prior to final project authorization. Several requirements must be met before a final Mitigation Plan is approved:

• The Commonwealth must prepare a comprehensive draft Mitigation Plan and submit it to EPA for review.

• After EPA's review and comment, the Commonwealth must prepare a final Mitigation Plan, which must be approved by EPA prior to project authorization.

• The final Mitigation Plan will be incorporated as a condition of the authorization by reference.

• The final Mitigation Plan must include the 12 components listed below. EPA may also require additional information as necessary to determine the appropriateness, feasibility, and practicability of the mitigation project.

7.3.5.1 Twelve Components of a Compensatory Mitigation Plan:

1. Objectives. A description of the resource type(s) and amount(s) that will be provided, the method of compensation (restoration, establishment, preservation etc.), and how the anticipated functions of the mitigation project will address lost or compromised functions and values of impacted resources.

2. Site selection. A description of the factors considered during the site selection process. This should include consideration of onsite alternatives and practicability of accomplishing ecologically self-sustaining aquatic resource restoration, establishment, enhancement, and/or preservation at the mitigation project site.

3. Site protection instrument. A description of the legal arrangements and instruments, including site ownership, which will be used to ensure the long-term protection of the mitigation project site.

4. Baseline information. A description of the ecological characteristics of the impact site and the proposed mitigation project site. This may include descriptions of historic and existing plant communities, historic and existing hydrology, soil conditions, a map showing the locations of the impact and mitigation site(s) or the geographic coordinates for those site(s), and other characteristics appropriate to the type of resource proposed as compensation. The baseline information should include a delineation of waters of the United States on the proposed mitigation project site.

5. Determination of mitigation credit. An explanation of how the mitigation project will provide the required compensation for unavoidable impacts to aquatic resources resulting from the proposed activity.

6. Mitigation work plan. Detailed written specifications and work descriptions for the mitigation project, including: the geographic boundaries of the project; construction methods, timing, and sequence; source(s) of water; methods for establishing the desired plant community; plans to control invasive plant species; proposed grading plan; channel form (e.g., typical channel cross-sections) and design discharge[29]; soil management; and erosion control measures.

7. Maintenance plan. A description and schedule of maintenance requirements to ensure the continued viability of the resource once initial construction is completed.

8. Performance standards. Ecologically-based standards that will be used to determine whether the mitigation project is achieving its objectives.

9. Monitoring requirements. A description of parameters monitored to determine whether the mitigation project is on track to meet performance standards and if adaptive management is needed. A schedule for monitoring and reporting monitoring results to EPA must be included.

10. Long-term management plan. A description of how the mitigation project will be managed after performance standards have been achieved to ensure the long-term sustainability of the

[29] The work plan in this case will also need to ensure that there will be no adverse impact on the Hurricane Barrier.

resource, including long-term financing mechanisms and the party responsible for long-term management.

11. Adaptive management plan. A management strategy to address unforeseen changes in site conditions or other components of the mitigation project, including the party or parties responsible for implementing adaptive management measures.

12. Financial assurances. A description of financial assurances that will be provided and how they are sufficient to ensure a high level of confidence that the mitigation project will be successfully completed, in accordance with its performance standards.

8.0 Summary of Section 404 (b) (1) Guidelines Analysis and Tentative Determination:

Based upon the analysis of the South Terminal Project, as described in Sections 4.0 – 7.0 of this decision document, the EPA has tentatively determined that this project as currently designed complies with the Section 404 (b) (1) guidelines with the inclusion of appropriate mitigation and special conditions (see Section 20.0).

RIVERS AND HARBORS ACT SECTION 10 PUBLIC INTEREST REVIEW

9.0 Analysis of Beneficial and Detrimental Impacts to the Environment and the Public Interest (33 C.F.R. § 320.4(a-r))

9.1 Public interest review factors (33 CFR 320.4(a) (1))

9.1.1 Conservation: The South Terminal Project is proposed to be constructed at the site of the former Potomska Mills in New Bedford, Massachusetts. This project will not result in the conservation of additional land, and it will not result in the use of lands conserved for other purposes.

9.1.2 Economics: The South Terminal Project will have both short-term and long-term positive economic impacts for the Port of New Bedford and adjacent communities. In the short-term the construction of the South Terminal and the dredging of the associated navigational channels will create short-term construction jobs. Post-construction operations at the terminal are expected to create several hundred permanent jobs when the site is used to support the construction of offshore wind energy projects or as a cargo terminal. Maintenance dredging and/or deepening of the existing navigational channels will have a positive economic impact on other existing maritime industries within the Port of New Bedford. The creation of these maritime jobs will also result in indirect and induced economic benefits for regional

companies that support maritime companies and their workers. (MassDEP 2012 at 67-73).

9.1.3 Aesthetics: The South Terminal Project will have short-term negative aesthetic impacts during the construction phase of this project. In the long-term, the site will be changed from a demolished mill property to an active marine terminal, similar in appearance to adjacent waterfront properties. Whether these aesthetic changes are positive or negative impacts is a subjective judgment.

9.1.4 General environmental concerns: The South Terminal Project will have both negative and positive environmental impacts. These impacts are detailed within Sections 5 and 6 above, and within this Section 9.

9.1.5 Wetlands: A total of 0.18 acres of salt marsh wetlands will be permanently filled as part of the creation of the confined disposal facility/marine terminal. Also, approximately 0.88 acres of salt marsh may be adversely affected by secondary impacts from the construction and operation of the facility. In addition, one small wetland on Parcel 49 of the site, approximately 0.1 acre in area, will be filled.

Tidal wetlands: Federally jurisdictional tidal wetlands at the project location consist of an emergent salt marsh system, situated directly within and adjacent to the proposed location of the CDF. This area was delineated during the June 28, 2012 site investigation, and a report submitted to EPA on July 11, 2012. Due to the late date of the submission of this report, EPA has not had adequate time to complete its review and confirm revised areal estimates of the salt marsh areas, including a newly identified south salt marsh area (Salt Marsh 2). Areal estimates in the recent report indicate a smaller area of salt marsh present at Salt Marsh 1 than had been previously described by the Commonwealth. For the purposes of the draft determination, the previously submitted estimate of the areal extent of Salt Marsh 1 is being used for assessment of impacts, combined with the areal estimate for the newly identified Salt Marsh 2 presented in the July 11, 2012 report. Areal estimates will be revised after EPA has completed review and confirmation of the new wetland delineation. For the purposes of the draft determination, the salt marsh resources present are estimated to be approximately 1.06 acres in area. Soil sampling indicates that the wetland soils are contaminated with PCBs and metals (SER 1/18/12 Application, Appendix 36, Tables 2A and 2E). Wetland vegetation present includes *Spartina alternaflora*, and trace amounts of *Salicornia virginiana.*

Functions and values associated with this system include groundwater discharge, flood flow alteration, fish and shellfish habitat, shoreline stabilization, and wildlife habitat.

Freshwater wetlands: A site investigation to characterize freshwater resources was conducted on June 28, 2012, and a report submitted to EPA on July 11, 2012. According to the report, fresh

water resources are very limited at the project location, comprised of one small vegetated wetland located north of the existing paved area on Parcel 49, approximately 4,600 square feet (0.1 acre) in area.[30] The proposed project will result in filling this wetland. [31]

This disturbed wetland has formed in a depressional area within the existing fill on site. Evidence of hydrology supporting this wetland is present. Soils consist of significantly disturbed urban fill. While no sampling data has been provided characterizing soils within this wetland, soil sampling conducted in the general vicinity of the wetland indicates that the wetland soils are likely to be contaminated with PCBs and metals (SER 1/18/12 Application, Appendix 39, Table 1). Wetland vegetation consists primarily of *Phragmites australis* (common reed), an invasive species.

Functions and values associated with this wetland include groundwater recharge/discharge, floodflow alteration, sediment/toxicant retention, and wildlife habitat. However, these wetland functions and values are limited due to the small size and degraded nature of the wetland system and the surrounding landscape.

Wetland mitigation: The Commonwealth submitted a Conceptual Mitigation Plan (MassDEP 2012) to provide compensatory mitigation for unavoidable direct and secondary impacts to the various resources affected by the project. The Conceptual Mitigation Plan proposes to provide compensatory mitigation for the project's impacts to wetlands through wetland restoration and enhancement in the vicinity of the existing tidal tributary adjacent to the Hurricane Barrier. In addition, a pedestrian/bike path is proposed adjacent to the wetland restoration area, to provide public access and some educational benefit.

The existing tidal tributary currently provides few ecological services, and is degraded by sediments contaminated with PCBs, SVOCs and metals, as well as the presence of invasive plant species and trash. The proposed mitigation will entail the removal of contaminated sediments and replacement with clean substrate from the CAD cell excavation. A new low flow channel

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[30] As noted in footnote 7 above, EPA considers this wetland to be adjacent to a traditionally navigable water and therefore subject to federal jurisdiction.

[31] On July 12, 2012, the Commonwealth informed EPA that there is a 0.4 acre freshwater wetland on one of the properties that may become incorporated into the terminal site. MassDEP 2012d. There is insufficient information available for EPA to determine the potential impacts of filling this wetland or appropriate mitigation at this time. EPA will evaluate this issue further once the Commonwealth determines whether the parcel will be incorporated into the site, and will ensure appropriate mitigation is developed consistent with the requirements discussed herein before making a final decision on the project.

will be constructed to maintain transport of tidal flow and stormwater.[32] The rip rap and fill on the western side of the channel will be removed, and the area regraded to support low marsh, high marsh and transitional tidal wetland vegetation. These areas will be planted with *Spartina alternaflora* (low marsh); *Spartina patens, Solidago sempervirens, Iva frutescens, Morella pensylvanica, Hibiscus moschuetos* (high marsh); and *Panicum virgatum , Iva frutescens, Ammophila brevigulata, and Prunus maritima* (transitional zone).

The Commonwealth also proposes to install a hooded catch basin or a trash screen at a local storm water outfall to reduce trash inflow from that source. EPA recommends that both improvements be installed. While the trash screen would be effective at removing larger trash and debris, the hooded catch basin would have the added benefit of reducing the potential discharge of oil and other floatable contaminants in the storm water. It is important that both of these infrastructure improvements be regularly maintained to assure their effectiveness.

Pending submission and review of additional information, EPA has tentatively concluded that the proposed wetland restoration and enhancement project and infrastructure improvements will provide adequate compensatory mitigation to address the lost or impaired functions and values of the 0.1 acre freshwater wetland and 0.18 acre salt marsh areas to be filled by the proposed project. It will result in the removal of contaminated sediments and a potential source of pollutants. It will result in the removal of fill and rip rap, replacing it and restoring the area with natural wetland substrates. It will also remove invasive plant species and replace them with a more diverse and desirable assemblage of native species.

Wetlands functions and values that would be replaced or enhanced include: groundwater discharge; floodflow alteration; fish and shellfish habitat; sediment/toxicant retention; floodflow alteration; shoreline stabilization; and, enhanced wildlife habitat. Additional wetland functions and values provided by the wetland restoration and enhancement project include production export and recreational and educational components.

Lastly, the proposed infrastructure improvements will contribute to improved water quality, and help prevent degradation of the restoration area.

As noted above, the Commonwealth's most recent reports regarding on-site wetland resources and impacts were submitted to EPA on July 11, 2012 (MassDEP 2012c) and July 12, 2012 (MassDEP 2012d), leaving inadequate time for complete review prior to the issuance of the draft

[32] The Corps of Engineers is reviewing the channel design to assure there will be no adverse effect on the operation of the Hurricane Barrier. EPA will coordinate with the Corps to make sure any concerns are addressed before EPA's final decision on the project.

determination. EPA will conduct additional review of these reports and any required supplemental information before making a final decision on the project, which may result in the need for modifications to the proposed Compensatory Mitigation Plan, including the Invasive Species Management Plan. Also, based on these reviews, additional monitoring of the site's existing salt marsh areas may be necessary to ensure that no secondary impacts to these resources are occurring as a result of the construction and operation of the facility, and to inform the implementation of any necessary corrective actions.

9.1.6 Historic properties: During 2010, the Commonwealth conducted archaeological surveys to identify historical and archaeological sites that could potentially be impacted by the South Terminal Project. As a result of these surveys, a number of archaeologically-sensitive "Paleosols" and a localized shipwreck were identified. (MassDEP 2012, at 107-111). The EPA has begun coordination with the Massachusetts State Historic Preservation Officer ("MA SHPO"), the Massachusetts Board of Underwater Archaeological Resources ("BUAR"), as well as the Wampanoag (Aquinnah) and the Mashpee Wampanoag Tribal Historic Preservation Officers ("THPO") in an attempt to avoid or to minimize impacts to these in-water historic properties. EPA's preliminary determination is that the South Terminal Project will have "no adverse effect" on these in-water historic properties or any adjacent upland historic properties. EPA will conclude coordination with the historic agencies prior to issuing a final determination on this project. See also Appendix G.

9.1.7 Fish and Wildlife: The South Terminal Project will result in negative impacts to fish and wildlife habitat areas within New Bedford Harbor. All totaled, approximately 0.18 acres of salt marsh, 0.1 acres of freshwater wetlands, and 6.67 acres of intertidal and sub-tidal benthic habitat will be permanently impacted due to filling to construct the CDF. Another approximately 53 acres of subtidal habitat will be temporarily impacted by the placement of fill as part of the mitigation plan to create and enhance winter flounder spawning habitat, intertidal area and shallow subtidal habitat, and associated with the capping of CAD cell 1 and the "Borrow Pit." In addition, approximately 53.7 acres of sub-tidal benthic habitat will be dredged and deepened as part of plans to maintenance dredge portions of the existing New Bedford Harbor Federal Navigation Project, to provide adequate navigational access to the South Terminal site, to realign the Gifford Street Boat Ramp Channel, to deepen areas within the North and South Mooring Areas, and to create CAD Cell #3. These impacts are discussed more fully in Sections 5 and 6 above and in Appendix H.

The proposed filling and dredging associated with the South Terminal Project will directly impact habitat areas for crustaceans, mollusks and other aquatic organisms that are prey species for finfish, birds, and mammal species (see Section 6.2.2 for more details). Less mobile organisms (worms, gastropods, mollusks, etc.) will likely be completely removed (by dredging) or buried (by filling) by this work. These populations are expected to be lost throughout the

South Terminal construction area. More mobile organisms (crabs, lobsters, shrimp, etc.) will likely suffer some mortality as well, but their mobility will allow some individuals to leave or avoid the construction area. These survivors as well as juvenile and adult fish will be able to forage and/or spawn in adjacent unimpacted habitat areas. The South Terminal Project is expected to result in the permanent loss of approximately 20.21 acres of winter flounder spawning and nursery habitat and the loss of 9-10 million individual shellfish. If blasting is required to remove fractured bedrock from the South Terminal/Confined Disposal Facility area, this could have a negative impact on fish eggs and larvae, as well as aquatic invertebrates (crustaceans, gastropods, mollusks, etc.), juvenile and adult fish, amphibians, and reptiles.

As part of the South Terminal Project approximately 247,100 cubic yards of Polychlorinated Biphenyl ("PCB") and heavy metal contaminated sediment will be removed from the South Terminal project area, adjacent navigational channels, and confined aquatic disposal ("CAD") Cell #3 and placed into CAD cells #2 and #3 (MassDEP 2012a, Appendix S). Removal and segregation of these contaminated sediments will result in long-term positive impacts for fish and wildlife habitat within New Bedford Harbor. As part of its proposed mitigation package for the South Terminal Project, the Commonwealth proposes to create 22.73 acres of shallow water Winter Flounder spawning habitat, 14.91 acres of near-shore shallow, sub-tidal habitat, and 4.47 acres of intertidal habitat in Outer New Bedford Harbor to mitigate for winter flounder spawning habitat losses. In addition, the Commonwealth will seed shellfish areas in the Outer New Bedford Harbor to mitigate for unavoidable shellfish impacts associated with this project.

As noted in Section 5.3 above, EPA engaged in informal consultation with the U.S. Fish and Wildlife Service and has completed a final Biological Assessment (BA) of the potential effects of the construction and long-term operation of the project on the endangered roseate tern, attached as Appendix K. For the reasons discussed in the final BA, EPA has concluded that the proposed NBH-South Terminal project may affect the roseate tern, but is unlikely to adversely affect the species. Also as noted in Section 5.3, the National Marine Fisheries Service has informed EPA that the endangered Atlantic sturgeon may be present in the vicinity of New Bedford Harbor. EPA is currently seeking additional technical assistance from NMFS and is in pre-consultation analysis with it. In that process, EPA and NMFS are discussing time of year restrictions, project sequencing options and mitigative dredging techniques which could greatly lessen or eliminate any potential adverse effects to the species. Prior to the issuance of a final decision on the impacts of the project, EPA will enter informal consultation with NMFS, which will include preparation of a Biological Assessment, and will seek concurrence with EPA's findings regarding the potential impacts to the sturgeon from the construction and operation of the project.

9.1.8 Flood hazards: The New Bedford Harbor area is actively protected from coastal flooding by the existing New Bedford Hurricane Barrier, located directly downriver of the South Terminal project site. If the New Bedford Hurricane Barrier is closed and heavy rain

is expected, flood waters from the Acushnet River need to be stored within the New Bedford Inner Harbor Basin. The Commonwealth has documented that approximately 27.33 acre-feet of flood storage will be lost due to filling impacts associated with the South Terminal/Confined Disposal Facility (MassDEP 2012, at 112-114). In a December 16, 2010 e-mail, the New England District of the U.S. Army Corps of Engineers had requested that the Commonwealth develop and implement a plan to mitigate for the 27.33 acre-feet of lost flood storage. Recently, the Commonwealth has documented that the New Bedford Harbor Trustee Council is in the process of developing plans for a Marsh Island Restoration Project, which will create up to 39.67 acre-feet of flood storage within the New Bedford Harbor Basin (MassDEP 2012a, at 41-43; MassDEP 2012b at 6 and Attachment B). EPA has tentatively determined that the proposed Marsh Island Restoration Project will adequately mitigate for unavoidable floodplain storage losses associated with the South Terminal Project. See Appendix L for more details on this issue.

9.1.9 Floodplain values: The construction of the South Terminal confined disposal facility will result in the loss of approximately 27.33 acre-feet of flood storage within the New Bedford Hurricane Barrier basin. As stated in Section 9.1.8, the New England District of the U.S. Army Corps of Engineers previously requested that the Commonwealth develop and implement a plan to mitigate for this lost flood storage. EPA has tentatively determined that the proposed Marsh Island Restoration Project will adequately mitigate for unavoidable floodplain storage losses associated with the South Terminal Project. Therefore, the South Terminal Project will not result in substantial long-term negative impacts on floodplain values within New Bedford Harbor.

9.1.10 Land use: The South Terminal Project is proposed to be located on properties within New Bedford's designated port area. The basic project purpose is to create a marine terminal capability of supporting offshore renewable energy projects. This basic project purpose is consistent with current land-use patterns and is unlikely to require substantial changes in adjacent land-use patterns.

9.1.11 Navigation: As part of the South Terminal Project, the Commonwealth proposes to improve commercial navigation access to the South Terminal site by widening and deepening the existing commercial navigation channel to this site. This proposed dredging will provide positive short-term and long-term navigation impacts for commercial and recreational vessels in the vicinity of the South Terminal site. In addition, the Commonwealth may need to maintenance dredge portions of the existing New Bedford Harbor Federal Navigation Project ("FNP"). This proposed maintenance dredging will provide short-term and long-term positive navigation impacts for commercial vessels accessing the South Terminal site as well as other maritime properties along the New Bedford shoreline, south of the Route 9 Bridge.

9.1.12 Shore erosion and accretion: The construction of the South Terminal/Confined Disposal Facility will result in the filling of approximately 0.18 acres of salt marsh, 0.1 acres of freshwater wetlands, as well as 6.67 acres of intertidal and sub-tidal areas. The existing shoreline within the South Terminal project area is mostly vegetatively stabilized. The current design for the South Terminal Project includes the installation of steel-sheet bulkheads with associated scour protection to stabilize the fill/dredge areas. Although the proposed shoreline realignment and deeper navigation channels may obstruct and/or improve local circulation/tidal flushing patterns, these impacts on shoreline erosion and accretion are expected to be minor compared to circulation obstruction impacts associated with the adjacent New Bedford Hurricane Barrier.

9.1.13 Recreation: The construction of the South Terminal Project is expected to have short-term negative impacts and long-term positive impacts to recreational users in the New Bedford Lower Harbor within and directly adjacent to the project area. The construction of the South Terminal/Confined Disposal Facility includes filling a portion of the existing Gifford Street boat ramp Channel. In addition, the dredging of an improved commercial channel to access the South Terminal site will displace some existing recreational boat moorings. The project design for the South Terminal Project includes plans to realign the Gifford Street boat ramp Channel and to dredge two areas to create/enhance two adjacent recreational mooring areas. These mitigative measures will result in a long-term positive impact to local recreational users.

The Gifford Street boat ramp parcel has been designated as one of the ancillary properties for South Terminal. This site will be actively used as a lay down area for storing wind turbine components, when the South Terminal facility is supporting the construction of offshore wind turbine projects. The Gifford Street boat ramp will have limited access during these times. However, when the South Terminal facility is used as a more conventional marine terminal, the Gifford Street boat ramp will be reopened for full recreational boating access.

Construction vessel traffic to and from the South Terminal site through the New Bedford Hurricane Barrier is expected to be minor and to not substantially affect general recreational patterns in this area. The Commonwealth has indicated that New Bedford Harbor is generally considered to be severely under-utilized by boat traffic (MassDEP 2012 at 276).

9.1.14 Water supply and conservation: The South Terminal Project will not affect local water supply systems and/or conservation. There are no local water supply wells or reservoirs located within the project area.

9.1.15 Water quality: The development of the South Terminal property will not

have any long term effect on water quality. Potential short term impacts will be mitigated through the use of dredging and filling practices that minimize discharge of excavated sediments into the surrounding water column, stockpiling practices that minimize erosion of stockpiled materials, and construction site management practices that control pollution runoff during rain events.

9.1.16 Energy needs: The redevelopment of the South Terminal property will result in increased energy use during the construction phase of this project (short-term) as well as during its operation as a marine terminal (long-term). However, the basic purpose for this project is to construct a marine terminal capable of supporting the construction of regional offshore renewable energy projects. Development of wind energy projects will make a substantial contribution to allowing utility companies to meet state renewable energy mandates as well as to providing cleaner sources of electricity to the New England regional electric grid.

9.1.17 Public Safety: The South Terminal Project is not expected to affect public safety.

9.1.18 Food and fiber production: This project is not expected to affect food and/or fiber production within New Bedford Harbor. While there is shellfish and finfish habitat within the South Terminal project area, all waters upstream of the New Bedford Harbor Hurricane Barrier are part of the Fish Closure Area #1. Fish, lobsters, and shellfish caught in this area are not safe for human consumption. In addition, this project will not involve any permanent impacts to agricultural or silvicultural lands.

9.1.19 Mineral needs: Construction of the South Terminal Project will necessitate the use of various mineral resources. However, it is not anticipated that this project will result in the short-term or long-term depletion of any mineral resources.

9.1.20 Consideration of property ownership: EPA's determination related to the South terminal project does not convey any property rights to the Commonwealth. The Commonwealth will need to purchase parcels and/or to acquire easements in order to utilize state, municipal, and/or private properties as part of the main South Terminal site and/or ancillary parcels. The facility operator will need to be careful in how wind turbine components are stored on the main South Terminal site and on ancillary parcels, in order to ensure that uses on adjacent properties are not substantially impacted. For example, vehicular access along Gifford Street will need to be maintained at all times and there should be no inadvertent impacts to the adjacent radio tower rigging and/or underground utilities. With this in mind, the South Terminal Project is not expected to result in any substantial property ownership impacts.

9.2 Additional Public Interest Review General Criteria (33 C.F.R. § 320.4(a) (2)):

9.2.1 The relative extent of the public and private need for the proposed work: The Commonwealth's basic project purpose for this project is to construct a multi-use marine terminal capable of supporting the installation of off-shore renewable energy projects such as off-shore wind farms. The Commonwealth's application provides strong evidence of the public and private need for maintenance and improvement dredging of these portions of New Bedford Harbor as well as for the development of such a marine terminal (MassDEP 2012).

9.2.2 The practicability of using reasonable alternative locations and/or methods to accomplish the objective of the proposed structure or work: The Commonwealth's submission for the South Terminal Project discusses feasibility criteria for siting a multi-use marine terminal capable of supporting the installation of off-shore renewable energy projects. These screening criteria included attributes such as proximity to future off-shore wind facilities, total wharf and upland yard area, berthing space, site availability, as well as site access horizontal and vertical clearances. A total of eight possible terminal locations, within and outside of New Bedford Harbor, were evaluated against the screening criteria. As discussed in Section 4 above, EPA has tentatively determined that the Commonwealth has demonstrated that the South Terminal site is the least environmentally damaging practicable alternative.

9.2.3 The extent and permanence of the beneficial and/or detrimental effects that the proposed structures or work may have on the public and private uses for which the area is suited: The Commonwealth's proposal for the South Terminal Project includes the filling of waters of the United States, including jurisdictional wetlands, in order to construct the South Terminal/Confined Disposal Facility area with associated scour protection. As part of the construction of the South Terminal Project approximately 0.18 acres of salt marsh, 0.1 acres of freshwater wetlands, and 6.67 acres of tidal waters and will be filled. In addition, the Commonwealth proposes to cap the existing Borrow Pit and CAD 1 with clean dredged material and dispose of contaminated dredged material into CAD cell 2, resulting in 10.8 acres of temporary impacts. Finally, filling will occur in conjunction with creating and/or enhancing 4.47 acres of intertidal habitat, 22.73 acres of winter flounder spawning habitat, and 14.91 acres of near-shore, shallow, sub-tidal habitat. The temporary and permanent impacts associated with this filling are discussed more fully in Sections 5 and 6 above and in Appendix H.
The South Terminal project also includes improvement dredging to provide adequate commercial navigational access to the South Terminal site, to realign the Gifford Street boat ramp Channel, and to deepen areas within the North and South Mooring Areas; dredging to construct the CAD cell #3 cell; and possible maintenance dredging of portions of the existing New Bedford Harbor Federal Navigation Project. All dredging will result in the removal of PCB-contaminated sediments with construction areas. Over 53.7 acres of sub-tidal benthic

habitat will be dredged and deepened as part of this work. The impacts associated with these dredging activities are discussed more fully in Sections 5 and 6 above.

The construction of the South Terminal confined disposal facility will result in the loss of approximately 27.33 acre-feet of flood storage within the New Bedford Hurricane Barrier basin. As stated in Section 9.1.8, the New England District of the U.S. Army Corps of Engineers previously requested that the Commonwealth develop and implement a plan to mitigate for this lost flood storage. Recently, the Commonwealth has documented that the New Bedford Harbor Trustee Council is in the process of developing plans for a Marsh Island Restoration Project, which will create up to 39.67 acre-feet of flood storage within the New Bedford Harbor Basin. MassDEP 2012a, at 41-43; MassDEP 2012b at 6 and Attachment B. EPA has tentatively determined that the proposed Marsh Island Restoration Project will adequately mitigate for unavoidable floodplain storage losses associated with the South Terminal Project. See Appendix L for more details on this issue.

The Commonwealth's mitigation proposals have been designed to compensate for impacts to specific habitat types. The successional marsh mitigation project involves the removal of PCB-contaminated sediment and partial filling/reshaping the cross-section of a tidal tributary/New Bedford Hurricane Barrier drainage way, in order to restore and to enhance up to 1.9 acres of salt marsh resource areas. The 4.47 acre intertidal mitigation project is meant to compensate for unavoidable impacts to intertidal areas associated with the construction of the South Terminal/Confined Disposal facility. As part of this work near-shore shallow sub-tidal areas will be partially filled with clean sand excavated from the navigational dredging. This beneficial use of dredged material will provide a secondary benefit by improving the cap to the OU-3 pilot cap area. The Commonwealth proposes to compensate for permanent impacts to winter flounder spawning habitat areas with the creation of the 22.73 acre winter flounder spawning habitat mitigation area as well as the 14.91 acre near-shore, shallow, sub-tidal mitigation area. Both these project involve partial filling of sub-tidal areas with clean sand excavated from navigational dredging. Finally, the Commonwealth has proposed to compensate for unavoidable impacts to shellfish species by reseeding shellfish in areas of the Outer New Bedford Harbor (for more detailed discussion of the Commonwealth's mitigation proposals and EPA's additional requirements, please see Section 7.3 above).

EPA has worked with the Commonwealth to avoid and to minimize impacts to waters of the United States, including jurisdictional wetlands, to the extent practicable. EPA has tentatively determined that the proposed mitigation with additional EPA conditions will adequately offset all temporary and permanent unavoidable impacts to waters of the United States.

9.3 Public Interest Tentative Determination: EPA has considered all relevant public interest review factors associated with the proposed South Terminal Project in New Bedford,

Massachusetts. Factors considered included conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, consideration of property ownership and in general, the needs and welfare of the people. After weighing the positive and negative impacts associated with this project, EPA has preliminarily determined that the South Terminal Project is not contrary to the overall public interest. NOTE: EPA will need to conclude coordination and/or consultation with Federal and State resource agencies in several areas before a FINAL determination can be made as to whether this project can be authorized as part of the State Enhanced Remedy.

OTHER FEDERAL LAWS AND EXECUTIVE ORDERS

10.0 Endangered Species Act: For detailed discussion, see Appendix I – Endangered Species Act and Appendix K – Final Biological Assessment. Summary information also available in Section 5.3 of this Appendix.

11.0 Essential Fish Habitat: For detailed discussion, see Appendix H – Essential Fish Habitat. Summary information on winter flounder also available in Section 7.3.1 of this Appendix.

12.0 Fish and Wildlife Coordination Act: For detailed discussion, see Appendix O. Summary information also available in Sections 5 and 6 of this Appendix.

13.0 Historic Properties: For detailed discussion, see Appendix G – National Historic Preservation Act. Summary information on historic properties also available in Section 9.1.6 of this Appendix.

14.0 Consultation with Indian Tribes: For detailed discussion, see Appendix G – National Historic Preservation Act.

15.0 Environmental Justice Issues (E.O. 12898): For detailed discussion, see Appendix M – Environmental Justice.

16.0 Floodplains E.O. (E.O. 11988): For detailed discussion, see Appendix L – Floodplain Management Executive Order. Summary information on floodplain management issues also available in Section 9.1.8 and Section 9.1.9 of this Appendix.

17.0 Wetlands E.O. (E.O. 11990): Executive Order 11990 requires Federal agencies to take

actions to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. This order emphasizes the importance of avoiding undertaking new construction located in wetlands unless there is practicable alternative to that construction, minimizing the harm to wetlands if the only practicable alternative requires construction in the wetland, and providing early and adequate opportunities for public review of plans and proposals involving new construction in wetlands.

There is a 4,600 square foot (0.1 acre) freshwater depressional wetland as well as a 1.06 acre salt marsh wetland within the South Terminal/Confined Disposal Facility project area. In designing the South Terminal Project, the Commonwealth was able to minimize direct fill impacts to only 0.18 acre of salt marsh by carefully choosing the alignment of the facility bulkhead. The remaining 0.88 acre of existing salt marsh will be directly adjacent to the facility bulkhead, but the Commonwealth has explained why it does not believe that salt marsh erosion (secondary impacts) will occur. MassDEP 2012b at 6-7. The 0.1 acre freshwater wetland is located within the middle of the proposed fill area and there are no practicable alternatives to avoid these wetland impacts. The Commonwealth proposes to mitigate these 0.28 acres of unavoidable wetland impacts through the Successional Marsh mitigation work, which involves regrading an existing tidal tributary/ New Bedford Harbor Hurricane Barrier drainageway in order to create and/or to restore up to 1.9 acres of tidal marsh areas. Members of the general public will have an opportunity to comment on these proposed wetland impact and/or mitigation during the public comment period for this DRAFT decisional document.

18.0 Invasive Species E.O. (E.O. 13112): For detailed discussion, see Appendix N and Sections 6.5 and 7.3 of this Appendix.

19.0 Section 176(C) Of The Clean Air Act General Conformity Rule Review: EPA's General Conformity Rule, 40 C.F.R. Part 93, Subpart B, implements section 176(c) of the Clean Air Act for non-attainment areas and maintenance areas. It requires that federal actions, unless exempt, conform with the federally approved implementation plans. EPA has analyzed the impacts on air quality associated with the construction of the South Terminal Project for conformity applicability pursuant to that General Conformity Rule. EPA has determined that such impacts will not exceed de minimis levels of direct or indirect emissions of a criteria pollutant or its precursors, and are exempted by 40 C.F.R. § 93.153. Any later indirect emissions are generally not within EPA's continuing program responsibility and generally cannot be practicably controlled by EPA. For these reasons a conformity determination is not required for EPA's authorization of this project.

SPECIAL CONDITIONS

20.0 Conditions

20.1 Conditions to be met before EPA's Final Decision:

1. The Commonwealth shall conduct and submit to EPA a modeling study to examine the potential lethal and sublethal effects of noise generated by blasting and pile-driving associated with the proposed project on the Atlantic sturgeon.

2. EPA has not had sufficient time to review the additional wetlands information submitted on July 11 and 12, 2012. Additional monitoring requirements or other conditions may be necessary to ensure appropriate avoidance, minimization and mitigation of impacts to wetland resources.

3. The Commonwealth must prepare a comprehensive draft Mitigation Plan and submit it to EPA for review.

4. After EPA's review and comment, the Commonwealth must prepare a final Mitigation Plan, which must be approved by EPA prior to project authorization.

5. The final Mitigation Plan will be incorporated as a condition of the authorization by reference.

6. The final Mitigation Plan must include the 12 components listed below:

a. Objectives. A description of the resource type(s) and amount(s) that will be provided, the method of compensation (restoration, establishment, preservation etc.), and how the anticipated functions of the mitigation project will address lost or compromised functions and values of impacted resources.

b. Site selection. A description of the factors considered during the site selection process. This should include consideration of onsite alternatives and practicability of accomplishing ecologically self-sustaining aquatic resource restoration, establishment, enhancement, and/or preservation at the mitigation project site.

c. Site protection instrument. A description of the legal arrangements and instrument including site ownership that will be used to ensure the long-term protection of the mitigation project site.

d. Baseline information. A description of the ecological characteristics of the impact site and the proposed mitigation project site. This may include descriptions of historic and existing plant communities, historic and existing hydrology, soil conditions, a map showing the locations of the impact and mitigation site(s) or the geographic coordinates for those site(s), and other characteristics appropriate to the type of resource proposed as compensation. The baseline information should include a delineation of waters of the United States on the proposed mitigation project site.

e. Determination of mitigation credit. An explanation of how the mitigation project will provide the required compensation for unavoidable impacts to aquatic resources resulting from the proposed activity.

f. Mitigation work plan. Detailed written specifications and work descriptions for the mitigation project, including: the geographic boundaries of the project; construction methods, timing, and sequence; source(s) of water; methods for establishing the desired plant community; plans to control invasive plant species; proposed grading plan; channel form (e.g., typical channel cross-sections) and design discharge ; soil management; and erosion control measures.

g. Maintenance plan. A description and schedule of maintenance requirements to ensure the continued viability of the resource once initial construction is completed.

h. Performance standards.. Ecologically-based standards that will be used to determine whether the mitigation project is achieving its objectives.

i. Monitoring requirements. A description of parameters monitored to determine whether the mitigation project is on track to meet performance standards and if adaptive management is needed. A schedule for monitoring and reporting monitoring results to EPA must be included.

j. Long-term management plan. A description of how the mitigation project will be managed after performance standards has been achieved to ensure the long-term sustainability of the resource, including long-term financing mechanisms and the party responsible for long-term management.

k. Adaptive management plan. A management strategy to address unforeseen changes in site conditions or other components of the mitigation project, including the party or parties responsible for implementing adaptive management measures.

l. Financial assurances. A description of financial assurances that will be provided and how they are sufficient to ensure a high level of confidence that the mitigation project will be successfully completed, in accordance with its performance standards.

20.2 Draft Conditions Proposed to be Incorporated into EPA's Final Decision

A. Dredging Special Conditions:

1. The project will adhere to the Performance Standards in Appendix C to this Draft Determination and the conditions in the TSCA Determination attached as Appendix J(1) to this Draft Determination.

2. Dredging will be done using an environmental bucket and appropriate containment devices, such as silt curtains.

3. To the maximum extent practicable, dredging will be sequenced to avoid or minimize potential impacts to fish migration and spawning (during February-June for migration and winter flounder spawning). If dredging is not completely stopped during February-June, it will be restricted to deeper water to avoid winter flounder spawning habitat.

4. Ambient water column monitoring will be conducted in accordance with the Commonwealth's proposed protocols to ensure that the Performance Standards are met.

5. Dredging in the Federal Navigation Project channel will only target areas that are above target depths (based on the draft of the vessels to be used to support off-shore wind energy development). The Commonwealth has indicated that it is possible that no dredging will be necessary depending on the draft. The estimate of 15 acres is a worst case scenario.

B. Blasting Special Conditions:

1. Blasting shall only be conducted in the time period from November to February.

2. To the degree practicable, erect silt curtains to isolate large schools of fish from the blast zone.

3. Monitoring of potential fish mortality is required for each blast. If excessive mortalities (hundreds of fish/event) occur, then additional technologies, such as fish startle systems or bubble curtains, may also be considered for use.

4. Plan the blasting program to minimize the total weight of explosive charges per shot and the number of shots for the project.

5. Use angular stemming material of sufficient length in drill holes to reduce energy dispersal to the aquatic environment.

6. Subdivide the charge, using detonating caps with delays or delay connectors with detonating cord, to reduce total pressure. Avoid use of submerged detonation cord.

7. Use decking when possible in lengthy drill holes to reduce total pressure.

8. For seismic exploration, use non-explosive sources when possible or use linear charges for open water shots or buried charges.

9. Used shaped charges to focus the blast energy when the submerged surface charges are necessary, reducing energy released to the aquatic environment during demolition.

C. Mitigation Special Conditions:

1. The Commonwealth shall implement the EPA-approved final Compensatory Mitigation Plan. EPA approval of the Compensatory Mitigation Plan is dependent upon several requirements, specified in the Preconditions Section above and in Section 7.3 (Compensatory Mitigation) in Appendix E.

2. The Commonwealth shall create 22.73 acres of winter flounder spawning habitat in an area just south of the hurricane barrier, consistent with the conceptual mitigation plan. This represents a replacement ratio of slightly greater than 1 to 1. The sediments in the proposed area currently possess elevated levels (1.3 to 8.2 ppm) of PCBs and are below the preferred depth range of winter flounder spawning. Clean sand from the navigational dredging will be brought in to cap the contaminated sediments and to elevate the depth of the bottom to a depth more amenable to winter flounder spawning activities.

3. Extensive bathymetric monitoring of the winter flounder spawning creation area will be undertaken to ensure that the cap does not erode with time and to measure the use of this new habitat by winter flounder for spawning. After 5 years, the acreage of the creation area must equal or exceed the acreage of the impacted area. If the creation area falls short of that target, the Commonwealth must add supplementary material in a quantity to reconcile the difference.

4. The Commonwealth shall create/enhance 4.47 acres of intertidal habitat in the OU-3 area south of the hurricane barrier by placing clean sand from the navigational dredging into this area of shallow subtidal habitat possessing sediments with elevated (1.3 to 8.2 ppm) PCB concentrations. Similar to the winter flounder spawning creation, this effort would create new habitat by changing its natural depth and would represent an improvement in habitat quality by isolating an area of contamination.

5. Extensive bathymetric surveys will be done for 5 years post construction of the OU-3 intertidal habitat. If due to erosion or sediment migration, the final acreage of the creation/enhancement area does not equal or exceed the impacts to intertidal areas, then the Commonwealth must add supplemental material to reconcile the difference.

6. The Commonwealth shall remediate 14.91 acres of shallow subtidal habitat in the OU-3 area south of the hurricane barrier by placing clean sand from the navigational dredging over sediments contaminated with elevated (1.3 to 8.2 ppm) levels of PCBs. This effort will not result in a change in habitat types, because the area will remain shallow subtidal habitat. It will result in a significant improvement in sediment quality by isolating the contaminated sediments from the environment.

7. The Commonwealth shall conduct a reseeding program of quahogs in open shellfishing areas south of the hurricane barrier. The Commonwealth plans to use larger seed clams and expects a

survival rate of about 40%. As a result, the Commonwealth must reseed 24,542,803 clams to offset the expected loss of 9,817,121 shellfish as a result of the project. Due primarily to the availability of seed, this replacement will take place over a 10 year time period (or longer if demonstrated to be necessary to achieve the mitigation goal).

8. The applicant proposes to restore/enhance a 1.9 acre salt marsh/tidal tributary in the inner harbor, bordering the western end of the hurricane barrier. Extensive monitoring will accompany this effort to ensure the success of the project.

The Commonwealth must implement its Invasive Species Plan with the following modifications: First, the ISMP proposes monitoring and reporting to occur after the first, third and fifth years of restoration. This schedule must be modified to require monitoring and reporting on an annual basis for five years at a minimum. The ISMP monitoring and reporting should be coordinated with the monitoring and reporting requirements of the Compensatory Mitigation Plan. Subsequent monitoring and reporting may be required, depending upon the success of the compensatory mitigation and the need for corrective measures in the event of unsuccessful compensatory mitigation. Secondly, the ISMP states that "removal of all invasive plant species around the periphery of the restoration area is not feasible." The ISMP does not provide adequate information to support this statement. More detailed information must be submitted for review on the types, location and areal extent of invasive species in the vicinity of the proposed compensatory mitigation project. Because the presence of peripheral invasive species is likely to undermine the success of the proposed mitigation, and because invasive species removal is common practice, the Commonwealth must provide clear explanation and justification for its proposal to not include removal of existing invasive species as part of its ISMP.

The Commonwealth also proposes to install a hooded catch basin or a trash screen at a local storm water outfall to reduce trash inflow from that source. EPA recommends that both improvements be installed. While the trash screen would be effective at removing larger trash and debris, the hooded catch basin would have the added benefit of reducing the potential discharge of oil and other floatable contaminants in the storm water. It is important that both of these infrastructure improvements be regularly maintained to assure their effectiveness.

9. The Commonwealth must develop and implement a post-construction monitoring plan for the bulkhead and pilings to detect the potential presence of new invasive species. At a minimum, the Commonwealth must conduct an annual survey of the bulkhead and a subset of the pilings for the presence of non-native species. If a new invasive species (a species that has not been previously documented in New England) is found during one of the surveys, the Commonwealth must consult the necessary experts on the new organism to determine the ecological risk posed by the species and to devise a control plan. Assuming that the new introduced species poses an ecological risk and the control plan is adequate, the Commonwealth must implement the plan. Subsequently, the monitoring frequency would be increased/adjusted to assess the success of the control plan.

D. Any Additional Conditions Resulting from EPA's ESA, EFH, and FWCA Consultations.

E. General Conditions:

1. Gifford Street provides the only vehicular access to the New Bedford Harbor Hurricane Barrier. The Commonwealth must allow vehicular access along Gifford Street at all times.

2. Environmental Monitor: EPA will include conditions related to the use of an Environmental Monitor for the duration of the construction.

3. EPA will require conformity with engineering plans and specifications.

4. EPA will include conditions similar to typical general conditions in Section 404 and Section 10 authorizations issued by the Corps of Engineers.

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EPA Draft Determination for the Proposed South Terminal Project
New Bedford Harbor State Enhanced Remedy

Appendix F
Determination of Compliance -
Section 402 of the Clean Water Act (33 U.S.C. §1342)

Clean Water Act ("CWA") Section 402, 33 U.S.C. § 1342

Analysis of CWA Section 402 Requirements Applicable to the South Terminal Project

Section 301 of the CWA, 33 U.S.C. § 1311, generally prohibits the discharge of pollutants into waters of the U.S. except in compliance with various sections of the Act, including Sections 402 and 404, 33 U.S.C. §§ 1342 and 1344. Section 402 authorizes discharges subject to the requirements of National Pollutant Discharge Elimination System ("NPDES") permits. Among the discharges regulated by the NPDES permit program are certain storm water discharges, specifically those from regulated municipal separate storm sewers systems ("MS4"); those associated with industrial activity as defined in 40 C.F.R. § 122.26(b)(14); those associated with construction activity as defined in 40 C.F.R. § 122.26(b)(15); and those specifically designated as needing a storm water NPDES permit under EPA's residual designation authority.

The NPDES-regulated discharges at the South Terminal Project that are under consideration as part of the State Enhanced Remedy ("SER") are storm water discharges associated with construction activities. Depending on future activities at the site upon its completion, the facility may be subject to NPDES permit requirements for other discharges, including storm water requirements for discharges associated with industrial activity. The operator of the facility must obtain any required NPDES permit or general permit authorization from EPA before any regulated discharge may commence.

Operators of projects subject to EPA's storm water construction regulations must comply with the terms and conditions contained in EPA's Construction General Permit (CGP) issued February 16, 2012 (http://www.epa.gov/npdes/pubs/cgp2012_finalpermit.pdf). The CGP requires operators of construction projects to develop and implement a Storm Water Pollution Prevention Plan (SWPPP) which documents the operation of the site and compliance with the terms of the permit. Some key elements of the SWPPP include:

- Sequencing of activities
- Site map
- Identification of pollutant sources
- Identification of non-storm water discharges
- Documentation of buffer requirements
- Identification of control measures to meet water quality requirements and erosion and sediment control requirements
- Identification of control measures for treatment chemicals (if applicable)
- Stabilization measures
- Pollution prevention measures and
- Procedures for inspections, maintenance and corrective actions.

A complete list of elements is found in Part 7.0 of the CGP.

Based on the information contained in the Commonwealth's submission entitled *State Enhanced Remedy in New Bedford, South Terminal (January 18, 2012)*(hereafter MassDEP 2012), EPA has tentatively concluded that if the construction operations and

storm water management measures are undertaken as described, the storm water discharges should meet the terms of the CGP. The submission contains an abbreviated storm water plan. The plan must be updated and completed to address all of the elements of the CGP no later than fourteen (14) days before land disturbing activities take place. The key elements of the SWPPP are addressed as follows:

- Sequencing of activities -- The overall sequencing of activities is described in MassDEP 2012 at Part 6.5.2.4.2.

- Site map -- An aerial site map is included in MassDEP 2012 at Part 6.5.2.1. A more detailed map must be developed before earth disturbing activities begin. The site map must indicate the location of storm water Best Management Practices ("BMPs"), material storage areas, pollutant sources, surface waters, etc. (see Part 7.2.6 of the CGP).

- Identification of pollutant sources -- Potential storm water pollutants and their sources are identified in MassDEP 2012 at Part 6.5.2.3. The pollutants include sediment, PCBs, heavy metals, oil, grease, fuel, paint, trash and debris, sanitary waste, landscaping materials, and building materials.

- Identification of non-storm water discharges -- The submission does not indicate the presence of sources of non-storm water discharges. The Commonwealth must evaluate the list of allowable non-storm water discharges in Part 1.3.d. of the CGP to determine if any of the sources will be present and, if so, reflect that in the final SWPPP, as well as measures to address such discharges consistent with the CGP.

- Documentation of buffer requirements -- Part 2.1.2.1 of the CGP has a requirement for the operator to maintain either a 50 foot vegetative buffer between the land disturbance activity and a surface water, or to maintain the equivalent of a 50 foot vegetative buffer. However, disturbances within 50 feet of a surface water are exempt from these requirements if they are associated with either construction approved under a CWA Section 404 permit, or construction of a water-dependent structure or water access area (e.g., pier, boat ramp, trail) (see Part 2.1.2.1.e.v. of the CGP). MassDEP's submission does not address these requirements because they did not exist at the time the document was developed. The Commonwealth must document in its SWPPP which portions of the site fall within the exemptions identified above, and if there are any other portions of the site that are not subject to the exemptions, include measures to be taken to comply with this provision in the SWPPP.

- Identification of control measures to meet water quality requirements and erosion and sediment control requirements -- Part 6.5.2.4 of MassDEP 2012 details sediment and erosion control BMPs that will be used. The New Bedford Harbor is impaired for priority organics, metals, nutrients, organic enrichment/low dissolved oxygen, pathogens, oil & grease, taste, odor, color, and objectionable deposits. The document states that the storm water system "...will be designed

and operated to ensure that discharges from the site do not cause or contribute to a violation of any applicable water quality standard...." Id. at 245. EPA has tentatively concluded that the BMPs are appropriate and, if implemented as described, will be sufficient to satisfy the permit requirements.

- Identification of control measures to address treatment chemicals --The Commonwealth's submission does not indicate whether storm water treatment chemicals will be used. The Commonwealth must evaluate whether they will be used and, if so, must include in the SWPPP measures to ensure that such use will be consistent with Part 2.1.3.3 of the CGP. In addition, if the Commonwealth intends to use cationic treatment chemicals, it must inform EPA so that the Agency can determine what additional conditions must be satisfied, before EPA makes a final decision about authorizing this project under the SER.

- Stabilization measures -- Part 6.5.2.4.4 of MassDEP 2012 details both temporary and permanent stabilization practices, and EPA has tentatively concluded that these practices are appropriate and sufficient.

- Pollution prevention measures -- In the section that identifies potential pollutant sources, the document also describes BMPs and pollution prevention measures that will be used to minimize and control the pollutants. EPA has tentatively concluded that these measures are appropriate and sufficient.

- Procedures for inspections, maintenance and corrective actions -- Part 6.5.2.4.1 of MassDEP 2012 indicates there will be weekly inspections of silt fences and maintenance when sediment has reached 6 inches. EPA has tentatively concluded that these inspection and maintenance measures are appropriate and sufficient. Part 5 of the CGP also requires operators to identify corrective actions to be taken in the event the operator determines that a required storm water control was never installed, was installed incorrectly, or not in accordance with the permit requirements; the operator determines the controls are not effective; or one of the prohibited discharges in Part 2.3.1 of the CGP has occurred. MassDEP's submission does not address the corrective action requirements because they did not exist at the time the document was developed. The Commonwealth must develop corrective action measures consistent with the CGP and include them in the SWPPP.

The Commonwealth's submission indicates that the future use of this site is "maritime commerce." Storm water runoff from this activity could be classified under "Water Transportation" (Standard Industrial Classification ("SIC") 44), which is a regulated activity under the federal storm water program for discharges associated with industrial activity. Determination of storm water requirements for the operation of the completed site is beyond the scope of this review, which, as noted above, only addresses storm water associated with construction activities.

To the extent that discharges from the State Enhanced Remedy facility discharge to waters of the United States through the New Bedford municipal storm sewer system, the operators of the facility are encourage to coordinate their storm water management activities with those of the City.

Draft Conditions

EPA's authorization of storm water discharges associated with construction activities as part of the State Enhanced Remedy is conditioned upon the Commonwealth's updating and completion of its SWPPP to address all of the elements of the CGP no later than fourteen (14) days before land disturbing activities take place, and on the Commonwealth's implementation of the SWPPP consistent with the terms and conditions of the CGP.

EPA Draft Determination for the Proposed South Terminal Project
New Bedford Harbor State Enhanced Remedy

Appendix G
Determination of Compliance -
National Historic Preservation Act (16 U.S.C. §470)
36 C.F.R. Part 800

Summary of Activities Taken Pursuant to National Historic Preservation Act (NHPA) and Tribal Consultation Requirements

The National Historic Preservation Act (NHPA) establishes a national program to ensure that the impacts of impacts of growth and development on historic properties are considered as Federal programs and projects are implemented. Section 106 of the Act requires that Federal agencies consider the effects of their undertakings on historic properties. In particular, Section 106 states that a Federal agency that has direct or indirect jurisdiction over a Federal undertaking shall, prior to the undertaking, take into account the effect of the undertaking on any site, building, structure or object that is included or eligible for inclusion in the National Registry. See 16 USC 470f. The Advisory Council on Historic Preservation (ACHP) regulations found at 36 CFR Part 800 govern the implementation of Section 106.

Prior to implementation, the New Bedford Harbor South Terminal CDF Project (the Project) must receive approval from EPA. Under the NHPA, an "undertaking" is defined an activity under the direct or indirect jurisdiction of a Federal agency, including any form of Federal approval such as a license or permit. 36 CFR § 800.16(y). EPA's approval of the Project arguably fits within the definition of a Federal undertaking. As a result, under the NHPA, EPA should determine what effect this approval could have on historic properties in advance of this approval. 36 CFR § 800.3(a). A historic property is defined as any site, building, structure or object that is listed on or eligible for listing on the National Registry of Historic Places. 36 CFR § 800.16(l).

In making determinations and findings concerning the effects of an undertaking on historic properties, the Federal agency should consult with other parties who have a significant interest in historic preservation issues, including but not limited to the State Historic Preservation Officer(s) (SHPO), federally recognized Indian Tribes, and Tribal Historic Preservation Officer(s) (THPO). See 36 CFR § 800.2(c). Agency officials may use the services of applicants, consultants or designees to prepare information, analyses and recommendations. 36 CFR § 800.2(a)(3). If the agency determines that the undertaking does not have the potential to cause adverse effects on historic properties, the agency official has no further obligations under the ACHP regulations. 36 CFR § 800.3(a)(1).

In accordance with the ACHP regulations and at the behest of EPA, contractors for the Commonwealth conducted archeological investigations during the summer, fall, and winter of 2010 within all of the areas projected to be impacted by the Project, including the subtidal, intertidal, and upland areas, to determine the impacts of this project on historic properties. The archeological investigations are summarized in five reports, including an upland archeological investigation report, an intertidal archeological investigation report, a subtidal archeological investigation report, a Phase I & IB underwater archeological investigation, and a Phase II investigation of a located shipwreck. These reports were provided to the SHPO, Massachusetts Board of Underwater Archeological Resources (MBUAR), and Wampanoag Tribe of Gay Head (Aquinnah) and Mashpee Wampanoag Tribe THPOs for review and comment as they were issued. In addition, these studies were resubmitted to the THPOs as part of the Commonwealth's

January 18, 2012 comprehensive submittal to EPA entitled State Enhanced Remedy in New Bedford, South Terminal.

In particular, the Commonwealth conducted cultural resources background research and prepared an archeological sensitivity assessment of a 12 acre upland portion of the Project area in June 2010. The assessment identified one previous archeological site within or adjacent to the Project area, while three additional historic sites are located within one kilometer of the area. No prehistoric archeological sites have been recorded within one kilometer of the Project area. In addition, the assessment determined that no State or National Register of Historic Places listed/eligible properties are located within or immediately adjacent to the Project Area.

The assessment concluded that the Project area has been extensively disturbed by 19th century industrial development. No above ground remnants of the previously recorded archeological site within the Project area exist, and any archeological remains, if present, will be covered by demolition rubble, fill and crushed stone to ensure that intact remains are not disturbed. As a result, the assessment concluded that no additional cultural resources background research or archeological subsurface investigation is necessary in the upland area. The SHPO concurred with this conclusion and recommended additional investigation of the non-upland portions of the Project site to evaluate the likelihood of Native American cultural resources.

Since completion of this assessment, the size of the upland area has significantly increased from 12 acres to approximately 21.4 acres to allow for additional lay down space. The Commonwealth has committed to undertake additional assessments, including archeological assessments, as it finalizes the fully delineated site. As noted above, the upland area has been subject to prior disturbance (e.g. demolition of former large industrial structures), and the anticipated use of the additional acreage for lay down will be limited to very near surface disturbances. As a result, the Commonwealth is confident that additional archeological assessments will not result in the need to modify or eliminate the use of any of the previously unassessed parcels. EPA cannot, however, reach the determination that the Project will have no potential adverse effect on historic properties in the upland area until a final assessment of the entire area is completed, and consulting parties are appropriately engaged.

In accordance with the SHPO's recommendation regarding paleosols, the Commonwealth conducted assessments of prehistoric archeological site potential for the intertidal and subtidal portions of the Project. MBUAR issued a provisional special use permit for the intertidal area on August 12, 2010; the Board confirmed its approval of this permit in letter dated September 30, 2010. In a September 9, 2010 letter to the EPA, the SHPO confirmed that the research design and methodology for assessments concerning these portions of the Project were adequate.

The reports concerning the intertidal and subtidal areas were submitted to the SHPO and MBUAR in October 2010. The intertidal report concluded that the area has low prehistoric archeological potential, and recommended that no further prehistoric evaluation of the intertidal portions of the project areas. The subtidal report, however, concluded that this area has a moderate potential for submerged prehistoric sites. Accordingly, the report recommended that a suitably trained archeologist be on board dredging vessels to monitor ground disturbing

activities. As explained in more detail below, in consultation with the Wampanoag Tribe of Gay Head (Aquinnah) and Mashpee Wampanoag Tribe, the Commonwealth has agreed, among other things, to have a suitably trained archeologist on board dredging vessels to monitor ground disturbing activities.

Both the SHPO and THPOs noted concerns about the preservation of paleosols, which are fossilized soils preserved within a sequence of geological deposits that are indicative of past conditions. In particular, the SHPO submitted a response to the intertidal and subtidal investigations on November 18, 2010. The SHPO noted that both the subtidal and intertidal zone investigations identified areas with intact paleosols, and requested that the Project planners consider an alternative that would avoid and protect these soils. Similarly, tribal concerns regarding the Project, as voiced by the Tribal Historic Preservation Officers from both the Mashpee Wampanoag Tribe and the Wampanoag Tribe of Gay Head (Aquinnah), also centered on the preservation of paleosols within the area of potential effect of the Project.

MBUAR submitted a response to the subtidal investigation on November 28, 2010. Although generally agreeing that the Project has a low potential for yielding Native American cultural resources, MBUAR requested that the Project be redesigned to avoid any impacts to the areas containing paleosols. The Board also suggested that the Commonwealth develop an unanticipated finds procedure to limit adverse affects to cultural resources discovered in the course of the Project.

The Commonwealth responded to the requests by the SHPO, MBUAR and THPOs to consider an alternative that avoids impacts to paleosols on January 12, 2011. In its response, the Commonwealth confirmed that the footprint of the facility would be altered to avoid impacts to mapped paleosols via either filling or dredging associated with the proposed Project by slightly reorienting its southern face.

Moreover, the Commonwealth will require its contractor to take additional actions to ensure that Project dredging activities will not cause adverse effects on paleosol areas. In particular, the contractor will be required to demarcate areas of cultural resource area significance (such as the subtidal and intertidal paleosol areas) prior to the start of construction. No equipment will be allowed within or floating above a paleosol area. No dredging or other work activities will take place within 100 feet of a paleosol area without the implementation of temporary excavation support (anticipated to be in the form of sheet piling to support the paleosol area). These precautions will ensure that the paleosol areas will not be disturbed during dredging or other work activities.

To date, neither the SHPO nor MBUAR has objected to or raised concerns regarding the proposed alternative. In addition, should unanticipated cultural resources be discovered during the implementation of the Project, the Commonwealth will rely upon the procedures set out in MBUAR's Policy Guidance for the Discovery of Unanticipated Underwater Archaeological Resources and Policy Guidance on the Discovery of Unanticipated Human Remains to limit adverse effects to these resources.

In March 2011, the Tribes met with the Commonwealth, its consultants, and EPA, over continuing concerns regarding the geotechnical investigations, proposed construction and potential impacts to paleosols. The Mashpee THPO requested the re-testing of a core sample containing ruddy sediment to confirm that there was no evidence of paleosols. The Tribes also requested that the Commonwealth provide direct notification to them in advance of any activities to ensure that the THPO's staff can schedule monitoring. In addition, they requested that scopes of work for any scheduled activities be sent to them for review, including protocol and criteria for procedures should cultural properties be discovered. The Commonwealth agreed to comply with these conditions.

In response to the Mashpee THPO's request, the Commonwealth re-tested the core sample in question and confirmed that there was no evidence of a paleosol. The April 2011 report regarding the results of this testing concluded that the sample did not contain evidence of formerly subaerial conditions, buried upland landscapes, or human or animal interments or cremations and was provided to the consulting parties.

Subsequent to the issuance of the April 2011 report, an additional consultation conference call, a consultation meeting at the Mashpee Natural Resources office in Mashpee, MA, and email information exchanges were conducted involving EPA, the Tribes and the Commonwealth. These meetings were held to ensure that the Tribes were fully informed of the Commonwealth's plans moving forward. The Tribes also requested that they be provided with the opportunity to monitor any Project activities that take place.

In August 2011, a geotechnical exploration involving pile-driving from a barge took place along the eastern face of the proposed terminal facility, which was between 250 and 300 feet from the nearest boundary of the paleosol areas. The purpose of the pilot test was to generate a higher degree of certainty regarding the anticipated penetration of the sheets during construction and was not intended to provide any relevant information with regard to permitting or assessment of archeological resources. Tribal monitoring took place during the activities. A total of five sheets in five locations were driven into the subsurface and then removed without any major disturbance of paleosols. No samples were collected during this activity. The archaeologist did not provide a report for the collection of that information because the activity was engineering in nature and did not provide any relevant permitting or archeological assessment value.

In October 2011, the Commonwealth conducted further investigations involving vibracore sample borings to collect additional environmental samples for testing beyond the area of mapped paleosols. The samples were collected using a vibrating core barrel which was advanced through the subsurface. These vibracores were also collected in the same location as previous vibracores has been collected; as a result, the archaeologist did not re-catalog the soils. Tribal monitoring took place during this activity.

The Commonwealth also conducted intensive marine archaeological reconnaissance surveys of the subtidal portions of the Project area to identify any previously recorded or unrecorded historic properties. The Phase I & IB surveys were submitted to MBUAR in September 2010. The Phase I survey found, and the Phase IB survey confirmed, the presence of a significant

cultural resource, namely, a late 20th/early 19th century sailing ship. The Phase I survey also recommended that no additional investigations of other target areas be conducted.

The January 2011 Phase II investigation report of the shipwreck target area confirmed that the wreck is the Thomas H. Lawrence, a schooner which burned and sank in New Bedford Harbor in 1941. Because of the deteriorated condition of this vessel, the report concluded that the archeological research potential of the wreck site is limited. As a result, the report recommended that any further investigation of the Thomas H. Lawrence was not warranted. On February 17, 2011, the Commonwealth received concurrence letters from the SHPO and MBUAR agreeing with the conclusion reached by the investigation that the shipwreck does not meet the Criteria of Eligibility for listing in the National Register of Historic Places (36 CFR Part 60), and that the site lacks integrity. As a result, EPA, the Commonwealth, the SHPO and MBUAR agree that no further investigation is warranted in connection with this shipwreck.

Since issuance of its January 18, 2012 comprehensive submission, the Commonwealth invited the Tribes to attend an April 11, 2012 public meeting in New Bedford regarding the Project. In addition, the EPA Indian Program Manager contacted both Tribes in June 2012 to offer them an opportunity to comment on the submittal before EPA issues its draft decision regarding the Project for public comment. The Wampanoag Tribe of Gay Head (Aquinnah) relayed that they have no substantive comments on the comprehensive submittal except that the agreed-upon communication, coordination, and monitoring protocols between the Tribes and Commonwealth continue. In addition, the Tribes indicated that they may monitor pile driving activities from the barge where it will take place; tribal monitoring of dredging and filling activities will take place from the shoreline

EPA has reviewed all of the archeological investigations concerning the areas projected to be impacted by the Project, including the upland archeological investigation report, the intertidal archeological investigation report, the subtidal archeological investigation report, the Phase I & IB underwater archeological investigation, and the Phase II investigation of a located shipwreck, and considered the input of the consulting parties to this project, including the SHPO, MBUAR, the Wampanoag Tribe of Gay Head (Aquinnah) and the Mashpee Wampanoag Tribe. In accordance with comments from both the SHPO and MBUAR, the footprint of the Project facility will be altered to avoid impacts to historic properties. Neither the SHPO nor MBUAR have objected to or raised concerns regarding the proposed alternative redesign of this facility. In addition, EPA has considered the comments, conditions imposed, and investigations performed as the result of consultations with the Wampanoag Tribe of Gay Head (Aquinnah) and the Mashpee Wampanoag Tribe.

Moreover, the Commonwealth has imposed additional conditions to avoid adverse effects to historic properties. In particular, if unanticipated cultural resources are discovered during the implementation of the Project, the Commonwealth will rely upon the procedures set out in MBUAR's Policy Guidance for the Discovery of Unanticipated Underwater Archaeological Resources and Policy Guidance on the Discovery of Unanticipated Human Remains to limit adverse affects to these resources. The Commonwealth has also agreed to have a suitably trained archeologist on board dredging vessels to monitor ground disturbing activities.

The consulting parties have also agreed that the shipwreck does not meet the Criteria of Eligibility for listing in the National Register of Historic Places (36 CFR Part 60), and that the site lacks integrity. As a result, the consulting parties agree that no further investigation is warranted in connection with this shipwreck.

On April 10, 2012 the Mashpee Wampanoag Tribe notified the Commonwealth that the THPO duties were reassigned. When EPA contacted the new THPO in June 2012 regarding the January 18, 2012 comprehensive submittal, she sought assurance that the paleosols, if left undisturbed, would not be "hazardous or dangerous" to future generations as a result of environmental contamination. If this cannot be guaranteed, she recommended that the paleosols be removed along with other contaminated soils.

A consultation meeting was held at Woods Hole, MA on Monday, July 2, 2012 with the EPA Tribal Program Manager, Commonwealth and two Wampanoag Tribes to discuss the Mashpee Wampanoag THPO's concern regarding paleosols as well as other concerns related to construction of the Project. To address the THPO's concern, the Commonwealth explained that contamination of soils is limited to sediments extending two to three feet in depth from the bottom surface at a concentration of less than 1 part per million. The subtidal paleosol is located from approximately 4.3 feet to 6.0 feet below the bottom surface. Therefore, it is unlikely that paleosols could expose future generations to contamination.

Although unrelated to tribal historic properties, the Commonwealth also discussed CAD cell construction during this meeting. The Commonwealth explained that it chose this disposal method because offsite disposal was too costly to be considered, adding that the site restoration would exceed EPA's minimum standards. The Commonwealth also noted that CAD cells would be exposed for approximately 360 to 540 days until capped with clean fill material. The Tribes requested that the Commonwealth consider capping with bentonite clay instead of clean fill to reduce the threat of exposure to shellfish and marine fish species. They also requested that an improved sequencing of CAD cell construction be considered to avoid long lead times before cells are capped.

The Commonwealth also explained that if ledge is encountered and the dredging width cannot be adjusted to avoid the ledge, blasting may be required. The Commonwealth has requested approval from EPA to use blasting as an option only if necessary to remove the ledge. The Commonwealth explained that while blasting would not be in the vicinity of the paleosols and therefore would have no effect on them, the effect of blasting on fish is of concern to EPA. The Tribes echoed this concern. Finally, the Tribes requested that they be contacted if any wooden objects are discovered in future explorations or construction.

The Commonwealth and EPA agreed to engage in additional consultation with the Tribes after publication of EPA's proposed Project decision. If requested, the Commonwealth is also committed to engage in additional discussions regarding tribal concerns raised during the July 2012 meeting that are unrelated to historic properties (such as CAD cell construction and blasting). The parties agreed that the next consultation meeting will be held on August 13, 2012.

On a final note, EPA and the Commonwealth will continue to abide by the coordination and communication protocols requested by the Tribes in the March 2011 meeting discussed above. In addition, EPA anticipates that it will revise a May 2010 Memorandum of Understanding between EPA, the Wampanoag Tribe of Gay Head (Aquinnah), and the US Army Corps of Engineers pertaining to cultural resources for the New Bedford Harbor Superfund Site. EPA anticipates that the revised MOU will include the May 2010 MOU signatories and well as the Mashpee Wampanoag Tribe and the Commonwealth.

In light of the investigations, project design modification, determinations, commitments, and conditions discussed above, it is EPA's intent to propose a finding of no adverse affect in connection with the subtidal and intertidal areas as long as the Commonwealth agrees to abide by the conditions discussed above. In accordance with the ACHP regulations, EPA will notify the consulting parties of this finding. If the SHPO and THPOs agree with the finding or do not provide a response within 30 days of its receipt, EPA may proceed with its approval of the Project for the subtidal and intertidal areas. 36 CFR § 800.5. EPA cannot, however, conclude the Section 106 consultation process in connection with the upland area until a final assessment of the entire area is completed, and consulting parties are appropriately engaged.

EPA Draft Determination for the Proposed South Terminal Project
New Bedford Harbor State Enhanced Remedy

Appendix H
Determination of Compliance
Essential Fish Habitat Assessment under the Magnuson-Stevens Act (16 U.S.C. § § 1851 *et seq.)*

Essential Fish Habitat Assessment under the Magnuson-Stevens Act, 16 U.S.C. §§ 1851 et seq.

Under Section 305(b)(2) of the Magnuson-Stevens Act, federal agencies need to consult with the National Marine Fisheries Service (NMFS) on activities that have the potential to impact designated essential fish habitat (EFH) for commercial species. As part of that consultation process, the federal action agency produces an analysis that projects impacts to EFH from its proposed action.

EPA has produced an EFH analysis as part of the approval process for the inclusion of the New Bedford Marine Terminal into the State Enhanced Remedy for the New Bedford Harbor Superfund site. This analysis lists the full range of commercial fish species which could potentially occur within New Bedford Harbor and the Acushnet River. The analysis then reduces this larger list of species to a subset of species that have the highest potential to be impacted by the proposed action. This reduction is completed by reviewing physical habitat requirements for each species and known physical habitat in the project area. The specific details of the proposed project are then considered in regards to the species at greatest risk. The analysis points out changes that have been adopted that minimize impacts to EFH and any mitigation that has been proposed to compensate for remaining impacts.

Designated EFH species for the Acushnet River and New Bedford Harbor: EFH is designated in fairly large areas by NMFS. These designations occur in 10'x10' squares. The description of the square that encompasses the project area is listed below with coordinates of each corner and a description of landmarks.

10' x 10' Square Coordinates

Boundary	North	East	South	West
Coordinate	41° 40.0' N	70° 50.0' W	41° 30.0' N	71° 00.0' W

Square Description (i.e. habitat, landmarks, coastline markers): Waters within Buzzards Bay within the Atlantic Ocean within the square affecting the following: south of Dartmouth, MA, New Bedford, MA, and Fairhaven, MA, from Sconticut Neck and the western part of West Island to Slocum Neck and Barney's Joy Point in Dartmouth, MA. Also affected are: Wilkes Ledge Mishaum Point, Round Hill Point, Smith Neck, Dumpling Rocks, Negro Ledge, Great Ledge, Phinney Rock, Pawn Rock, White Rock, Hussey Rock, Apponagansett Bay, and Ricketson Point in South Dartmouth, MA, Apponagansett, MA, Clarks Cove, Clarks Point in Fairhaven, MA, Butler Flats, Mosher Ledge, Wilbur Point on Sconticut Neck, Bents Ledge, Middle Ledge, and West Ledge. These waters are also within western Nasketucket Bay, east of Sconticut Neck and north of West Island and within New Bedford Harbor.

Species	Eggs	Larvae	Juveniles	Adults
Atlantic cod (*Gadus morhua*)	X	X	X	X
haddock (*Melanogrammus aegelefinus*)	X	X		
pollock (*Pollochius virens*)				
whiting (*Merluccius bilinearis*)				
offshore hake (*Merluccius albidus*)				
red hake (*Urophycis chuss*)		X	X	X
white hake (*Urophycis tenuis*)				
redfish (*Sebastes fasciatus*)	n/a			
witch flounder (*Glyptocephalus cynoglossus*)				
winter flounder (*Pleuronectes americanus*)	X	X	X	X
yellowtail flounder (*Pleuronectes ferruginea*)				
windowpane flounder (*Scopthalmus aquosus*)	X	X	X	X
American plaice (*Hippoglossoides platessoides*)			X	X
ocean pout (*Macrozoarces americanus*)				
Atlantic halibut (*Hippoglossus hippoglossus*)				
Atlantic sea scallop (*Placopecten magellanicus*)				
Atlantic sea herring (*Clupea harengus*)			X	X
monkfish (*Lophius americanus*)				
bluefish (*Pomatomus saltatrix*)			X	X
long finned squid (*Loligo pealei*)	n/a	n/a	X	X
short finned squid (*Illex illecebrosus*)	n/a	n/a		
Atlantic butterfish (*Peprilus triacanthus*)	X	X	X	X

Atlantic mackerel (*Scomber scombrus*)	X	X	X	X
summer flounder (*Paralicthys dentatus*)	X	X	X	X
scup (*Stenotomus chrysops*)	X	X	X	X
black sea bass (*Centropristus striata*)	n/a	X	X	X
surf clam (*Spisula solidissima*)	n/a	n/a	X	X
ocean quahog (*Artica islandica*)	n/a	n/a		
spiny dogfish (*Squalus acanthias*)	n/a	n/a		
tilefish (*Lopholatilus chamaeleonticeps*)				
king mackerel (*Scomberomorus cavalla*)	X	X	X	X
Spanish mackerel (*Scomberomorus maculatus*)	X	X	X	X
cobia (*Rachycentron canadium*)	X	X	X	X
sandbar shark (*Charcharinus plumbeus*)				X
bluefin tuna (*Thunnus thynnus*)			X	

Proposed Project Description: The Commonwealth of Massachusetts proposes the development of an approximately 28-acre marine terminal capable of supporting offshore renewable energy development and other future uses. The facility would also provide a site for the disposal of navigational dredged material associated with the State Enhanced Remedy ("SER") during construction of the facility, and would support staging of additional dredged material for beneficial reuse during operation of the facility. The facility would be located at the South Terminal area in lower New Bedford Harbor. The proposal is described in detail in the document entitled State Enhanced Remedy in New Bedford, South Terminal and its appendices, dated January 18, 2012 and submitted by the Massachusetts Department of Environmental Protection ("MassDEP") on behalf of the Commonwealth (hereafter referred to as MassDEP 2012). The Commonwealth has updated and supplemented its January 18, 2012 submission with several additional submissions (with attachments), including submissions dated June 18, 2012 (hereafter MassDEP 2012a) and June 29, 2012 (hereafter MassDEP 2012b).

The project's components include:

1. Installation of a 1200 linear foot bulkhead in the Harbor, and placement of dredged material (clean sand) behind the bulkhead, resulting in the filling of intertidal habitat, shallow,

near-shore sub-tidal habitat, and salt marsh. This filled structure, referred to as a confined disposal facility ("CDF"), will be adjacent to approximately 22 acres of upland that, together with the filled structure, will comprise the terminal facility;

2. Dredging of shallow, near-shore, sub-tidal habitat and deeper sub-tidal habitat to provide navigational access to and berthing at the terminal; to realign the Gifford Street Boat Ramp Channel and create new mooring areas (to mitigate impacts to recreational users from the South Terminal dredging); and to conduct maintenance dredging in the Federal Navigation Project channel and turning basin: and

3. Dredging of shallow, near-shore, sub-tidal habitat to create a confined aquatic disposal ("CAD") cell, identified as "CAD Cell 3," which will then be filled with contaminated dredged material from the above-described navigational dredging.

4. Disposal of contaminated dredged material from the above-described navigational dredging into CAD Cell 3 and existing CAD cell 2, and well as capping existing CAD Cell 1 and the "Borrow Pit" with clean dredged material.

5. Compensatory mitigation to address impacts to wetlands, intertidal habitat, subtidal habitat, and shellfish resources.

Species Least Likely to be Impacted: Not all the listed EFH species have the same probability of being affected by the proposed project. A number of the listed species do not have life stages that are commonly found in New Bedford Harbor or the Acushnet River. These species tend to prefer deeper water or water with higher salinity. EPA has assessed the likelihood of occurrence of each species based on a review of existing data from New Bedford Harbor and the Acushnet River and a review of the species specific habitat requirements as published by the National Oceanic and Atmospheric Administration (NOAA).

Some of the listed species may only occur in the project area as juveniles or adults. These life stages tend to be more mobile and resilient, so potential impacts from dredging or inwater construction may be primarily avoidance of areas of elevated suspended solids. The liberal and proper use of containment barriers would minimize the potential area affected by elevated solids concentrations. These impacts represent a temporary disturbance that EPA, in its mitigation conditions, will ensure are minimized to the greatest extent practicable.

Thus, EPA has tentatively determined that the species listed below may not be impacted at all or at most may suffer minor temporary impacts. EPA intends to require the Commonwealth to employ the normal safeguards taken for dredging (containment barriers, water quality monitoring) to minimize the size and duration of any temporary impacts.

Atlantic cod
Haddock

Red hake
American plaice
Atlantic butterfish
Atlantic mackerel
Sandbar shark
Bluefin tuna
Atlantic sea herring
Bluefish
Long finned squid
Surf clam
King mackerel
Spanish mackerel
Cobia
Summer flounder.

Species Most Likely to be impacted: Of the listed EFH species, EPA has determined that winter flounder, windowpane flounder, scup and black sea bass face the greatest potential to suffer adverse impacts from the proposed project. This determination was made in large part due to the known presence of these species in the project area and the use of the project area by the more sensitive life stages (egg and larvae) of these species (MassDEP, 2012).

Analysis of Potential Impacts: Potential impacts to winter flounder, windowpane flounder, scup and black sea bass could occur as the result of the physical loss of benthic habitat, degradation of water quality, and the loss of shallow subtidal and intertidal habitat as a result of filling or dredging.

Physical loss of benthic habitat: Winter flounder, windowpane flounder, scup and sea bass are all considered benthic fish, which simply means they are typically found on or near the sea floor. These species generally feed on benthic invertebrates and small fish that live in and on the sea floor. Table 1 details the likely prey items for each life stage of each of these four species.

Table 1: Likely prey items per life stage of winter flounder, windowpane flounder, scup and black sea bass

Species	Life Stage	Likely prey	Source
Winter flounder (*Pseudopleuronectes americanus*)	larval	Nauplii, invertebrate eggs, protozoans, polychaetes	Pereira et al. 1999
	juvenile	Sand dollar, bivalve	

		siphons, polychaetes, amphipods	
	adult	Amphipods, polychaetes, bivalves or siphons, capelin eggs, crustaceans	
Windowpane flounder (*Scopthalmus aquosus*)	larval	Copepods and other zooplankton	Chang et al. 1999
	juvenile	Polychaetes and small crustaceans such as mysids	
	adult	Polychaetes, mysids, decapods, shrimp, hake and tomcod	
Scup (*Stenotomus chrysops*)	larval	Zooplankton	Steimle et al. 1999a
	juvenile	Small benthic invertebrates, fish eggs and larvae	
	adult	Benthic and near bottom invertebrates and small fish	
Black sea bass (*Centropristus striata*)	larval	Zooplankton	Steimle et al. 1999b
	juvenile	Small epibenthic invertebrates, such as crustaceans	
	adult	Benthic, near bottom invertebrates and small fish	

The construction of the terminal will result in the filling and permanent loss of 1.94 acres of intertidal habitat, 4.73 acres of near-shore shallow subtidal habitat and 0.18 acres of fringing salt marsh, for a total permanent loss of just over 6.85 acres of habitat.

There will also be temporary impacts from filling. First, the mitigation plan involves some placement of clean sand from the navigational dredging in several areas outside the hurricane barrier in order to raise the seafloor to create or enhance habitat. To create winter flounder spawning habitat, the Commonwealth will place clean sand on 22.73 acres of subtidal seafloor to create shallow subtidal habitat. Clean sand will also be placed to raise seafloor depths in subtidal areas to create 4.47 acres of intertidal habitat. In addition, clean sand will be placed to

enhance/restore approximately 14.91 acres of shallow subtidal habitat. Throughout these restoration areas, PCB concentrations in the sediments range from 1-8 ppm. Covering these sediments with clean sand will eliminate exposure of elevated levels of PCBs to the biological community. The impacts from these fill activities are considered temporary, because aquatic habitat will be available for recolonization and use by organisms upon completion.

Second, clean sand excavated from the proposed CAD cell 3 will provide capping material to isolate PCB contaminated sediment in existing CAD cell 1 and the "Borrow Pit". There will also be further disposal of contaminated sediments into the partially filled CAD cell 2. The capping of the existing CAD cell 1 and the "Borrow Pit" will result in mortality to benthic organisms that may have recolonized those areas since they have been filled, but more importantly the filling will complete the containment strategy that results in the isolation of PCB contaminated sediment from the aquatic ecosystem. There will be additional temporary impacts to the benthic community by the placement of fill within CAD cell 2, which is approximately 2 acres in size.

Temporary filling impacts from this proposal will affect approximately 52.91 acres of aquatic habitat. The impacts due to filling are summarized in Table 2.

Table 2: Summary of filling impacts from South Terminal Project

Habitat type	Acreage	Permanent/temporary
Intertidal	1.94	Permanent
Shallow subtidal	4.73	Permanent
Salt marsh	0.18	Permanent
Winter flounder spawning habitat creation	22.73	Temporary
Intertidal creation/enhancement	4.73	Temporary
Near shore subtidal enhancement	14.91	Temporary
CAD Cells 1 and 2 and the "Borrow Pit"	10.8	Temporary

The dredging associated with the project will potentially impact a cumulative total of 53.7 acres of seafloor. The breakdown of dredging impacts is listed in Table 3.

Table 3: Summary of dredging impacts from South Terminal Project

Location	Acreage	Starting depth (ft)	Target depth (ft)
Quayside areas	7.02	-1 to -6	-30 to -32
Quayside areas/tug	8.46	-1 to -6	-14

channel			
Gifford St. mooring	6.17	-1 to -6	-6 to -7
CAD cell #3	8.76	-4 to -6	-45 then filled to original elevation and capped
South Terminal Channel	8.29	-20 to -25	-30
Federal Channel	15	Existing depths	-30

Total = 53.7

The various dredging and filling activities associated with construction of the project will result in either the removal (by dredging) or burial (by filling) of many of the benthic prey items favored by these species. The benthic infaunal community will be removed with the sediment or buried, so polychaetes, bivalves and burrowing amphipods will be lost within the footprint of proposed work. Epibenthic invertebrates of limited mobility (snails, sea stars, sand dollars) will also suffer significant mortality from the dredging. More mobile epibenthic invertebrates (crabs, lobsters, shrimp) will likely suffer some mortality as well, but their mobility will allow some individuals to leave or avoid the impact zone.

The impacts associated with the filling to construct the terminal will be permanent and represent a loss of approximately 6.85 acres of habitat for all species utilizing the area. The impacts associated with the dredging, the partial filling that will occur with compensatory mitigation, and the filling of the CAD cell, will be temporary, except with respect to winter flounder habitat, discussed further below. As soon as the dredging and/or filling stops, mobile crustaceans will return to the dredged or filled footprint. Lobsters, crabs and shrimp use chemoreception to detect prey and they are drawn to the "odor" of disturbed sediments. It is believed that they view the presence of disturbed sediments as an opportunity to forage for exposed and defenseless benthic infauna. The benthic infaunal community will begin colonizing the newly exposed sediments during the next spawning event. Typically, opportunistic shallow burrowing polychaetes are the first organisms to colonize an area. The paradigm for benthic community ecology follows that the quick reproducing small polychaetes comprise the initial or Stage I benthic community (Rhoads and Germano, 1986). The Stage II community features slightly larger polychaetes and some small shellfish that typically are slightly deeper burrowers than what is found in Stage I (Rhoads and Germano, 1986). The final step in the successional process is the Stage III community. This community is characterized by large deep burrowing bivalves and larger polychates (Rhoads and Germano, 1986). The presence of large concentrations of bivalves within the dredge footprint suggests that this area currently is a Stage III community. Full recovery to a Stage III successional community will likely take 3-7 years (Rhoads and Germano, 1986).

The proposed project will result in the projected loss of almost 10 million shellfish. Clam siphons

are a known preferred prey item for winter flounder (Periera et al., 1999). EPA views this large impact as a loss to the forage base for winter flounder that should be mitigated for.

The dredging will alter the depth of the sea floor and has the potential to change the sediment characteristics of the bottom. Winter flounder, windowpane flounder, scup and black sea bass all have specific habitat requirements for spawning. These habitat requirements are listed in Table 4.

Table 4: Spawning habitat requirements of winter flounder, windowpane flounder, scup and black sea bass

Species	Temperature (°C)	Salinity (ppt)	Depth (m)	Substrate
Winter flounder	< 10	10-32	0.3-4.5	Sand, muddy sand
Windowpane flounder	<21	5.5-36	1-75	Mud, fine grained sand
Scup	13-23	n/a	<10	Weedy, sandy areas
Black sea bass	n/a	n/a	20-50	Sand

Source: NMFS/NERO, www.nero.nmfs.gov/ro/doc/efhtables.pdf

The proposed dredging will increase the depth of 44.94 acres of sea floor. This change in depth should not alter the available spawning habitat for windowpane flounder, scup or black sea bass. However, the proposed dredging, terminal construction and operation will result in the loss of approximately 20.21 acres of winter flounder spawning or nursery habitat. EPA views this potential loss of habitat as critical and as such, these impacts need to be minimized and mitigated. Winter flounder stocks in southern New England have crashed to historically low levels within the last 5 years. This has resulted in the commercial fishery for winter flounder off of southern Massachusetts, Rhode Island and Connecticut to be closed indefinitely.

Water quality impairment: Dredging typically will result in elevated concentrations of total suspended solids, reduced dissolved oxygen concentrations in the water column and potentially elevated concentrations of contaminants associated with the sediments. The sediments to be dredged in inner harbor have been extensively tested and have elevated concentrations of polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), various heavy metals and dioxins/furans.

Extensive water quality monitoring has been conducted during prior dredging projects in the inner harbor as part of the Superfund cleanup. Dredging has been undertaken using standard bucket dredges or hydraulic systems. In both cases, containment systems have been implemented to reduce potential impacts to water quality from the suspension of sediments. In general, *in-situ* monitoring has shown levels of elevated turbidity were limited to a fairly small area (300 ft)

"downstream" from the dredging operation. Turbidity levels returned to close to pre-dredging levels within hours after dredging ceased. Toxicity testing conducted with discrete water samples "downstream" from the dredging have not shown any significant levels of mortality. To protect fish passage, dredging in narrow portions of the inner harbor have been undertaken with containment barriers and generally in times of year when anadromous or diadromous fish are not moving in or out of the system.

Blasting: Geotechnical data collected from the terminal site shows the presence of fractured rock within the footprint of the dredge area. Due to its fractured nature, it is possible that it can be removed with a dredge, but the Commonwealth cannot rule out the need to use blasting to remove it (MassDEP, 2012a). Based on prior experience in Boston Harbor with blasting, there is a reasonable concern over the potential of mass fish mortalities (US Army Corps, 2008), even with some protective measures being employed. Numerous fish species including winter flounder, alewife, blueback herring, rainbow smelt and possibly Atlantic sturgeon are using this area for either spawning, foraging and/or nursery habitat. The normal schooling behavior of alewife, blueback herring and rainbow smelt make them particularly vulnerable to large mortality events. Schools of several hundred to 1500 fish were estimated to be killed by 4 separate blasting events in the fall of 2007 in Boston Harbor (US Army Corps, 2008). These estimates were derived by observing and estimating the number of fish that floated to the surface and are unquestionably low. Some fish are shredded to pieces by blasting, others do not float to the surface and still others will be eaten by birds or other predators before they can be tallied. If blasting is ultimately required, there are a series of precautions that can be implemented to reduce the potential risk of impacts. These precautions are described below in the section on Minimization/Mitigation of Potential Impacts.

Ballast Water Uptake: The Commonwealth projects that the offshore wind development project anticipated to be the first user of the marine terminal will receive 26 international vessels within a 12 month period delivering components for wind turbine construction (MassDEP 2012). After offloading, these vessels will take on water from New Bedford Inner Harbor to use as ballast to stabilize the ship for the return trip across the Atlantic Ocean. The uptake of ballast water results in the entrainment of fish eggs and larvae associated with that volume of water. The Commonwealth estimates that each vessel will take on between 200,000 and 300,000 gallons of water for ballast (Commonwealth Response to EPA 6-26-12). This would result in an annual removal of between 5,200,000 and 7,800,000 gallons per year. This volume of water represents less than 1% of the total volume of New Bedford Inner Harbor and thus likely represents a negligible potential impact to planktonic larvae and eggs within New Bedford Inner Harbor.

Minimization/Mitigation of Potential Impacts

To minimize the impacts from dredging, the Commonwealth has proposed to take the following steps:

- The Commonwealth has based the configuration and extent of the proposed dredging on the size and maneuverability of the vessels that would visit the port. It has concluded that the proposed dredging represents the minimum amount necessary to ensure safe navigation and transit by these vessels.
- Dredging in the Federal Navigation Project channel will only target areas that are above target depths (based on the draft of the vessels to be used to support off-shore wind energy development). The Commonwealth has indicated that it is possible that no dredging will be necessary depending on the draft. The estimate of 15 acres is a worst case scenario. The project will attempt to honor relevant environmental dredge windows, by minimizing dredging during certain times of year (February-June for migration and winter flounder spawning). If dredging is not completely stopped during the spring, it will be restricted to deeper water to avoid winter flounder spawning habitat.
- Dredging will be done using an environmental bucket and appropriate containment devices, such as silt curtains.
- The project will adhere to the Performance Standards (MassDEP 2012, Appendix 75 for dredging that have been developed with input from state and federal resource agencies (including NMFS) for the New Bedford Superfund Cleanup Project.
- Ambient water column monitoring will occur to ensure that those Performance Standards are met.
- If feasible, erect silt curtains to isolate large schools of fish from the blast zone.
- Plan the blasting program to minimize the total weight of explosive charges per shot and the number of shots for the project.
- Use angular stemming material of sufficient length in drill holes to reduce energy dispersal to the aquatic environment.
- Subdivide the charge, using detonating caps with delays or delay connectors with detonating cord, to reduce total pressure. Avoid use of submerged detonation cord.
- Use decking when possible in lengthy drill holes to reduce total pressure.
- For seismic exploration use non-explosive sources when possible or use linear charges for open water shots or buried charges.
- Used shaped charges to focus the blast energy when the submerged surface charges are necessary, reducing energy released to the aquatic environment during

demolition.

- Monitoring of potential fish mortality is required for each blast. If excessive mortalities (hundreds of fish/event) occur, then additional technologies, such as fish startle systems or bubble curtains, may also be considered for use.

EPA has tentatively determined that in addition to all the conditions above which the Commonwealth has agreed to implement, the additional condition of restricting blasting to between November and February is necessary to protect aquatic resources in New Bedford Inner Harbor.

To provide compensatory mitigation to address both permanent and temporary aquatic impacts associated with this project, the Commonwealth has proposed the following mitigation package:

- The Commonwealth proposes to create 22.73 acres of winter flounder spawning habitat in an area just south of the hurricane barrier. This represents a replacement ratio of slightly greater than 1 to 1. The sediments in the proposed area currently possess elevated levels (1.3 to 8.2 ppm) of PCBs and are below the preferred depth range of winter flounder spawning. Clean sand from the navigational dredging will be brought in to cap the contaminated sediments and to elevate the depth of the bottom to a depth more amenable to winter flounder spawning activities.

- Extensive monitoring of the winter flounder spawning creation area will be undertaken to ensure that the cap does not erode with time and to measure the use of this new habitat by winter flounder for spawning.

- The Commonwealth will create/enhance 4.47 acres of intertidal habitat in an area south of the hurricane barrier by placing clean sand from the navigational dredging into an area of shallow subtidal habitat that possesses sediments with elevated (1.3 to 8.2 ppm) PCB concentrations. Similar to the winter flounder spawning creation, this effort would create new habitat by changing its natural depth and would represent an improvement in habitat quality by isolating an area of contamination.

- The Commonwealth will remediate 14.91 acres of shallow subtidal habitat in an area south of the hurricane barrier by placing clean sand from the navigational dredging over sediments contaminated with elevated (1.3 to 8.2 ppm) levels of PCBs. This effort would not result in a change in habitat types; it would remain shallow subtidal habitat. It would be a significant improvement in sediment quality by isolating the contaminated sediments from the environment.

- The Commonwealth will be conducting a reseeding program of quahogs in open shellfishing areas south of the hurricane barrier. The Commonwealth is planning on using larger seed clams and expects a survival rate of about 40%. As a result, EPA proposes to require the Commonwealth to reseed 24,542,803 clams to offset the expected loss of 9,817,121 shellfish as a result of the project. Due primarily to the availability of seed, this replacement will take place over a 10-15 year time period.

- The applicant proposes to restore/enhance a 1.9 acre salt marsh/tidal tributary in the inner harbor, bordering the western end of the hurricane barrier. Extensive monitoring will accompany this effort to ensure the success of the project.

- Existing CAD cell 1 and the "Borrow Pit" will be capped as part of this proposal effectively containing sediment contaminated with PCBs.

Conclusions: The majority of the impacts to EFH habitat associated with this project will be temporary and reversible. Ambient monitoring will be required to ensure that Performance Standards are met. Exceedances of performance standards may trigger reduced dredging rates to ensure the protection of water quality. For the permanent impacts, the Commonwealth has developed a mitigation package that should offset the projected loss of winter flounder spawning habitat, salt marsh and intertidal habitat. An expanded shellfish reseeding effort consistent with that described above will be necessary to offset the losses associated with that resource. EPA has tentatively determined that impacts to EFH species will be minimized and mitigated to the greatest extent practicable provided that the Commonwealth fully implements all of the proposed minimization and mitigation measures described above.

This EFH assessment is the first step in the required consultation process between the federal action agency (in this case EPA) and NMFS. NMFS will review this document and may issue conservation recommendations. EPA may or may not adopt those recommendations, but if EPA chooses not to adopt any recommendation, EPA must provide a written explanation defending that choice to NMFS. EPA will complete the consultation process before making a final decision on the project.

EPA Draft Determination for the Proposed South Terminal Project
New Bedford Harbor State Enhanced Remedy

Appendix I
Determination of Compliance -
Endangered Species Act (16 U.S.C. §1531 *et seq.)*

Endangered Species Act, 16 U.S.C. 1531 et seq.

Section 7 of the Endangered Species Act ("ESA") requires EPA to ensure, in consultation with the U.S. Fish and Wildlife Service ("FWS") or the National Marine Fisheries Service ("NMFS"), that any action authorized by EPA is not likely to jeopardize the continued existence of any endangered or threatened species or adversely affect its critical habitat.

1. Species under U.S. Fish and Wildlife Service (FWS) Jurisdiction

EPA initially identified three federally listed species that may occur in the area of the proposed New Bedford Harbor - South Terminal project in New Bedford, Massachusetts: roseate tern (*Sterna dougallii*), listed as endangered; piping plover (*Charadrius melodus*), listed as threatened; and northeastern beach tiger beetle (*Cicindela dorsalis dorsalis*), listed as threatened. EPA initiated informal consultation with FWS on May 17, 2012 and provided EPA's draft Biological Assessment ("BA") for its review and comment. Based on discussions with FWS EPA now believes and FWS informally confirmed during a June 27, 2012 telephone conversation, that the piping plover and the northeastern beach tiger beetle would not be found in the project area and, therefore, that the proposed project would have no effect on those species. EPA has requested written confirmation of this conclusion from FWS.

Since FWS has indicated that only the roseate tern may occur in the area of the proposed project, EPA has completed a final Biological Assessment of the potential effects of the construction and long-term operation of the project on the roseate tern, attached as Appendix K to EPA's Draft Determination for the Proposed South Terminal Project. For the reasons discussed in the final BA, and summarized briefly below, EPA has concluded that the proposed NBH-South Terminal project may affect the roseate tern, but is unlikely to adversely affect the species. EPA will be transmitting the final Biological Assessment to FWS and will request concurrence from FWS prior to making a final decision on the project.

Roseate Tern

The U.S. Fish and Wildlife Service listed the roseate tern (*Sterna dougallii*) as endangered under the Endangered Species Act in 1987. The species is also listed by the Commonwealth of Massachusetts as endangered under state law.

Terns arrive in Massachusetts from South America in late April to mid-May to nest. In 2011, the population of roseate terns in Massachusetts decreased slightly (2.4%) to 1,359 pairs (vs. 1,393 pairs in 2010). Approximately 90% of the population was concentrated at just 2 Massachusetts colonies: Bird Island, Marion, MA, (937); and Ram Island, Mattapoisett, MA (385). Due to their very specialized habitat requirements, there are very few nesting locations in the Commonwealth. Roseate terns forage in specialized situations – shallow sand bars, shallow water or rip tides where prey fish are swept close to the surface. Typically these areas are in bays, tidal inlets or between islands. The roseate tern feeds mainly by plunge diving to catch prey fish just below the surface. They are known to fly up to 25 km to forage over reliable feeding areas (Nisbet,1991; Duffy, 1986; Safina, 1990; Heinemann ,1992 in USFWS,1998). Bird Island and Ram Island (respectively located approximately 17 km and 9.2 km from the NBH-South

Terminal project, "as the crow flies") are the two closest colonies to the NBH- South Terminal project area and both lie within the typical foraging range (25 km) of the roseate tern. That said, a study undertaken by Heinemann in 1992 in the New Bedford Harbor area identified no roseate terns foraging in the inner harbor area.

The roseate tern's dietary habits are also fairly specialized, consuming primarily sand lance (95% prior to mid-June, 75% over the season) and broadening after mid-June to include herring (8 – 11%), anchovy (4-6%), silversides (10-11%), and sometimes the juveniles of mackerel and bluefish.

Fisheries studies were conducted by Normandeau Associates, Inc., in New Bedford Harbor from June, 1998 - May, 1999 through seine and trawl sampling. The most numerous species identified at three near shore seine sampling stations were Atlantic Silversides (44%); striped killifish (16%), mummichog (9%), cunner (7%) and winter flounder (6%). Other than Atlantic Silversides, no other species known to be prey for the roseate tern were found in abundance. Any sand lance (the roseate tern's primary food source) was likely tallied as part of the category of "other species" (MassDEP 2012). Atlantic silverside is a widespread species that is abundant in every major estuary from Nova Scotia to Florida. It is unlikely that the potential impacts of the South Terminal project on silverside or other juvenile prey species will affect the occasional or transient roseate terns that may enter NBH for foraging, as there are several other more particularly suited foraging areas available within the 25 km foraging range of the colonies at Ram and Bird Island.

MassDEP conducted an assessment for potential avian usage of the NBH – South Terminal area by reviewing a wide variety of existing avian survey data. The conclusion of this assessment was that "[t]hese surveys indicate that the Common and Roseate Terns likely do not travel inside of the New Bedford Hurricane Barrier, and if they do, they do so infrequently and have not been noted within the surveys in question." (MassDEP Avian Assessment, September 21, 2010) In addition, as mentioned above, a study undertaken by Heinemann in 1992 in the New Bedford Harbor area identified no roseate terns foraging in the inner harbor area (although, this survey predated the restoration of suitable nesting conditions on Ram Island). Consistent with these data, EPA believes that the likelihood of a foraging roseate tern being present in the project area is very small due to the lack of specialized foraging conditions there, its preferred food items not being available, and the existence of other preferable foraging habitat in the general area. EPA also believes that the reduction in the forage base resulting from the dredging and filling activities, would have an insignificant effect on the tern should a transient roseate tern forage in the area. Effects from operations of the terminal once completed are also expected to be insignificant, since current conditions in the area are likely deterrents to the use of the harbor by roseate terns. As such, additional noise from the project is not expected to cause any further adverse effect.

In light of the above considerations, there is, at most, only a small likelihood that a transient roseate tern might seek to use the project area for foraging during nesting and migration. If such a transient roseate tern did seek to forage in the project area, it is highly unlikely that it would encounter any contamination, or that its prey sources would have been reduced in any meaningful way, as a result of the project. EPA concludes that, though the proposed NBH-

South Terminal project may affect the roseate tern, the project is unlikely to adversely affect the species.

2. Species under National Marine Fisheries Service Jurisdiction

On May 25, 2012, EPA wrote to NMFS advising it of an endangered species under its jurisdiction which has the potential to be in the project area, and sought concurrence from NMFS that the list of potential species was accurate and complete. EPA identified the Atlantic sturgeon (*Acipenser oxyrinchus oxyrincus*) as a species which has the potential to occur in the area and may be adversely affected by the proposed action. On June 19, 2012, NMFS wrote to EPA advising that because Atlantic sturgeon undertake large-scale marine migrations and will forage anywhere any available habitat exists, this species may be present in the vicinity of New Bedford Harbor. EPA is currently seeking additional technical assistance from NMFS and is in pre-consultation analysis with it. In that process, EPA and NMFS are discussing time of year restrictions, project sequencing options and mitigative dredging techniques which could greatly lessen or eliminate any potential adverse effects to the species. Prior to the issuance of a final decision on the impacts of the project, EPA will enter informal consultation with NMFS, which will include preparation of a Biological Assessment, and will seek concurrence with EPA's findings regarding the potential impacts to the sturgeon from the construction and operation of the project.

On August 5, 2011, NMFS received a petition from the Natural Resources Defense Council ("NRDC") requesting that it list both alewife (*Alosa pseudoharengus*) and blueback herring (*Alosa aestivalis*) as threatened throughout all or a significant portion of their range. At this time these species are being reviewed by NMFS as candidate species for listing under the ESA. Section 7 of the ESA does not require agencies to consult with the NMFS about candidate species ("candidate species" is defined as any species being considered by the Secretary of Commerce for listing as an endangered or threatened species, but not yet the subject of a proposed rule). NMFS must make a finding by August 5, 2012 whether the petitioned action by NRDC is warranted. If NMFS determines that listing either species is warranted, it would next publish a proposed listing determination and solicit public comments before deciding to publish a final determination to list them as endangered or threatened under the ESA. If either or both species is proposed for listing, NMFS would provide technical assistance to EPA in assessing the potential impacts of the proposed project on those species and determining any necessary project restrictions or mitigation.

EPA Draft Determination for the Proposed South Terminal Project
New Bedford Harbor State Enhanced Remedy

Appendix J(1)
Draft TSCA §761.61(c) Determination

Draft TSCA § 761.61(c) Determination

The Commonwealth of Massachusetts submitted a request for inclusion of a 28.25 acre marine terminal consisting of 6.85 acres of filled waters (referred to as "the confined disposal facility" or the "CDF") and approximately 11 acres of upland area, (not including the ancillary properties) (referred to as the "upland area" for the purposes of this TSCA Determination) in the South Terminal location of the New Bedford Harbor in New Bedford, Massachusetts as well as the dredging and filling associated with that construction, including dredging and filling of confined aquatic disposal cells (collectively the "proposed Project", the "Project", or the "South Terminal Project") into the New Bedford Harbor State Enhanced Remedy ("SER"). In general, the CDF construction involves the extension of the existing terminal by installing sheeting piling, dredging of sediments within the CDF footprint that are not suitable for construction, and filling of the CDF with structurally suitable materials. (See **Attachments 1a and 1b** for CDF area.)

I have reviewed the pertinent documents regarding the SER which are contained in the Administrative Record and include but are not limited to the following Commonwealth submittals: January 18, 2012 (January SER); the *draft* 100% Construction Design Plans dated June 6, 2012; drawings and analytical data submitted via email on June 13, 2012 for CAD cell #3, the stormwater drainage swale, and the South Terminal Channel/Federal Channel; groundwater sampling data submitted via email on June 13, 2012; response to TSCA comments submitted via email on June 20, 2012; Response to USEPA Comments on January 18, 2012 SER (submitted June 18, 2012); and Response to USEPA Comments (submitted via email on July 3, 2012).

Previous TSCA determinations for the disposal of PCB-contaminated dredged sediments into the borrow pit CAD, CAD cell #1, and CAD cell #2 are dated January 12, 2005 and November 12, 2008 (see **Attachments 2 and 3**)

In addition to construction of the CDF, the following activities are associated with the January 18, 2012 request and further described in the *draft* Construction Design Plans which will potentially impact PCB-contaminated sediments and soils with greater than (>) 1 part per million (ppm):

- Construction of a confined aquatic disposal (CAD) cell #3;
- Dredging of PCB-contaminated sediments with less than (<) 50 ppm located within the area where the CDF will be constructed;
- Potential dredging of PCB-contaminated sediments with < 50 ppm located in the federal navigational channels with disposal in CAD cell #3;
- Dredging of PCB-contaminated sediments with < 50 ppm located within the Gifford Street Channel re-alignment area and the northern and southern mooring mitigation areas with

disposal into CAD cell #3;

- Dredging of PCB-contaminated sediments located in the stormwater drainage swale (see **Attachment 4**);

- Removal of greater than or equal to (>) 25 ppm PCB-contaminated soils on the current upland area with disposal at a TSCA-approved disposal facility or a RCRA hazardous waste landfill in accordance with § 761.61(a)(5)(i)(B)(*2*)(*iii*);

- Grading and/or removal of < 25 ppm PCB-contaminated soils on the current upland area with disposal within the CDF area;

- Construction of a protective 3-foot cap or equivalent over that portion of the CDF area which has been determined to have PCB concentrations at greater than (>) 1 ppm. The cap will consist of a minimum of 36-inches of compacted dense aggregate; and,

- Establishment of a deed restriction in the form of an Activity and Use Limitation for the CDF area where PCB concentrations are > 1 ppm.

Consistent with Section 761.61(c) of the Toxic Substances Control Act (TSCA), I have determined that the proposed method of excavation and disposal of the current upland soils and PCB-contaminated sediments as described do not pose an unreasonable risk to human health or the environment as long as the following conditions are met:

Dredging and Disposal of Sediments

1. Development and submittal of a Phase IV Work Plan to SER Resource Agencies;

2. Compliance with water quality and turbidity performance standards as specified by **Attachment 5** to this TSCA Determination is maintained, at a minimum. (Attachment 5 may also be found at Appendix C to EPA's Draft Determination. If, as a result of EPA's consultation with NMFS related to the Atlantic sturgeon, it is determined that the standards are not protective, EPA will impose additional requirements;

3. Compliance is maintained with conditions previously established for management and disposal of PCB-contaminated sediments into other CAD cells under TSCA Determinations dated January 12, 2005 and November 12, 2008.

4. Any dredged material that accidently comes to be located outside of CAD cell #3 during disposal (e.g., "missing" the cell during placement or from "surge" related overflow during placement) is removed and placed into the CAD cell;

5. The CAD cell #3 is capped with clean, suitable material of sufficient thickness to isolate the PCB-contaminated sediments physically, chemically and biologically from the surrounding benthic environment. The placement of the underwater cap shall be timed such that sufficient consolidation of the underlying dredged material has taken place to physically support the cap material. A bathymetric survey shall be performed upon completion of the cap placement;

6. The CAD cell #3 cap is monitored to demonstrate their physical, chemical and biological quality. This monitoring shall include bathymetric surveys, chemical sampling and sediment camera work (as an alternative to benthic faunal enumeration). The frequency of this cap monitoring shall be at least annually for the first three years after cap placement, unless otherwise directed by EPA New England. After three years, the Commonwealth may propose a revised schedule for monitoring;

7. An annual report summarizing the CAD cell #3 cap placement or CAD cell cap monitoring shall be submitted to EPA New England beginning with placement of the cap material. This report shall include a summary discussion of all activities associated with the cap placement or cap monitoring, and shall include if needed any recommendations for corrective action to maintain the physical, chemical or biological quality of the caps. A draft and final version of each such annual report shall be submitted, with the final version incorporating all comments received from EPA New England.

8. Following removal of PCB-contaminated sediments from the drainage swale, confirmatory sampling shall be conducted in accordance with 40 CFR Part 761 to document that all PCBs with greater than (>) 1 part per million (ppm) have been removed. Alternatively, a notice on the deed in accordance with state law shall be executed to document that PCBs at > 1 ppm remain in the drainage swale area as required under 40 CFR § 761.61(a)(8).

9. Corrective actions recommended in the annual reports, or alternatively, those required by EPA New England based on information in the annual reports, shall be implemented in a timely manner. Corrective actions could include, but not be limited to, installation of additional controls or excavation and disposal of dredged PCB-contaminated sediments from the CAD cell #3 if information indicates that the CAD cell #3 is not effective in isolating and/or controlling migration of PCBs from the CAD cell #3 into the harbor.

10. The City of New Bedford/Harbor Development Commission shall coordinate with the Department of Commerce through the National Oceanic and Atmospheric Administration, National Ocean Service and the U.S. Coast Guard to ensure that the as-built location of the CAD cell #3 becomes included in all future nautical charts of New Bedford Harbor.

Current Upland Area of CDF as depicted in Attachment 8 to this TSCA Determination

1. The selected contractor for the upland area PCB remediation work shall submit a contractor work plan describing the containment and air monitoring that will be employed during PCB remedial activities, including but not limited to site control, excavation, handling, storage, and disposal activities. At a minimum, the air monitoring plan and action levels for the project shall include the procedures and performance standards contained in **Attachment 6** of this TSCA determination. (Attachment 6 may also be found at Appendix A to EPA's Draft Determination.) This work plan should also include information on how and where all PCB-contaminated wastes (both ≤ 25 ppm and > 25 ppm) will be stored, how stormwater controls and runoff will be managed, and on how field equipment will be decontaminated.

2. Identified PCB-contaminated soils with > 25 ppm shall be excavated and disposed off-site at a TSCA-approved facility or a RCRA-hazardous waste landfill as required under § 761.61(b). Confirmatory sampling shall be conducted in accordance with 40 CFR Part 761, Subpart O to document that all PCBs with > 25 ppm have been removed. The locations of these PCB-contaminated soil areas are identified in **Attachment 7**.

3. In the event it is determined that soils that are deemed to be "geotechnically unsuitable" must be removed and disposed off-site, the contractor shall submit a sampling and analysis plan for characterization of these soils to EPA for review and approval, unless characterization data exists which documents the PCB concentrations in the soils. If PCB concentrations in these soils are determined to be greater than (>) 1 ppm but less than (<) 50 parts per million (ppm), EPA approval will be required for disposal of these soils. If PCB concentrations are determined to be greater than or equal to (≥) 50 ppm, the soils shall be disposed of in accordance with 40 CFR § 761.61(b).

4. Compliance with the PCB regulations at 40 CFR Part 761 is maintained during all phases of work involving PCB-contaminated soils and/or sediments, including but not limited to:

   a. 40 CFR § 761 Subpart C – Marking of PCBs and PCB Items

   b. 40 CFR § 761.65 - Storage for Disposal

   c. 40 CFR § 761.79 – Decontamination Standards and Procedures

   d. 40 CFR § 761.180 - Records and Monitoring

   e. 40 CFR § 761 Subpart K, PCB Waste Disposal Records and Reports

5. A long-term monitoring plan (LTMP) shall be established for maintenance of ground surfaces and for groundwater monitoring on the CDF area. At a minimum, the LTMP shall include: a description of the activities that will be conducted, including cap inspection

criteria, frequency, and routine maintenance activities; groundwater quality monitoring locations; sampling protocols, sampling frequency, and analytical criteria; and reporting requirements.

a. The LTMP shall include a communications component which details where the inspection and monitoring results will be maintained and communicated, if requested, to interested stakeholders.

b. The LTMP shall be submitted to EPA for review and comment and the Commonwealth shall incorporate any changes to the LTMP required by EPA. Activities required under the LTMP shall be conducted until such time that EPA determines, in writing, that such activities are no longer necessary.

6. A deed restriction in the form of an Activity and Use Limitation shall be recorded on the CDF area where PCB concentrations at > 1 ppm remain. The deed restriction shall identify the use restrictions for the property, if any, and the long-term monitoring requirements on the area. The identified area subject to this deed restriction is identified on **Attachment 8**.

This determination is based on the information contained in the Administrative Record. Any proposed change(s) to the SER which involves management or impact to PCB-contaminated soils or sediments shall be provided to EPA. Upon review, EPA may find it necessary to revise this determination, a condition herein, or issue a new TSCA determination based on the proposed change(s).

_____ _____

James T. Owens, III
Office of Site Remediation & Restoration

Date

Attachment 1a: Location of CDF – Option A Configuration
Attachment 1b: Location of CDF – Option B Configuration
Attachment 2: January 12, 2005 TSCA Determination
Attachment 3: November 12, 2008 TSCA Determination
Attachment 4: Stormwater Drainage Swale sediments and PCB concentrations
Attachment 5: State Enhanced Remedy – Water Quality and Turbidity Performance Standards
Attachment 6: Minimum Air Monitoring Standards
Attachment 7: Current Upland Area PCB Excavation Areas
Attachment 8: Deed Restriction Area

Attachment 1a.

CDF

Apex Companies, LLC.

184 HIGH STREET
SUITE 502
BOSTON MA 02110
(617) 728-0070

REVISIONS

NO.	DATE	DESCRIPTION

THESE DRAWINGS PREPARED BY APEX FOR THIS PROJECT ARE INSTRUMENTS OF APEX'S SERVICE FOR USE SOLELY WITH RESPECT TO THIS PROJECT, AND APEX SHALL BE DEEMED THE AUTHOR OF THE DRAWING AND SHALL RETAIN ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS WITH RESPECT THERETO, INCLUDING COPYRIGHT. THE DOCUMENTS SHALL NOT BE USED ON OTHER PROJECTS, FOR ADDITIONS TO THIS PROJECT OR FOR COMPLETION OF THIS PROJECT BY OTHERS, EXCEPT BY AGREEMENT IN WRITING AND WITH APPROPRIATE COMPENSATION TO APEX.

PREPARED FOR:

COMMONWEALTH OF MASSACHUSETTS

DRAWING TITLE:

NEW BEDFORD MARINE COMMERCE TERMINAL PROPOSED CONFIGURATION A

Scale: 1"=150'

0 75 150 300 450 FEET

Date 3/24/10	Drawing No.
Proj. Mgr.	
Design	
Check CM	
Drawn GCD	
Job. No. 6615	
Last Rev. 7/7/10	

P:\Jobs\6690 NBH_ Phase IV\PLANS\FINAL_PLANS\PROPERTIES.dwg

Attachment 1b.

Apex Companies, LLC.

184 HIGH STREET
SUITE 502
BOSTON MA 02110
(617) 728-0070

REVISIONS

NO.	DATE	DESCRIPTION

THESE DRAWINGS PREPARED BY APEX FOR THIS PROJECT ARE INSTRUMENTS OF APEX'S SERVICE FOR USE SOLELY WITH RESPECT TO THIS PROJECT, AND APEX SHALL BE DEEMED THE AUTHOR OF THE DRAWING AND SHALL RETAIN ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS WITH RESPECT THERETO, INCLUDING COPYRIGHT. THE DOCUMENTS SHALL NOT BE USED ON OTHER PROJECTS, FOR ADDITIONS TO THIS PROJECT OR FOR COMPLETION OF THIS PROJECT BY OTHERS, EXCEPT BY AGREEMENT IN WRITING AND WITH APPROPRIATE COMPENSATION TO APEX.

PREPARED FOR:

COMMONWEALTH OF MASSACHUSETTS

DRAWING TITLE:

NEW BEDFORD MARINE COMMERCE TERMINAL PROPOSED CONFIGURATION B

Scale: 1"=100'

0 50 100 200 300 FEET

Date 3/24/10	Drawing No.
Proj. Mgr.	
Design	
Check CM	
Drawn GCD	
Job. No. 6615	
Last Rev. 7/7/10	

P:\Jobs\6690 NBH_Phase IV\PLANS\FINAL_PLANS\PROPERTIES.dwg

Attachment 2.

Appendix A - TSCA 761.61(c) Determination

Consistent with Section 761.61(c) of the Toxic Substances Control Act (TSCA), I have reviewed the pertinent documents regarding the state enhanced remedy for the New Bedford Harbor site and considered the proposed confined aquatic disposal cells (CAD cells) for the dredged PCB-contaminated sediments set out in the October 2004 Work Plan for New Bedford Harbor Dredge - Phase II, North Terminal Maintenance Dredge. I have also reviewed a map of the location of the CAD cells which is attached hereto as Attachment A. As required by that section of TSCA, I have determined that the Work Plan's proposed method of disposing of the PCB-contaminated sediments in CAD cells north of Route 6 in New Bedford Harbor does not pose an unreasonable risk to human health or the environment as long as the following conditions are met:

1. Compliance with the Work Plan's water quality and turbidity performance standards is maintained during all dredging and disposal activities;

2. The CAD cells are capped with clean, suitable material of sufficient thickness to isolate the PCB-contaminated sediments physically, chemically and biologically from the surrounding benthic environment. The placement of these underwater caps shall be timed such that sufficient consolidation of the underlying dredged material has taken place to physically support the cap material. A bathymetric survey shall be performed upon completion of the cap placement;

3. The CAD cell caps are monitored to demonstrate their physical, chemical and biological quality. This monitoring shall include bathymetric surveys, chemical sampling and sediment camera work (as an alternative to benthic faunal enumeration). The frequency of this cap monitoring shall be at least annually for the first three years after cap placement, unless otherwise directed by EPA New England. After three years, the Commonwealth may proposed a revised schedule for monitoring;

4. An annual report summarizing the CAD cell cap placement or CAD cell cap monitoring shall be submitted to EPA New England beginning with placement of the cap material. This report shall include a summary discussion of all activities associated with the cap placement or cap monitoring, and shall include if needed any recommendations for corrective action to maintain the physical, chemical or biological quality of the caps. A draft and final version of each such annual report shall be submitted, with the final version incorporating all comments received from EPA New England.

5. Corrective actions recommended in the annual reports, or alternatively, those required by EPA New England based on information in the annual reports, shall be implemented in a timely manner.

6. The City of New Bedford/Harbor Development Commission coordinates with the Department of Commerce through the National Oceanic and Atmospheric Administration, National Ocean Service and the U.S. Coast Guard to ensure that the as-built locations of the CAD cells become included in all future nautical charts of New Bedford Harbor.

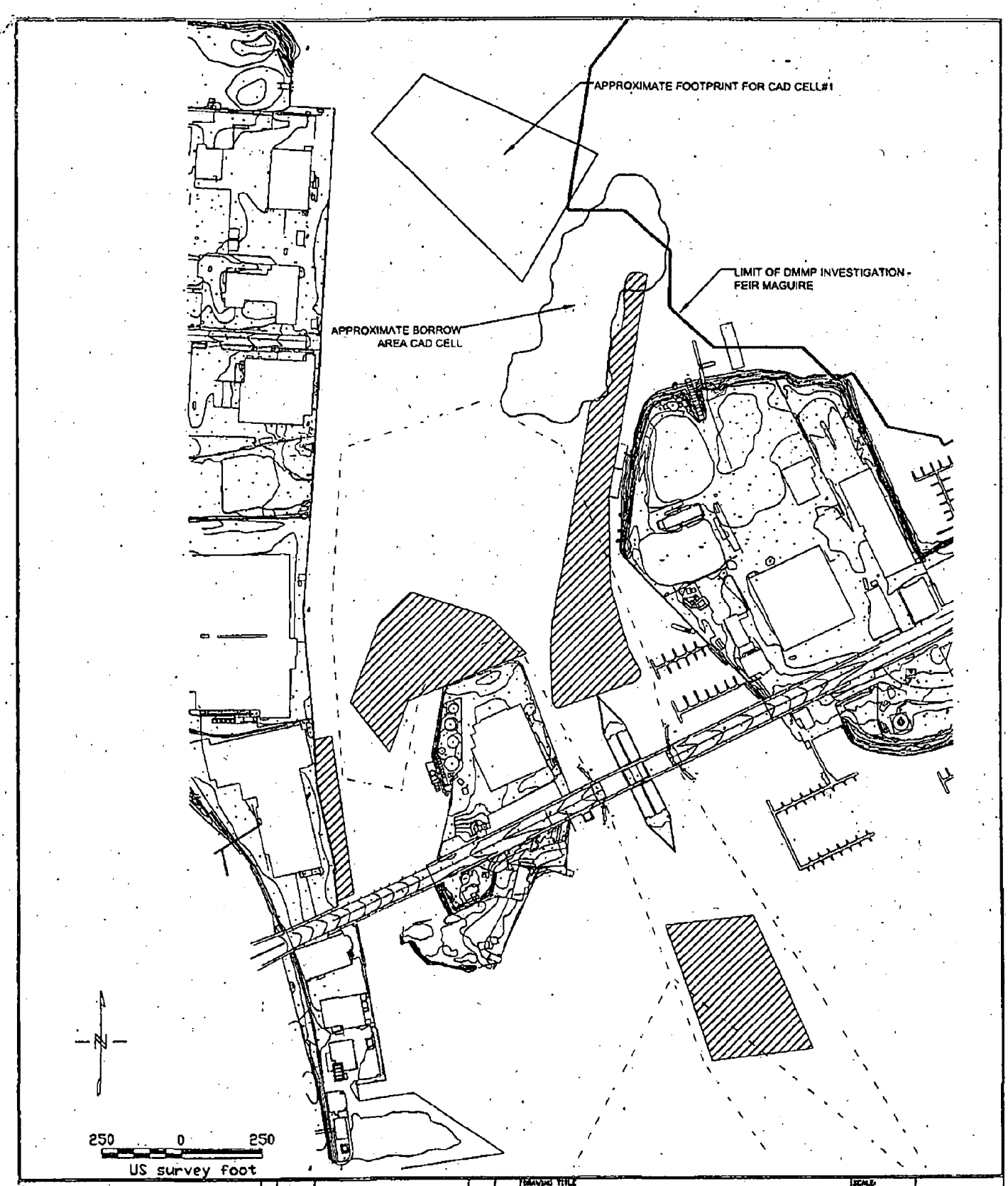
This determination is based on the information contained in the December 2004 Work Plan. Any

proposed change(s) to the 2004 Work Plan shall be provided to EPA. Upon review, EPA may find it necessary to revise this determination or issue a new TSCA determination based on the proposed change(s).

Robert W. Varney
Regional Administrator, EPA New England

1-12-05
Date

Attachment A - State Enhanced Remedy Initial CAD cells and dredging areas



PROPOSED DREDGE AREAS

REV	DATE	DESCRIPTION	BY	APP.
1	12/8	ENLARGED VIEW	TDM	JL

DRAWING TITLE: FIGURE 1 - PROPOSED CAD CELL LOCATIONS

PROJECT: NEW BEDFORD HARBOR DREDGE - PHASE II

CLIENT: NEW BEDFORD HDC, NEW BEDFORD, MASSACHUSETTS

Apex ENVIRONMENTAL, INC. — APEX ENVIRONMENTAL, 274 CONGRESS ST, SUITE 300, BOSTON, MA, TEL: 617 720-0079, FAX: 617 720-0000

SCALE:	AS SHOWN
DATE:	25 OCT 04
DRAWN BY:	TDM
DESIGNED BY:	KH
CHECKED BY:	ST
APPROVED BY:	ST
SHEET NO.	1
PROJECT NO.	6545.002

6545.002_FIG1-2_121404.DWG

Attachment 3.

Appendix A - TSCA 761.61(c) Determination

Consistent with Section 761.61(c) of the Toxic Substances Control Act (TSCA) I have reviewed the pertinent documents regarding the state enhanced remedy for the New Bedford Harbor site and considered the proposed confined aquatic disposal cells (CAD cells) for the dredged PCB-contaminated sediments set out in the draft April 2007 CAD Cell #2 Pre-Design Work Plan and Section 01135 of the November 2008 Phase III Contact Specifications for the New Bedford Harbor navigational dredging. I have also reviewed a map of the location of the CAD cells which is attached hereto as Attachment A. As required by that section of TSCA, I have determined that the proposed method of disposing of the PCB-contaminated sediments in a CAD cell(s) north of Route 6 in New Bedford Harbor does not pose an unreasonable risk to human health or the environment as long as the following conditions are met:

1. Compliance with the Work Plan's and Contract Specification's water quality and turbidity performance standards is maintained during all dredging and disposal activities;

2. Any dredged material that accidently comes to be located outside of CAD cell #1 or #2 during disposal (e.g., "missing" the cell during placement or from "surge" related overflow during placement) is removed and placed into the CAD cell(s);

3. The CAD cells are capped with clean, suitable material of sufficient thickness to isolate the PCB-contaminated sediments physically, chemically and biologically from the surrounding benthic environment. The placement of these underwater caps shall be timed such that sufficient consolidation of the underlying dredged material has taken place to physically support the cap material. A bathymetric survey shall be performed upon completion of the cap placement;

4. The CAD cell caps are monitored to demonstrate their physical, chemical and biological quality. This monitoring shall include bathymetric surveys, chemical sampling and sediment camera work (as an alternative to benthic faunal enumeration). The frequency of this cap monitoring shall be at least annually for the first three years after cap placement, unless otherwise directed by EPA New England. After three years, the Commonwealth may proposed a revised schedule for monitoring;

5. An annual report summarizing the CAD cell cap placement or CAD cell cap monitoring shall be submitted to EPA New England beginning with placement of the cap material. This report shall include a summary discussion of all activities associated with the cap placement or cap monitoring, and shall include if needed any recommendations for corrective action to maintain the physical, chemical or biological quality of the caps. A draft and final version of each such annual report shall be submitted, with the final version incorporating all comments received from EPA New England.

6. Corrective actions recommended in the annual reports, or alternatively, those required by EPA New England based on information in the annual reports, shall be implemented in a timely manner. Corrective actions could include, but not be limited to, installation of additional controls or excavation and disposal of dredged PCB-contaminated sediments from the CAD cells

if information indicates that the CAD cells are not effective in isolating and/or controlling migration of PCBs from the CAD cells into the harbor.

7. The City of New Bedford/Harbor Development Commission shall coordinate with the Department of Commerce through the National Oceanic and Atmospheric Administration, National Ocean Service and the U.S. Coast Guard to ensure that the as-built locations of the CAD cells become included in all future nautical charts of New Bedford Harbor.

This determination is based on the information contained in the April 2007 Work Plan and the November 2008 Contract Specifications. Any proposed change(s) to the Work Plan's or Contract Specifications shall be provided to EPA. Upon review, EPA may find it necessary to revised this determination or issue a new TSCA determination based on the proposed change(s).

James T. Owens, III
Director, Office of Site Remediation and Restoration

11-12-08
Date

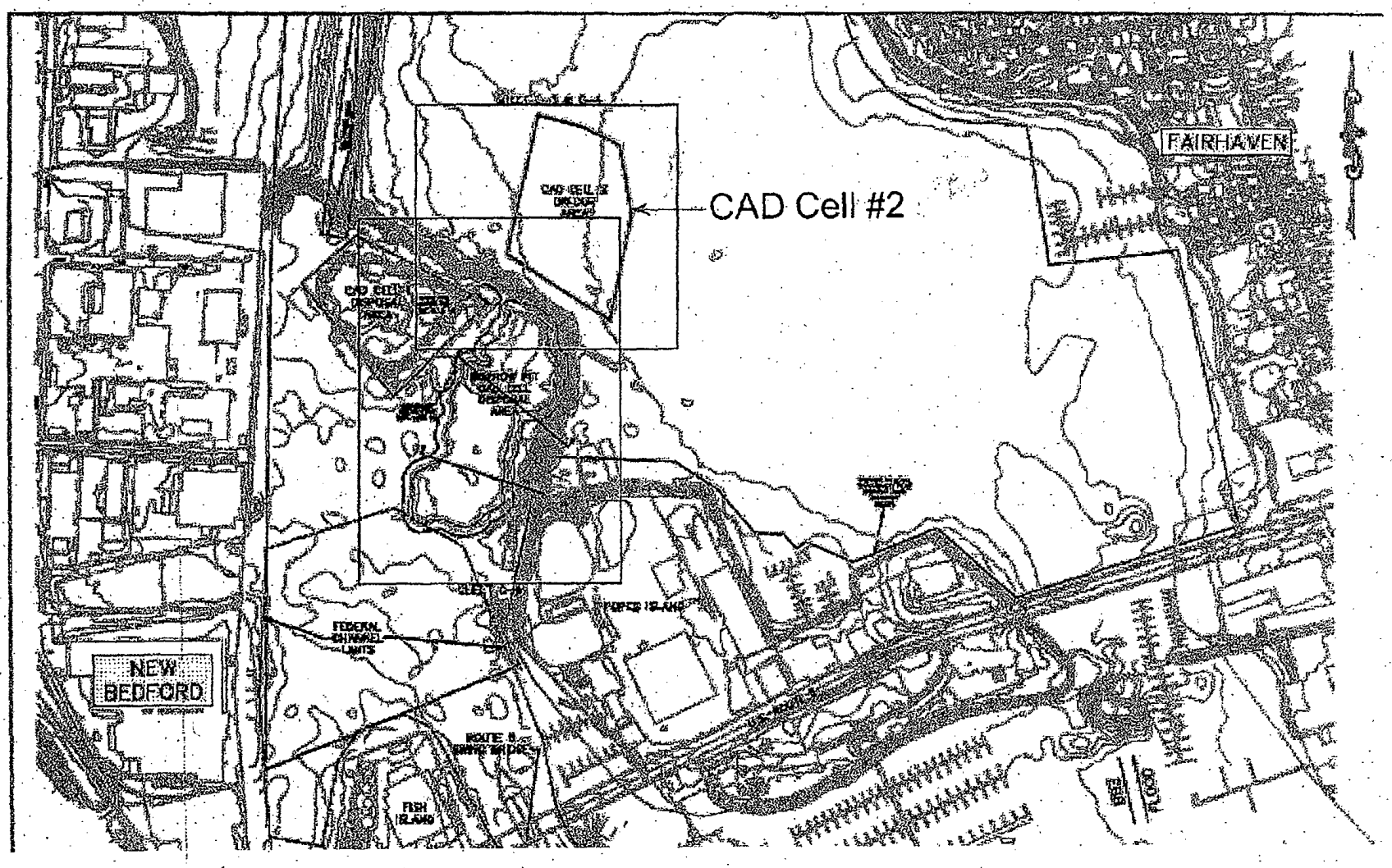
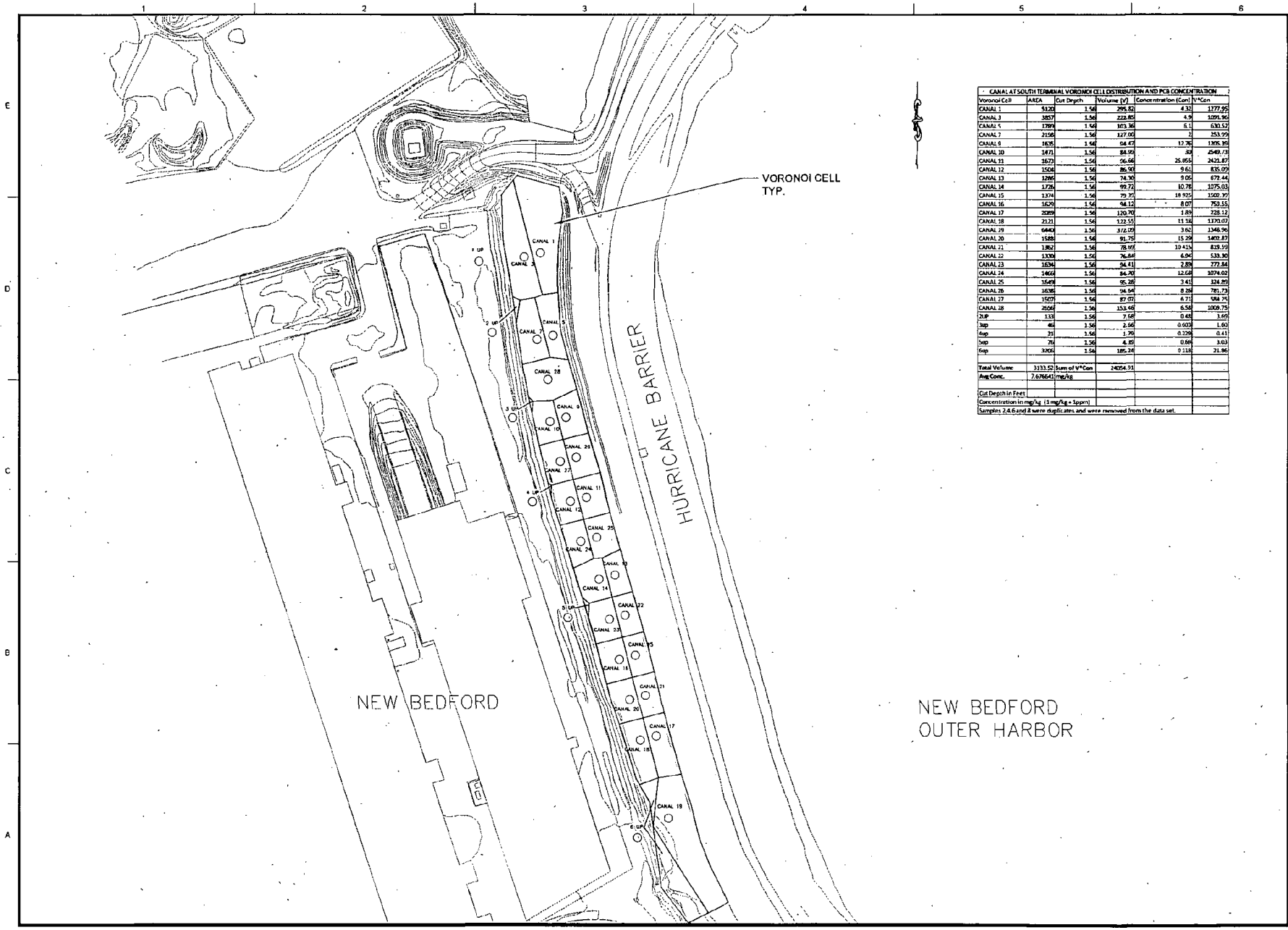


Figure 1: CAD #2 Location

Attachment 4



CANAL AT SOUTH TERMINAL VORONOI CELL DISTRIBUTION AND PCB CONCENTRATION

Voronoi Cell	AREA	Cut Depth	Volume (V)	Concentration (Con)	V*Con
CANAL 1	5120	1.56	295.82	4.32	1277.95
CANAL 3	3857	1.56	222.85	4.9	1091.96
CANAL 5	1789	1.56	103.36	6.1	630.57
CANAL 7	2198	1.56	127.00	2	253.99
CANAL 9	1635	1.56	94.47	12.76	1205.35
CANAL 10	1471	1.56	84.99	30	2549.73
CANAL 11	1673	1.56	96.66	25.055	2421.87
CANAL 12	1504	1.56	86.90	9.61	835.09
CANAL 13	1296	1.56	74.90	9.05	677.44
CANAL 14	1726	1.56	99.72	10.78	1075.03
CANAL 15	1374	1.56	79.37	18.925	1502.37
CANAL 16	1629	1.56	94.12	8.07	759.55
CANAL 17	2089	1.56	120.70	1.89	228.12
CANAL 18	2121	1.56	122.55	11.18	1370.07
CANAL 19	6449	1.56	372.59	3.62	1348.96
CANAL 20	1588	1.56	91.75	15.29	1402.87
CANAL 21	1362	1.56	78.69	10.415	819.59
CANAL 22	1300	1.56	76.84	6.94	533.30
CANAL 23	1636	1.56	94.51	2.89	272.84
CANAL 24	1462	1.56	84.47	12.68	1074.62
CANAL 25	1649	1.56	95.28	3.41	324.89
CANAL 26	1636	1.56	94.54	8.28	781.73
CANAL 27	1507	1.56	87.07	6.71	584.75
CANAL 28	2666	1.56	153.46	6.58	1009.75
2UP	133	1.56	7.68	0.45	3.69
3up	46	1.56	2.66	0.603	1.60
4up	31	1.56	1.79	0.229	0.41
5up	76	1.56	4.39	0.69	3.03
6up	3206	1.56	185.24	0.118	21.86
Total Volume	3133.52	Sum of V*Con	24054.93		
Avg Conc.	7.676641	mg/kg			
Cut Depth in Feet					
Concentration in mg/kg (1 mg/kg = 1ppm)					
Samples 2,4,6 and 8 were duplicates and were removed from the data set.					

APEX

ROCKVILLE, MD
SOUTH WINDSOR, CT - BOSTON, MA - NEW BEDFORD, MA - HOLYOKE, MA

184 HIGH STREET, SUITE 502
BOSTON, MA 02210

501 CONNECTICUT AVENUE
SOUTH WINDSOR, CT

DRAFT

PROJECT
NEW BEDFORD
MARINE COMMERCE
TERMINAL

OWNER
MASSACHUSETTS CLEAN ENERGY CENTER
55 SUMMER STREET, 9TH FLOOR
BOSTON, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY
1.	12-23-11	FOR CONSTRUCTION	CHJ

PROJECT NO.	8690
CADD FILE	[illegible]
DESIGNED BY	JER
DRAWN BY	JER
CHECKED BY	
DATE	05/30/2012
DRAWING SCALE	1"=50'

GRAPHIC SCALE
SCALE: 1"=50'
0 25 50 100

SHEET TITLE
STORMWATER DRAINAGE SWALE MITIGATION AREA VORONOI CELL DISTRIBUTION

DRAWING NO.
V-5.3

2 OF 2

P:\Jobs\8690 NBH_Phase IV\PLANS\ANALYSIS\AE DATA\ISCA_DETENTION.dwg

Attachment 5.

APPENDIX A

State Enhanced Remedy – Performance Standards

I MADEP 401 Water Quality Program Standards: Dredge & Fill

1. Anti-degradation provisions of the Massachusetts Surface Water Quality Standards protect all waters, including wetlands. 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. Prior to the start of in-water work, the SER Project Manager (SER PM) shall be notified of any proposed change(s) in plans that may affect waters or wetlands.

3. Environmental Monitor. The contractor shall employ an "Environmental Monitor" (EM). An assistant to the EM shall be hired if needed. The EM shall have a minimum of five (5) years experience in wetlands protection, erosion and sedimentation control, water quality monitoring, site maintenance, site drainage, dredging operation management and general site construction. The EM shall verify the placement and performance of erosion/sediment/turbidity control measures and shall have the authority to halt construction for erosion control purposes or for other threats to public health, safety or the environment. The name and phone number(s) of the EM and his or her assistant, if needed, and back-up shall be provided to the Department and other governmental agencies charges with oversight of the project so that s/he may be contacted on a 24-hour basis, seven days a week to address any emergency situation. The EM shall be authorized to contact the Department directly for any matter involving wetland protection. The EM shall submit bi-weekly reports to the Department, following the commencement of construction and continuing until completion of work in resource areas. The bi-weekly reports shall summarize, by station location, the status of construction, the condition of the site, the weather conditions and shall report any erosion, sedimentation, discharge or pollution problems and how they were corrected, along with recommendations on how to prevent similar problems in the future. The EM shall immediately report any erosion, sedimentation or pollution problems to the Resident Engineer(s), who shall take immediate steps to correct those problems. The EM shall immediately report any unauthorized discharges of sediments to the Department and Resident Engineer(s) who shall take immediate steps to correct those problems. The EM shall submit annual reports for a minimum of five years to the DEP Greenbush Designee following completion of replication area construction and shall submit an outline of the report for approval by the Department prior to preparation of the first report.

4. All dredge and fill activities shall meet NOAA & MassDMF conditions to protect winter flounder spawning & the alewife fish run that passes through the harbor to the Acushnet Sawmill Pond spawning area.
5. A Storm Water Pollution Prevention Plan (SWPPP) for the entire project, proposing both non-structural and structural BMPs to limit erosion & sediment laden discharge during

land clearing filling and construction, shall be prepared and submitted to the Department for prior review and written approval prior to commencement of. The SWPPP shall emphasize measures to contain and prevent sediment laden water from being discharged from dewatering activities from areas within the bulkhead sheet pile that is to serve as a containment device. Further, the SWPPP shall meet the criteria established for such plans contained in the NPDES Construction General Permit. All proposed dewatering shall be identified in the site specific SWPPPs and shall not exceed the following limits when discharged:

a) pH: pH shall be 6.5 to 8.5 for discharge to salt water bodies. The SWPPPs shall identify the specific measures to be taken to adjust the pH to acceptable limits [for example, carbon dioxide (CO2) bubbling when concrete pouring is also occurring].

6. As proposed, silt-curtains and absorbent booms shall be deployed to enclose the area being dredged and filled. The contractor's plan for deployment of the silt curtains/absorbent booms shall be submitted to the Department and SER PM for review prior to the start of in-water work. Should the deployment of silt-curtains prove not feasible or be unsuccessful, the SER PM will be notified prior to any dredging without silt curtains.

7. Water Quality Monitoring:

   a. **When the dredging and filling operation is contained within a silt-curtained area,** the following water-quality monitoring program shall be carried out daily for the first three days of activities commencing and once a week thereafter for dredging operations and during those times when dewatering activities are ongoing from the terminal fill operation :
      i. A reference location shall be established outside of and approximately 200-feet from the silt-curtained area and a monitoring location shall be established outside of and within 15-feet of the silt-curtain.
      ii. Turbidity shall be measured, using an optical backscatter sensor, at both the reference and monitoring locations, at established depths: near the water's surface, at the mid-point of the water column and near the bottom. The three values obtained shall be averaged, such that a single, representative turbidity value is calculated for the monitoring site and a single, representative value is calculated for the reference site.
      iii. Turbidity shall be measured at both the monitoring and reference site prior to the start of dredging, and once every two hours during dredging.
      iv. An exceedance of the project turbidity standard shall be attributed to project activities when the average turbidity at the monitoring site exceeds the average reference site turbidity plus the permissible turbidity increase, as outlined in the following table:

Reference Site Turbidity (NTUs)	Permissible Turbidity Increase
<10	Reference plus 20 NTUs
11-20	Reference plus 15 NTUs
>21	Reference plus 30% of reference

v. If, in two consecutive monitoring events, the average turbidity at the monitoring site exceeds the average turbidity at the reference site by more than the permissible turbidity increase, then water samples, composited over the entire water column, from both the monitoring and reference sites shall be collected and submitted for analysis of Total Suspended Solids, dissolved PCBs, arsenic, cadmium, copper, chromium, lead, mercury, nickel, and zinc. When samples are submitted to the laboratory, a 36-hour turn-round time shall be requested. Additionally, the Proponent, or their contractor, shall take operational action(s) designed to limit such exceedences, such as increasing the dredge cycle time, inspection and any necessary repair, of the silt curtains, deployment of an additional row of silt curtains or other mitigation measures. Turbidity monitoring shall continue on the schedule outlined in Section 6.a.iii, until compliance is reestablished.

vi. If compliance can not be reestablished within 48 hours, dredging shall cease and Department and any other interested local, state, or federal agency staff, in consultation with the Proponent, their contractors and/or consultants shall review the operational actions undertaken, the results of the analyses of the water samples and evaluate the biological significance of the available data and determine the requirements for additional mitigation, if any.

b. **Should the deployment of silt-curtains prove not possible or be unsuccessful,** the following water-quality monitoring program shall be carried out daily for the first three days of activities commencing and twice a week thereafter for dredging activities and during those times when dewatering activities are ongoing from the terminal fill operation:

i. A reference location shall be established approximately 200-feet up-current from the dredge and a monitoring location shall be established 200-feet down-current from the dredge.

ii. Turbidity shall be measured, using an optical backscatter sensor, at both the reference location and the monitoring location, at established depths: near the water's surface, at the mid-point of the water column and near the bottom. The three depth values obtained shall be averaged, such that a single, representative turbidity value is calculated for the reference location and a single, representative turbidity value is calculated for the monitoring location.

iii. Turbidity shall be measured at both the reference location and at the edge of the mixing zone prior to the start of dredging, and once every two hours of dredging.

iv. An exceedance of the project turbidity standard shall be attributed to project activities when the average turbidity at the edge of the mixing zone exceeds the reference site turbidity plus the permissible turbidity increase, as outlined in the following table:

Reference Site Turbidity (NTUs)	Permissible Turbidity Increase
<10	Reference plus 20 NTUs
11-20	Reference plus 15 NTUs
21-30	Reference plus 10 NTUs
>31	Reference plus 30% of reference

v. If, in two consecutive monitoring events, the average turbidity at the edge of the mixing zone exceeds the average turbidity at the reference site plus the permissible turbidity increase, then water samples, composited over the entire water column, from both the reference location and the edge of the mixing zone shall be collected and submitted for analysis of Total Suspended Solids, dissolved PCBs, arsenic, cadmium, copper, chromium, lead, mercury, nickel, and zinc. When samples are submitted to the laboratory, a 36-hour turn-round time shall be requested. Additionally, the Proponent, or their contractor, shall take operational action(s) designed to limit such exceedences, such as increasing the dredge cycle time, inspection and any necessary repair, of the silt curtains, deployment of an additional row of silt curtains or other mitigation measures. Turbidity monitoring shall continue on the schedule outlined in Section 6.b.iii, until compliance is reestablished.

vi. If compliance cannot be reestablished within 48 hours, dredging shall cease and the Department and any other interested local, state or federal agency staff, in consultation with the Proponent, their contracts and/or consultants shall review the operational actions undertaken, the results of the analyses of the water samples and evaluate the biological significance of the available data and determine the requirements for additional mitigation, if any.

8. As proposed, dredging of contaminated, silty sediment shall be done using a closed, environmental, clamshell bucket. Where pilings or other debris are found to interfere with environmental bucket closure or equipment operation, a conventional clamshell bucket may be used to extract the pilings/debris. Sediment removal during such activity shall be minimized to the greatest extent practicable. Should dredging with the environmental bucket become unfeasible or unsuccessful, the SER PM must be notified prior to any contaminated sediment dredging not using the environmental bucket, and the contractor must also continue to meet the project water quality standard performance standards.

9. Water discharged from the barge shall be appreciably free of suspended sediment and meet the water quality criteria established in Section 4 (above). Any free liquid

flowing from the barge in the harbor shall be passed through a sand media filter or equivalent filtration system (which must be approved by the project Resident Engineer) prior to discharge.

12 The Resident Engineer and EM shall be responsible for anticipating the need for and installation of additional erosion/sediment/turbidity controls and shall have the authority to require additional control measures to protect the resource areas beyond what is shown on the plans, if field conditions or professional judgment dictate that additional protection is necessary.

13. Emergency Response/Spill Prevention Plan: Included in said Plan shall be the contact responsible for shutting down BMPs discharging to the New Bedford Harbor in the event of a spill and maintenance practices to be employed to make sure gate valves or other shut down measures work appropriately to prevent spills from entering the adjacent waters.

14. During dewatering, if necessary, the discharge point shall be protected. Water from dewatering activities shall be filtered via the use of a portable sedimentation tank that removes suspended solids, temporary sedimentation basins, or other means prior to discharge.

15. Diesel-powered equipment shall be fitted with after-engine emissions controls such as oxidation catalysts or particulate filters.

16. Within 30 days of the completion of the initial dredging, a bathymetric, survey of the dredge footprint, depicting post-dredge conditions, shall be sent to the MADEP SER Project Manager.

17. Disposal of any volume of dredged material at any location in tidal waters is subject to approval by the Department and the Massachusetts Coastal Zone Management office.

18. A baseline condition report detailing existing conditions of all areas proposed to be transformed to salt marsh shall be submitted to the Department. An annual progress report shall be produced at the end of each year following construction of the salt marsh area for a period of five (5) years, and shall be submitted by the EM to the Department, no later than December 30 of each year. All reports shall be prepared in the same format so that a comparison can be made from each year to the next. The first annual report shall be prepared and submitted no later than December 30 of the first year following the implementation of the salt marsh creation. The existing conditions report and all annual reports shall include, in textual, tabular and graphic formats, percent of vegetative cover, a list of plant species, coverage of wetland plants as a percentage of all plants, and an evaluation of relative plant vigor (i.e. mortality rate of existing species and number or new species) and any changes observed in soils or hydrology. Additionally, the report shall include representative photographs of site conditions and recommendations for improvement. These reports shall also summarize agency consultations pertaining to the restoration project, the

remedial responses to those problems and appropriate recommendations for future project.

19. Any changes made to documents submitted shall be immediately forwarded to the Department for review and comment.

II MADEP Chapter 91 Waterways Standards:

1. Acceptance of these Waterways Conditions shall constitute an agreement by the Proponent to conform to all terms and conditions herein.

2. All subsequent maintenance dredging and transportation and disposal of this dredge material, during the term of this Project shall conform to all standards and conditions applied to the original dredging operation performed under this Project.

3. After completion of the work authorized, the Proponent shall furnish to the Department a suitable plan showing the depths at mean low water over the area dredged. Dredging under this Project shall be conducted so as to cause no unnecessary obstruction of the free passage of vessels, and care shall be taken to cause no shoaling. If, however, any shoaling is caused, the Proponent shall at his/her expense, remove the shoal areas. The Proponent shall pay all costs of supervision, and if at any time the Department deems necessary a survey or surveys of the area dredged, the Proponent shall pay all costs associated with such work.

4. The Proponent shall, at least three days prior to the commencement of any dredging in tide water, give written notice to the Department of the time, location, and amount of the proposed work.

Special Waterways Conditions

1. Dredge material shall be transported to suitable disposal facilities; unregulated dumping of dredge materials is not permitted.

2. The Proponent shall develop and implement a Navigation Plan to address and mitigate temporary impacts to navigation during dredging activities.

3. The Proponent shall provide and maintain in good working order appropriate United States Coast Guard (USCG) approved navigation aids to assist mariners in avoiding work areas as required by the USCG.

4. The Proponent shall maintain vehicular access to water-dependent users throughout construction activities. As part of the final design plan, the Proponent describes the means by which the public shall provide reasonable measure to provide on-foot public passage consistent with the need to avoid undue interference with the water=-dependent uses of the project.

5. The Proponent shall remove and properly dispose of all temporary structures no later than three (3) months after completion of the dewatering and amendment of the sediments. Temporary structures are defined as berms and dikes; lime silo; dewatering tanks, erosion and sediment control systems, pipes, and siltation curtains.

6. Modification to this Project: the SER PM, may review on an individual basis, modifications to construction activities and/or temporary structures which represent and insignificant deviation from original specifications, in terms of configuration, materials or other relevant design or fabrication parameters as determined by DEP within all areas of construction. Such review shall be in accordance with the following procedure:
    a. The Proponent shall submit a written request describing the proposed modifications to the work accompanied by plans, for prior review of the DEP. The DEP will consider comments submitted within ten (10) days of the DEP's receipt of the request. The DEP will send any significant modifications to the Resource Agencies for review and comment and to identify any future Performance Standards, if necessary. EPA will also have the opportunity to make a consistency determination if the change is significant, as necessary. The DEP will notify the Resource Agencies of any minor modifications.

7. After completion of the work authorized the Proponent shall furnish the Department a suitable plan showing the depths at mean low water over the areas dredged within 90 days of completion if each phase of the dredging.

Attachment 6.

Minimum Air Monitoring Standards and Requirements

1. The Air Quality Management and Monitoring Plan ("the Plan") shall include:

   a. The means and methods used to perform the proposed Project upland work. The means and methods shall be designed and implemented in a manner that minimizes airborne PCBs and particulates (and asbestos) to the maximum degree practicable. The Plan will detail the means and methods to be used to maintain airborne PCB levels at the performances standards specified in Item 3, below. The Plan will be in effect continuously until completion of the work.

   b. A description of how the proponent will:

      - Establish a minimum of 4 perimeter air monitoring locations;
      - Define air monitoring procedures, parameters and detection limits and the process for modification to these with EPA approval. Air monitoring parameters shall include particulates (PM_{10}), PCBs, asbestos, and lead.
      - Define air monitoring frequency based on site activity and the process for modifying frequency with EPA approval;
      - Establish background levels; and,
      - Calculate a running average of airborne PCB levels monitored at each air monitoring location during performance of the work. This station-specific average shall be submitted to EPA within three days of receipt of the laboratory data.

2. Aroclor versus PCB Homolog Analysis: To be consistent with previous airborne PCB sampling from other site remediation activities in and around the Harbor, EPA recommends at a minimum, that the total homolog approach be used to determine the concentration of total PCBs in air. However, if the proponent can demonstrate, through the performance of a comparative analysis study showing the results of paired homolog versus Aroclor data, that airborne Aroclor data are equivalent to total homolog data at the South Terminal upland work area, EPA will consider use of the Aroclor approach as an alternative. Proponent must first propose and EPA approve, the method for the comparative analysis prior to its implementation.

3. Proponent shall use best management practices to comply at all times during performance of the work with air quality performance standards. On the upland area, the point of compliance for air quality performance standards shall be the

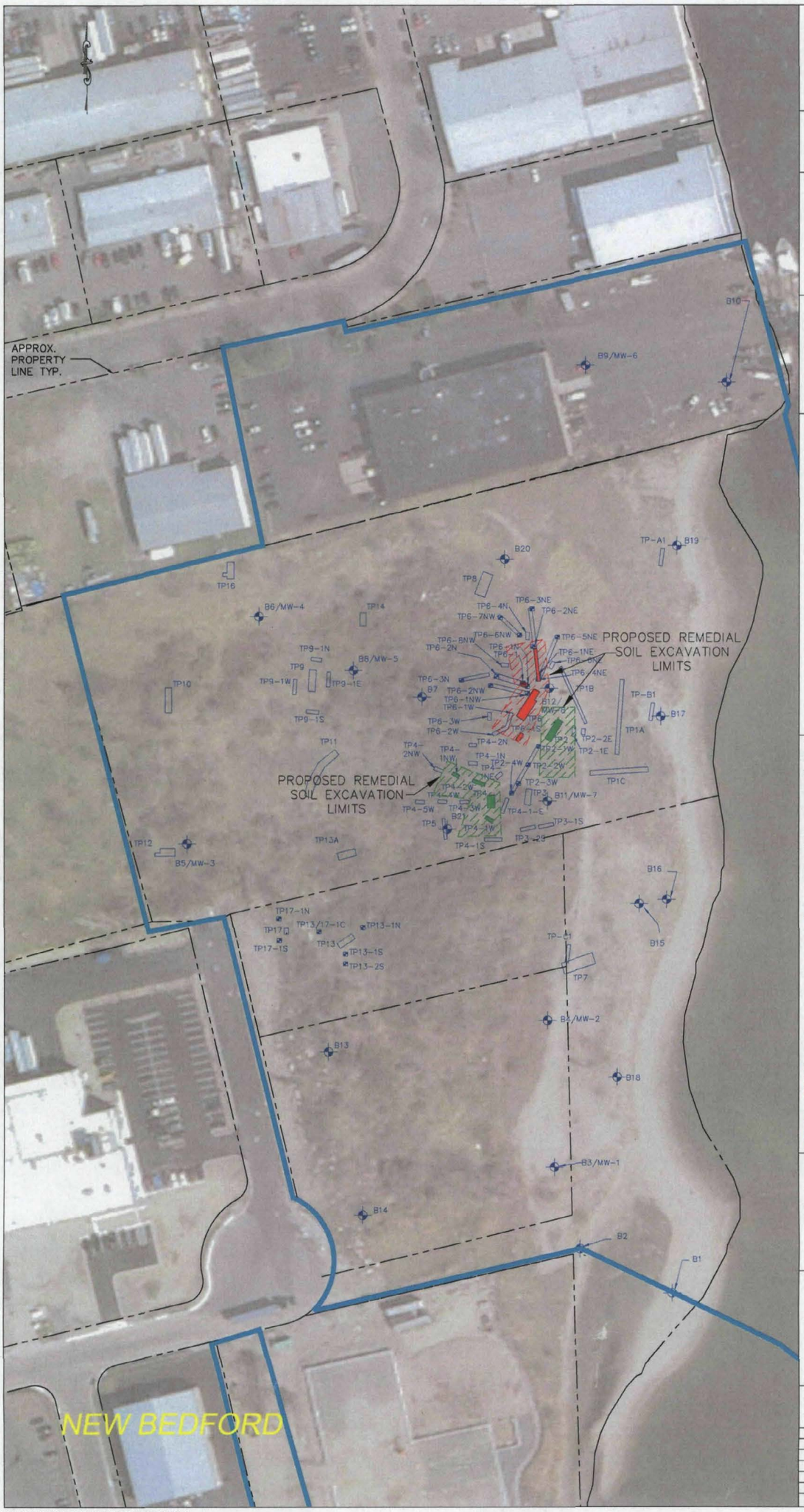
property boundary. At a minimum, a fence shall be constructed along the property boundaries during remedial activities. At no time during the performance of the remedial work shall levels exceed the following standards:

- Airborne particulates (PM_{10}): not to exceed 100 ug/m^3 (10 hour TWA).
- Airborne PCBs: not to exceed background or 0.10 ug/m^3, whichever is higher.
- Airborne asbestos: not to exceed 0.1 fiber/cc.
- Lead: not to exceed 50 ug/m^3.

4. Proponent may propose an alternate PCB standard (Not To Exceed 0.260 μg/m^3) for properties along the fence line where no residential property exists within 200 feet of said fence line.

5. In the event of an exceedance, the Commonwealth shall immediately cease work and submit a proposed corrective action plan. Work shall resume only with EPA's approval and upon implementation of the corrective action plan.

Attachment 7.



Apex Companies, LLC.

184 HIGH STREET
SUITE 502
BOSTON MA 02110
(617) 728-0070

REVISIONS

#	DATE	DESCRIPTION
1	7/11/11	LAND BORINGS
2	7/12/12	LEGEND CHANGE FOR CLARITY

THESE DRAWINGS PREPARED BY APEX FOR THIS PROJECT ARE INSTRUMENTS OF APEX'S SERVICE FOR USE SOLELY WITH RESPECT TO THIS PROJECT, AND APEX SHALL BE DEEMED THE AUTHOR OF THE DRAWING AND SHALL RETAIN ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS WITH RESPECT THERETO, INCLUDING COPYRIGHT. THE DOCUMENTS SHALL NOT BE USED ON OTHER PROJECTS, FOR ADDITIONS TO THIS PROJECT OR FOR COMPLETION OF THIS PROJECT BY OTHERS, EXCEPT BY AGREEMENT IN WRITING AND WITH APPROPRIATE COMPENSATION TO APEX.

NOTES:

1. THE PROPOSED BORING LOCATIONS SHOWN HEREON ARE APPROXIMATE.
2. PROPERTY LINES AND OWNERSHIP SHOWN HEREON ARE FOR REFERENCE ONLY AND BASED ON AN ELECTRONIC PLAN PROVIDED BY THOMPSON FARLAND, INC. THIS PLAN IS NOT INTENDED TO BE USED AS A PLAN OF RECORD, OR FOR THE DETERMINATION OF PROPERTY LINES, BOUNDARIES, OR LINES OF OWNERSHIP.
3. BACKGROUND IMAGES SHOWN HEREON ARE PROVIDED COURTESY OF MASSGIS.
4. STRUCTURES AND FEATURES LOCATED BEYOND THE PROJECT LIMITS, ARE TAKEN FROM AN AERIAL SURVEY CONDUCTED BY THE ARMY CORPS OF ENGINEERS AND SHOULD BE CONSIDERED APPROXIMATE.

A-2011-LB-813 BEDROCK ELEV=-11.2 — UPLAND BORING SHOWING BEDROCK ELEVATION

B9/MW-6 — BORING/MONITORING WELL LOCATION

OVER WATER GEOTECHNICAL BORING

TP6 — LARGE TEST PIT BOUNDARIES

SMALL TEST PIT LOCATION

PROPOSED SOIL EXCAVATION PCB CONCENTRATION > 25 PPM

PROPOSED SOIL EXCAVATION EPH/TPH CONCENTRATION > 10,000 PPM

EXISTING TEST PIT PCB CONCENTRATION > 50 PPM

EXISTING TEST PIT EPH/TPH CONCENTRATION > 10,000 PPM

PREPARED FOR:

MASSACHUSETTS CLEAN ENERGY CENTER

DRAWING TITLE:

NEW BEDFORD MARINE COMMERCE TERMINAL AS-BUILT BORING AND TEST PIT LOCATIONS

Scale: 1"=50'

0 25 50 100 150 FEET

Date	10/28/10
Proj. Mgr.	
Design	CWM
Check	JAB
Drawn	GAD
Job. No.	6690
Last Rev.	11/22/10

Drawing No.

FIG. 1

P:\Jobs\6690 NBH_Phase IV\PLANS\SOUTHTERMINAL_SAMPLING_AND_ANALYSIS_PLAN3-28-11.DWG

Attachment 8.

APEX

184 HIGH STREET
SUITE 502
BOSTON MA 02110
(617) 728-0070

REVISIONS

NO.	DATE	DESCRIPTION

THESE DRAWINGS PREPARED BY APEX FOR THIS PROJECT ARE INSTRUMENTS OF APEX'S SERVICE FOR USE SOLELY WITH RESPECT TO THIS PROJECT, AND APEX SHALL BE DEEMED THE AUTHOR OF THE DRAWING AND SHALL RETAIN ALL COMMON LAW, STATUTORY, AND OTHER RESERVED RIGHTS WITH RESPECT THERETO, INCLUDING COPYRIGHT. THE DOCUMENTS SHALL NOT BE USED ON OTHER PROJECTS, FOR ADDITIONS TO THIS PROJECT OR FOR COMPLETION OF THIS PROJECT BY OTHERS, EXCEPT BY AGREEMENT IN WRITING AND WITH APPROPRIATE COMPENSATION TO APEX.

PREPARED FOR:

COMMONWEALTH
OF
MASSACHUSETTS

DRAWING TITLE:

NEW BEDFORD MARINE
COMMERCE TERMINAL
AREA FOR TSCA
DETERMINATION

Scale: 1"=80'

0 40 80 160 240 FEET

Date 6/19/12	Drawing No.
Proj. Mgr.	
Design	
Check GCD	
Drawn JER	
Job. No. 6615	
Last Rev. 7/7/10	

EPA Draft Determination for the Proposed South Terminal Project
New Bedford Harbor State Enhanced Remedy

Appendix J(2)
Draft Second Modification to TSCA §761.61(c) Determination

Second Modification to November 12, 2008 TSCA § 761.61(c) Determination

In its November 12, 2008 TSCA Determination (Determination), EPA found that disposal of PCB-contaminated sediment into CAD Cells located north of Route 6 in New Bedford Harbor would not pose an unreasonable risk to human health or the environment provided certain conditions were met. This Determination was based on information set forth in the draft April 2007 CAD Cell #2 Pre-Design Work Plan and Section 01135 of the November 2008 Phase III Contract Specifications for the New Bedford Harbor navigational dredging.

On June 18, 2012, a modification to the Determination authorized disposal of approximately 6,000 cubic yards of PCB-contaminated sediment with less than (<) 50 parts per million (ppm) that will be generated by AGM Marine, Inc. from its property located at 7 Fish Island into CAD cell #2. EPA found that disposal of these < 50 ppm PCB-contaminated sediment into CAD cell #2 would not pose an unreasonable risk to human health or the environment provided the certain conditions are met, including but not limited to compliance with all conditions contained in the November 12, 2008 TSCA Determination.

The Commonwealth of Massachusetts submitted a request for inclusion of a 28.25 acre marine terminal consisting of 6.85 acres of filled waters (referred to as "the confined disposal facility" or the "CDF") and approximately 21.4 acres of upland area, (including the ancillary properties) (referred to as the "upland area") in the South Terminal location of the New Bedford Harbor in New Bedford, Massachusetts as well as the dredging and filling associated with that construction, including dredging and filling of confined aquatic disposal cells (collectively the "proposed Project", the "Project", or the "South Terminal Project") into the New Bedford Harbor State Enhanced Remedy ("SER"). CDF construction will include dredging of sediments within the CDF footprint that are not suitable for construction and disposal of these sediments into a newly designed CAD cell #3. Construction of the CAD cell #3 will require removal of PCB-contaminated soils, which will be disposed of within existing CAD cell #2. In addition, the Commonwealth has requested disposal of PCB-contaminated sediments located in the drainage swale adjacent to the hurricane barrier into CAD cell #2. The sediments to be disposed of into CAD cell #2 contain PCB concentrations at or below those sediments previously disposed of in CAD cell #2.

Based on information provided, I have determined that disposal of the CAD cell #3 sediments, the drainage swale sediments, and potentially some sediment from the footprint of the CDF into CAD cell #2 does not pose an unreasonable risk to human health or the environment as long as the following conditions are met:

1. Compliance with water quality and turbidity performance standards as specified by **Attachment 5** to this TSCA Determination is maintained, at a minimum. (Attachment 5 may also be found at Appendix C to EPA's Draft Determination.) If, as a result of EPA's consultation with NMFS related to the Atlantic sturgeon, it is determined that the standards are not protective, EPA will impose additional requirements;

2. Compliance is maintained with conditions previously established for management and disposal of PCB-contaminated sediments into other CAD cells under TSCA Determination November 12, 2008; and,

3. Any dredged material that accidently comes to be located outside of CAD cell #2 during disposal (e.g., "missing" the cell during placement or from "surge" related overflow during placement) is removed and placed into the CAD cell #2.

This Modification to the November 12, 2008 TSCA Determination is based on the information contained in the Administrative Record for the South Terminal project. Any proposed change(s) to the work described in those submittals shall be provided to EPA. Upon review, EPA may find it necessary to revise this determination or issue a new TSCA determination based on the proposed change(s).

_____ _____

James T. Owens, III Date
Director, Office of Site Remediation & Restoration

Attachment 5: State Enhanced Remedy – Water Quality and Turbidity Performance Standards

Attachment 5.

APPENDIX A

State Enhanced Remedy – Performance Standards

I MADEP 401 Water Quality Program Standards: Dredge & Fill

1. Anti-degradation provisions of the Massachusetts Surface Water Quality Standards protect all waters, including wetlands. 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. Prior to the start of in-water work, the SER Project Manager (SER PM) shall be notified of any proposed change(s) in plans that may affect waters or wetlands.

3. Environmental Monitor. The contractor shall employ an "Environmental Monitor" (EM). An assistant to the EM shall be hired if needed. The EM shall have a minimum of five (5) years experience in wetlands protection, erosion and sedimentation control, water quality monitoring, site maintenance, site drainage, dredging operation management and general site construction. The EM shall verify the placement and performance of erosion/sediment/turbidity control measures and shall have the authority to halt construction for erosion control purposes or for other threats to public health, safety or the environment. The name and phone number(s) of the EM and his or her assistant, if needed, and back-up shall be provided to the Department and other governmental agencies charges with oversight of the project so that s/he may be contacted on a 24-hour basis, seven days a week to address any emergency situation. The EM shall be authorized to contact the Department directly for any matter involving wetland protection. The EM shall submit bi-weekly reports to the Department, following the commencement of construction and continuing until completion of work in resource areas. The bi-weekly reports shall summarize, by station location, the status of construction, the condition of the site, the weather conditions and shall report any erosion, sedimentation, discharge or pollution problems and how they were corrected, along with recommendations on how to prevent similar problems in the future. The EM shall immediately report any erosion, sedimentation or pollution problems to the Resident Engineer(s), who shall take immediate steps to correct those problems. The EM shall immediately report any unauthorized discharges of sediments to the Department and Resident Engineer(s) who shall take immediate steps to correct those problems. The EM shall submit annual reports for a minimum of five years to the DEP Greenbush Designee following completion of replication area construction and shall submit an outline of the report for approval by the Department prior to preparation of the first report.

4. All dredge and fill activities shall meet NOAA & MassDMF conditions to protect winter flounder spawning & the alewife fish run that passes through the harbor to the Acushnet Sawmill Pond spawning area.
5. A Storm Water Pollution Prevention Plan (SWPPP) for the entire project, proposing both non-structural and structural BMPs to limit erosion & sediment laden discharge during

land clearing filling and construction, shall be prepared and submitted to the Department for prior review and written approval prior to commencement of. The SWPPP shall emphasize measures to contain and prevent sediment laden water from being discharged from dewatering activities from areas within the bulkhead sheet pile that is to serve as a containment device. Further, the SWPPP shall meet the criteria established for such plans contained in the NPDES Construction General Permit. . All proposed dewatering shall be identified in the site specific SWPPPs and shall not exceed the following limits when discharged:

a) pH: pH shall be 6.5 to 8.5 for discharge to salt water bodies. The SWPPPs shall identify the specific measures to be taken to adjust the pH to acceptable limits [for example, carbon dioxide (CO2) bubbling when concrete pouring is also occurring].

6. As proposed, silt-curtains and absorbent booms shall be deployed to enclose the area being dredged and filled. The contractor's plan for deployment of the silt curtains/absorbent booms shall be submitted to the Department and SER PM for review prior to the start of in-water work. Should the deployment of silt-curtains prove not feasible or be unsuccessful, the SER PM will be notified prior to any dredging without silt curtains.

7. Water Quality Monitoring:

   a. **When the dredging and filling operation is contained within a silt-curtained area,** the following water-quality monitoring program shall be carried out daily for the first three days of activities commencing and once a week thereafter for dredging operations and during those times when dewatering activities are ongoing from the terminal fill operation :
      i. A reference location shall be established outside of and approximately 200-feet from the silt-curtained area and a monitoring location shall be established outside of and within 15-feet of the silt-curtain.
      ii. Turbidity shall be measured, using an optical backscatter sensor, at both the reference and monitoring locations, at established depths: near the water's surface, at the mid-point of the water column and near the bottom. The three values obtained shall be averaged, such that a single, representative turbidity value is calculated for the monitoring site and a single, representative value is calculated for the reference site.
      iii. Turbidity shall be measured at both the monitoring and reference site prior to the start of dredging, and once every two hours during dredging.
      iv. An exceedance of the project turbidity standard shall be attributed to project activities when the average turbidity at the monitoring site exceeds the average reference site turbidity plus the permissible turbidity increase, as outlined in the following table:

Reference Site Turbidity (NTUs)	Permissible Turbidity Increase
<10	Reference plus 20 NTUs
11-20	Reference plus 15 NTUs
>21	Reference plus 30% of reference

v. If, in two consecutive monitoring events, the average turbidity at the monitoring site exceeds the average turbidity at the reference site by more than the permissible turbidity increase, then water samples, composited over the entire water column, from both the monitoring and reference sites shall be collected and submitted for analysis of Total Suspended Solids, dissolved PCBs, arsenic, cadmium, copper, chromium, lead, mercury, nickel, and zinc. When samples are submitted to the laboratory, a 36-hour turn-round time shall be requested. Additionally, the Proponent, or their contractor, shall take operational action(s) designed to limit such exceedences, such as increasing the dredge cycle time, inspection and any necessary repair, of the silt curtains, deployment of an additional row of silt curtains or other mitigation measures. Turbidity monitoring shall continue on the schedule outlined in Section 6.a.iii, until compliance is reestablished.

vi. If compliance can not be reestablished within 48 hours, dredging shall cease and Department and any other interested local, state, or federal agency staff, in consultation with the Proponent, their contractors and/or consultants shall review the operational actions undertaken, the results of the analyses of the water samples and evaluate the biological significance of the available data and determine the requirements for additional mitigation, if any.

b. **Should the deployment of silt-curtains prove not possible or be unsuccessful,** the following water-quality monitoring program shall be carried out daily for the first three days of activities commencing and twice a week thereafter for dredging activities and during those times when dewatering activities are ongoing from the terminal fill operation:

i. A reference location shall be established approximately 200-feet up-current from the dredge and a monitoring location shall be established 200-feet down-current from the dredge.

ii. Turbidity shall be measured, using an optical backscatter sensor, at both the reference location and the monitoring location, at established depths: near the water's surface, at the mid-point of the water column and near the bottom. The three depth values obtained shall be averaged, such that a single, representative turbidity value is calculated for the reference location and a single, representative turbidity value is calculated for the monitoring location.

iii. Turbidity shall be measured at both the reference location and at the edge of the mixing zone prior to the start of dredging, and once every two hours of dredging.

iv. An exceedance of the project turbidity standard shall be attributed to project activities when the average turbidity at the edge of the mixing zone exceeds the reference site turbidity plus the permissible turbidity increase, as outlined in the following table:

Reference Site Turbidity (NTUs)	Permissible Turbidity Increase
<10	Reference plus 20 NTUs
11-20	Reference plus 15 NTUs
21-30	Reference plus 10 NTUs
>31	Reference plus 30% of reference

v. If, in two consecutive monitoring events, the average turbidity at the edge of the mixing zone exceeds the average turbidity at the reference site plus the permissible turbidity increase, then water samples, composited over the entire water column, from both the reference location and the edge of the mixing zone shall be collected and submitted for analysis of Total Suspended Solids, dissolved PCBs, arsenic, cadmium, copper, chromium, lead, mercury, nickel, and zinc. When samples are submitted to the laboratory, a 36-hour turn-round time shall be requested. Additionally, the Proponent, or their contractor, shall take operational action(s) designed to limit such exceedences, such as increasing the dredge cycle time, inspection and any necessary repair, of the silt curtains, deployment of an additional row of silt curtains or other mitigation measures. Turbidity monitoring shall continue on the schedule outlined in Section 6.b.iii, until compliance is reestablished.

vi. If compliance cannot be reestablished within 48 hours, dredging shall cease and the Department and any other interested local, state or federal agency staff, in consultation with the Proponent, their contracts and/or consultants shall review the operational actions undertaken, the results of the analyses of the water samples and evaluate the biological significance of the available data and determine the requirements for additional mitigation, if any.

8. As proposed, dredging of contaminated, silty sediment shall be done using a closed, environmental, clamshell bucket. Where pilings or other debris are found to interfere with environmental bucket closure or equipment operation, a conventional clamshell bucket may be used to extract the pilings/debris. Sediment removal during such activity shall be minimized to the greatest extent practicable. Should dredging with the environmental bucket become unfeasible or unsuccessful, the SER PM must be notified prior to any contaminated sediment dredging not using the environmental bucket, and the contractor must also continue to meet the project water quality standard performance standards.

9. Water discharged from the barge shall be appreciably free of suspended sediment and meet the water quality criteria established in Section 4 (above). Any free liquid

flowing from the barge in the harbor shall be passed through a sand media filter or equivalent filtration system (which must be approved by the project Resident Engineer) prior to discharge.

12 The Resident Engineer and EM shall be responsible for anticipating the need for and installation of additional erosion/sediment/turbidity controls and shall have the authority to require additional control measures to protect the resource areas beyond what is shown on the plans, if field conditions or professional judgment dictate that additional protection is necessary.

13. Emergency Response/Spill Prevention Plan: Included in said Plan shall be the contact responsible for shutting down BMPs discharging to the New Bedford Harbor in the event of a spill and maintenance practices to be employed to make sure gate valves or other shut down measures work appropriately to prevent spills from entering the adjacent waters.

14. During dewatering, if necessary, the discharge point shall be protected. Water from dewatering activities shall be filtered via the use of a portable sedimentation tank that removes suspended solids, temporary sedimentation basins, or other means prior to discharge.

15. Diesel-powered equipment shall be fitted with after-engine emissions controls such as oxidation catalysts or particulate filters.

16. Within 30 days of the completion of the initial dredging, a bathymetric, survey of the dredge footprint, depicting post-dredge conditions, shall be sent to the MADEP SER Project Manager.

17. Disposal of any volume of dredged material at any location in tidal waters is subject to approval by the Department and the Massachusetts Coastal Zone Management office.

18. A baseline condition report detailing existing conditions of all areas proposed to be transformed to salt marsh shall be submitted to the Department, An annual progress report shall be produced at the end of each year following construction of the salt marsh area for a period of five (5) years, and shall be submitted by the EM to the Department, no later than December 30 of each year. All reports shall be prepared in the same format so that a comparison can be made from each year to the next. The first annual report shall be prepared and submitted no later than December 30 of the first year following the implementation of the salt marsh creation. The existing conditions report and all annual reports shall include, in textual, tabular and graphic formats, percent of vegetative cover, a list of plant species, coverage of wetland plants as a percentage of all plants, and an evaluation of relative plant vigor (i.e. mortality rate of existing species and number or new species) and any changes observed in soils or hydrology. Additionally, the report shall include representative photographs of site conditions and recommendations for improvement. These reports shall also summarize agency consultations pertaining to the restoration project, the

remedial responses to those problems and appropriate recommendations for future project.

19. Any changes made to documents submitted shall be immediately forwarded to the Department for review and comment.

II MADEP Chapter 91 Waterways Standards:

1. Acceptance of these Waterways Conditions shall constitute an agreement by the Proponent to conform to all terms and conditions herein.

2. All subsequent maintenance dredging and transportation and disposal of this dredge material, during the term of this Project shall conform to all standards and conditions applied to the original dredging operation performed under this Project.

3. After completion of the work authorized, the Proponent shall furnish to the Department a suitable plan showing the depths at mean low water over the area dredged. Dredging under this Project shall be conducted so as to cause no unnecessary obstruction of the free passage of vessels, and care shall be taken to cause no shoaling. If, however, any shoaling is caused, the Proponent shall at his/her expense, remove the shoal areas. The Proponent shall pay all costs of supervision, and if at any time the Department deems necessary a survey or surveys of the area dredged, the Proponent shall pay all costs associated with such work.

4. The Proponent shall, at least three days prior to the commencement of any dredging in tide water, give written notice to the Department of the time, location, and amount of the proposed work.

Special Waterways Conditions

1. Dredge material shall be transported to suitable disposal facilities; unregulated dumping of dredge materials is not permitted.

2. The Proponent shall develop and implement a Navigation Plan to address and mitigate temporary impacts to navigation during dredging activities.

3. The Proponent shall provide and maintain in good working order appropriate United States Coast Guard (USCG) approved navigation aids to assist mariners in avoiding work areas as required by the USCG.

4. The Proponent shall maintain vehicular access to water-dependent users throughout construction activities. As part of the final design plan, the Proponent describes the means by which the public shall provide reasonable measure to provide on-foot public passage consistent with the need to avoid undue interference with the water=-dependent uses of the project.

5. The Proponent shall remove and properly dispose of all temporary structures no later than three (3) months after completion of the dewatering and amendment of the sediments. Temporary structures are defined as berms and dikes; lime silo; dewatering tanks, erosion and sediment control systems, pipes, and siltation curtains.

6. Modification to this Project: the SER PM, may review on an individual basis, modifications to construction activities and/or temporary structures which represent and insignificant deviation from original specifications, in terms of configuration, materials or other relevant design or fabrication parameters as determined by DEP within all areas of construction. Such review shall be in accordance with the following procedure:
    a. The Proponent shall submit a written request describing the proposed modifications to the work accompanied by plans, for prior review of the DEP. The DEP will consider comments submitted within ten (10) days of the DEP's receipt of the request. The DEP will send any significant modifications to the Resource Agencies for review and comment and to identify any future Performance Standards, if necessary. EPA will also have the opportunity to make a consistency determination if the change is significant, as necessary. The DEP will notify the Resource Agencies of any minor modifications.

7. After completion of the work authorized the Proponent shall furnish the Department a suitable plan showing the depths at mean low water over the areas dredged within 90 days of completion if each phase of the dredging.

EPA Draft Determination for the Proposed South Terminal Project
New Bedford Harbor State Enhanced Remedy

Appendix K
Final Biological Assessment for the Roseate Tern
New Bedford Harbor – South Terminal Project, New Bedford, Massachusetts

U.S.EPA – New England Region
July 2012

FINAL BIOLOGICAL ASSESSMENT

for the ROSEATE TERN

NEW BEDFORD HARBOR – SOUTH TERMINAL PROJECT
NEW BEDFORD, MASSACHUSETTS

U.S. Environmental Protection Agency
Office of Ecosystem Protection (OEP05-2)) U.S. EPA New England Region
5 Post Office Square, Suite 100
Boston, MA 02109-3912

July 2012

TABLE OF CONTENTS

Subject		Page
I.	Introduction	3
II.	Description of Project and Action Area	4
	A. Project Description	4
	B. Action Area	6
III.	Environmental Setting	6
	A. Flora - Salt Marsh, Intertidal and Subtidal Resources	6
	B. Fauna – Finfish and Shellfish	7
	C. Physical Conditions – Sediments, Patterns of Circulation, Noise	11
IV.	Roseate Tern Biology	12
	A. Seasonal Distribution	12
	B. Nesting	12
	C. Staging	14
	D. Foraging	14
V.	Effects Analysis	17
	A. Direct Loss of Salt Marsh, Intertidal and Subtidal habitat	17
	B. Foraging by Nesting/Migrating Terns	18
	C. Effects on Prey Species In Shallow Water Habitat	18
	D. Dredging Impacts to Prey Fish in Sub-tidal Environment	19
	E. Noise and Traffic	20
	F. Oil Spills and Shipping Traffic	21
	G. Ecological Benefits of the Project	22
VI.	Determination of Effects on the Roseate Tern	22
VII	Conclusion	23
VIII.	References.	24
IX.	List of Contacts Made and Preparers	28

New Bedford Harbor - South Terminal Project
Endangered Species Act Biological Assessment for the Roseate Tern

I. Introduction

This Biological Assessment (BA) was prepared to comply with Section 7 of the Endangered Species Act (ESA). It assesses the potential effects of the construction and long-term operation of the proposed New Bedford Harbor (NBH) - South Terminal project in New Bedford, MA, on the roseate tern (*Sterna dougallii*), a federally listed as endangered which may occur in the area of the proposed project.[1] While New Bedford Harbor is not federally designated critical habitat for any federally endangered species, the project area provides potential habitat for nesting and foraging for the roseate tern.

Roseate terns were once abundant in Massachusetts waters, reportedly numbering in the hundreds of thousands, but a variety of threats has resulted in much-reduced populations. According to the U.S. Fish and Wildlife Service Roseate Tern Recovery Plan – Northeastern Population (USFWS, 1998), the numbers of roseate terns were severely reduced in the 1870's and 1880's by commercial hunting for the millinery trade and most colonies previously recorded colonies appear to have been eliminated at that time. The total number of remaining roseate terns was estimated to be roughly 2,000 pairs at the lowest point in about 1890 (Nisbet 1980 in USFWS, 1998). Following protection efforts in the 1890's and strengthened by the Migratory Bird Treaty Act of 1918, roseate tern populations increased to a high of about 8,500 pairs in the 1930s but declined again to a low of 2,500 pairs in 1977 due to habitat loss and gull encroachment (USFSW, 1998).

The islands in Buzzards Bay and Nantucket Sound have been among the most important nesting sites for roseate terns in the northeast. In 2011, based upon total season estimates of roseate tern pairs, approximately 90% of the population was concentrated at just 3 colonies: Great Gull Island, New York (NY) (1,500 pairs); Bird Island, Marion, Massachusetts (MA) (937); and Ram Island, Mattapoisett, MA (385). Other sites in Massachusetts included Penikese I., Gosnold (34), S. Monomoy I., Chatham (7), Monomoy I., Chatham (3), and Plymouth Beach, Plymouth (≥1). Roseate terns were observed carrying fish into the Plymouth colony in 2007, 2008, and 2010 and presumably nested in those years; in 2011, a nest and young were confirmed.

The total nesting area available to roseate terns is limited, which increases the terns' vulnerability to potential catastrophic events, such as oil spills or disease. The gradual loss of breeding sites in the northeast and the roseate tern's reluctance to colonize new sites are serious obstacles to the recovery of the northeast population.

[1] EPA's draft biological assessment dated October 2010 also discussed the piping plover (*Charadrius melodus*), listed as threatened; and the Northeastern beach tiger beetle (*Cicindela dorsalis dorsalis*), listed as threatened. Since that time, the Region has determined that those two species are not present in the project area, and the U.S. Fish and Wildlife Service has orally confirmed this determination (EPA Memorandum to file July 10, 2012)

II. Description of Project and Action Area

A. Project Description

The Commonwealth of Massachusetts proposes to construct an approximately 28-acre marine terminal (South Terminal) within the Designated Port Area of the New Bedford Harbor at a site north of and proximate to the Harbor's Hurricane Barrier (action area). The terminal will be capable of supporting offshore renewable energy development and other future maritime uses. The proposal is described in detail in the document entitled "State Enhanced Remedy in New Bedford, South Terminal" and its appendices, dated January 18, 2012 and prepared by the Massachusetts Department of Environmental Protection, "MassDEP"(MassDEP 2012). The Commonwealth has updated and supplemented its January 18, 2012 submission with 2 additional submissions (including attachments), dated June 18, 2012 (hereafter MassDEP 2012a) and June 29, 2012 (hereafter MassDEP 2012b).

As discussed in more detail below, the project will involve, among other things, navigational dredging to accommodate vessels' access to the terminal and the construction of a solid fill structure in waters of the U.S. to provide sufficient acreage and load bearing capacity at the terminal site. Temporary and permanent impacts to the roseate tern may occur as a result of the dredging and filling of aquatic habitat, and noise from pile driving and blasting (if it becomes necessary).

EPA's Superfund ("CERCLA") regulations provide for a state to petition EPA to expand its remedial action to include additional activities as an enhancement of the remedy (i.e., State Enhanced Remedy or "SER"). In the case of the New Bedford Harbor remediation, the State Enhanced Remedy involves additional navigational dredging as well as disposal of the sediments into confined aquatic disposal ("CAD") cells (below the ocean floor) or into confined disposal facilities ("CDFs") (above the ocean floor).

The proposed NBH - South Terminal would include construction of a 6.85 acre CDF adjacent to the shoreline. It would be bounded by sheet piling, and capped by Dense Graded Aggregate, which includes a mixture of gradations of aggregates. The majority of the upland that will be incorporated into the proposed terminal was once occupied by a former textile manufacturing complex and has been heavily disturbed. The total estimated size of the facility, including ancillary southern properties, is currently anticipated to be approximately 28.25 acres. The main portion of the terminal will support staging of additional dredged material for beneficial reuse during operation of the facility.

To complete the project as proposed, a total of approximately 22.33 acres of intertidal, subtidal and salt marsh resource areas would be altered and temporary impacts from dredging would affect up to 38.22 acres of near-shore sub-tidal and sub-tidal areas. (see Section III or V. Environmental Setting, below, for further discussion of resource areas).

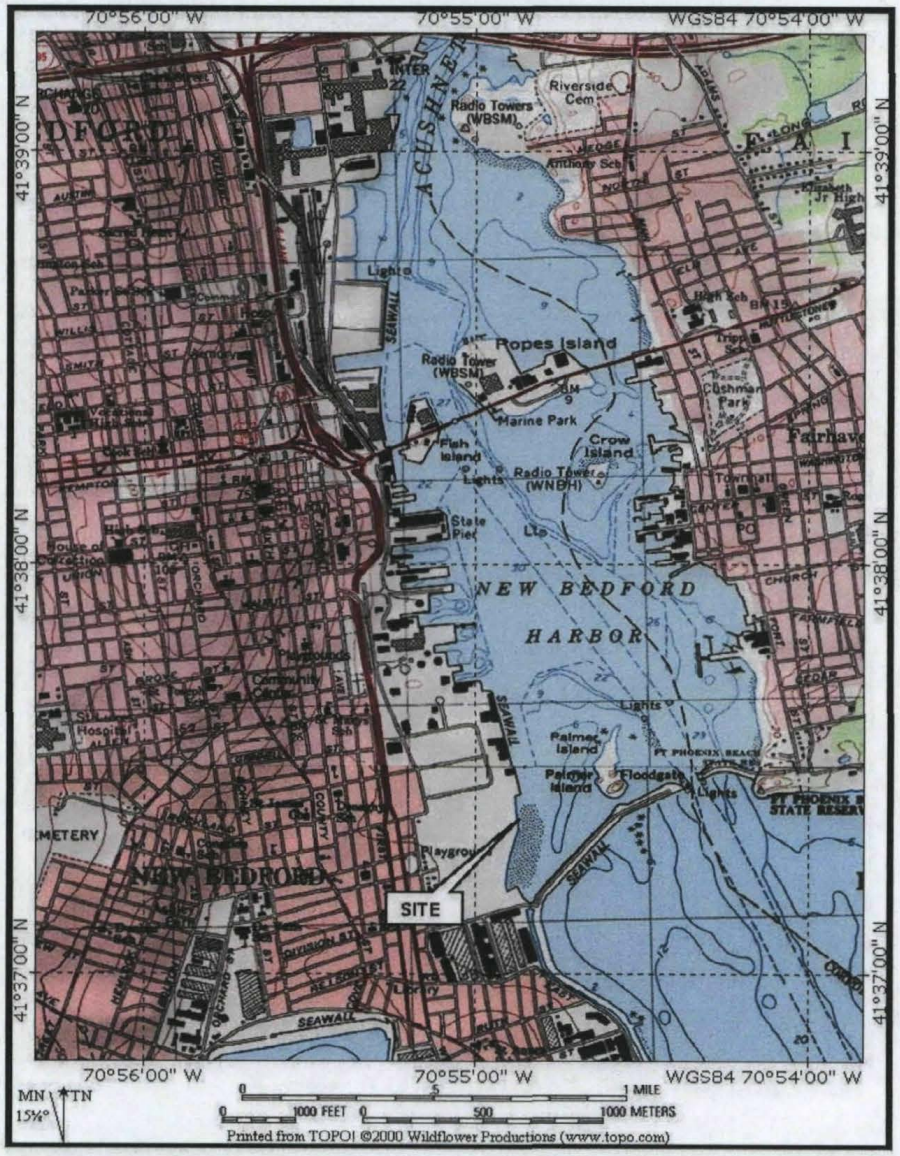


Figure 1: Site Location Map
South Terminal CDF Proposed Location
City of New Bedford, New Bedford, Massachusetts

Source: Expanded Avian Assessment Appendices (MassDEP, 2012)

B. Action Area

New Bedford Harbor is located on the northern shore of Buzzards Bay and borders the communities of Fairhaven to the east, and New Bedford to the west. The New Bedford Hurricane Barrier seawall and floodgates (immediately south of Palmer Island) demarcates the outer harbor from the inner harbor. There is also a federal navigation channel which leads into the inner harbor (see Figure 1 - Site Location Map, above). The Acushnet River flows into the northernmost part of the upper estuary and is the most significant freshwater inflow into the harbor. The inner harbor contains several marinas, a recreational fleet, historical attractions, commercial fishing fleet, and fish processing/cold storage facilities. Land usage along the shore is a mixture of residential, commercial and industrial uses (MassDEP, 2012).

New Bedford Harbor is contaminated with polychlorinated biphenyls (PCBs) and heavy metals from manufacturing discharges that occurred from 1940 to the late 1970s. The harbor sediments are contaminated in varying degrees from the upper Acushnet River into Buzzards Bay. Bioaccumulation of PCBs within the marine food chain has resulted in closing the area to lobstering and fishing, and recreational activities and harbor development has been limited by the widespread PCB problem. The source of the contamination has been attributed to two electrical capacitor manufacturing facilities that operated between the 1940s and 1970s. One facility, Aerovox Corporation was located near the northern boundary of the site and the other facility, Cornell-Dubilier Electronics, Inc., is located just south of the New Bedford Hurricane Barrier. Based on the health concerns from the site, the Environmental Protection Agency (EPA) added the site to the National Priorities List in 1983 as a designated Superfund Site (USACE 2010). EPA's selected remedy for site contamination involves sediment removal by dredging and the containment of contaminated sediments. Full scale dredging began in 2004, and to date approximately 200,000 cubic yards of contaminated sediments and soils have been remediated (EPA, 2010a).

III. Environmental Setting

A. Flora - Salt Marsh, Intertidal and Subtidal Resources

New Bedford Harbor is a coastal embayment with a mean tidal range of approximately 3.3 feet or 1 meter (Howes and Goehringer, 1996 in MADEP, 2010a). The primary resource areas in the NBH- South Terminal project area include; intertidal, near-shore subtidal (existing elevation of between -1 and -6 MLLW), deeper subtidal (existing elevation between -20 and -25 MLLW), and salt marsh (MassDEP, 2012). Although the proposed site is surrounded by industrial properties, the salt marsh, intertidal and sub-tidal areas provide feeding locations and potential nesting habitat for shore birds; serve as finfish foraging and spawning habitat; and supports a benthic and shellfish invertebrate community (see Figure 2 – Salt Marsh, Intertidal and Subtidal Resources). The sediments within the resource area are, however, contaminated with PCBs (MassDEP 2010a) and as such, fishing, shellfishing, and lobstering are banned within New Bedford Harbor (EPA 2010a).

B. Fauna – Finfish and Shellfish

New Bedford Harbor is home to a wide variety of marine life. Fisheries include both commercial and recreational bottom dwelling and free-swimming water column resident and migratory species. The intertidal and subtidal areas were found to support abundant benthic and pelagic resources, including horseshoe crabs, and provide spawning and nursery habitat for various species of fish. Ecologically, the harbor functions both as an ocean embayment and estuarine environment (MADEP, 2010a). Roseate terns eat almost exclusively small marine fish and very rarely small crustaceans such as shrimp. (Gochfeld et al., 1998) The Massachusetts Department of Public Health (MDPH) promulgated state regulations in 1979 prohibiting the consumption of any fish/shellfish within designated areas of NBH due to high levels of contamination (EPA 2010b), but for wildlife utilizing these resources, the consumption of shellfish or fish is still an avenue for bioaccumulation of PCBs in fish and wildlife utilizing these resources. A shellfish survey was conducted in May 2010 under the guidance of Mr. David Whittaker, South Shore Section Leader of the MA Department of Marine Fisheries (MADMF), in order to determine potential impacts to the local shellfish population due to the NBH-South Terminal project construction (MADEP, 2010a). Approximately 9,817,121 quahogs, oysters and clams are estimated to be impacted from the direct impacts of filling and dredging in the proposed project area. (Mass DEP, 2012a)

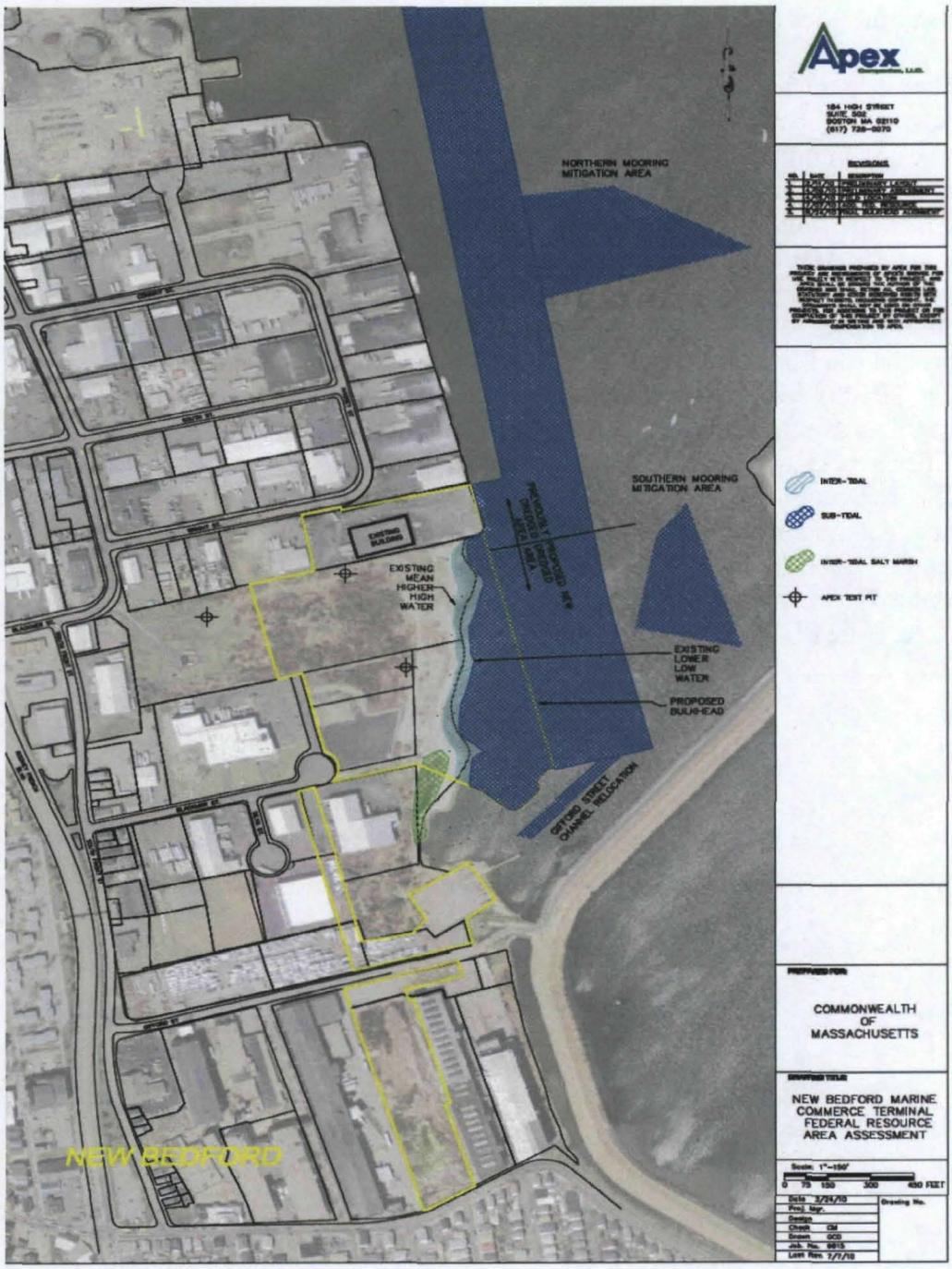


Figure 2 – Salt Marsh, Intertidal and Subtidal Resources (MassDEP,2012)

An Essential Fish Habitat (EFH) assessment was prepared by the MassDEP for the NBH - South Terminal project in conformance with the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) for managed fish species listed in the project vicinity. There are twenty EFH species listed for the NBH area; three species of which are considered potential forage for roseate terns. These include bluefish *(Pomatomus saltatrix)* (listed for the presence of juveniles and adults), king mackerel (*Scomberomorus cavalla*) (listed for all life stages; eggs, larvae, juvenile and adults) and Spanish mackerel (*S. maculatus*) (listed for all life stages) (MADEP, 2010a). Roseate terns generally feed on the young of these larger fish species.

A fisheries study was conducted by Normandeau Associates Inc. (NAI) in New Bedford Harbor from June 1998 to May 1999 which consisted of three near shore seine sampling stations (two in the outer harbor and one in the inner harbor) and trawl samples along five transects (three in the outer harbor and two in the inner harbor) in deeper waters (from 6.5 to 33 feet). As noted above in Section II. Project Description, the demarcation between the inner harbor and the outer harbor is the New Bedford Hurricane Barrier. (MassDEP,2012). No inner harbor sampling sites were located in the NBH–South Terminal project area; however, the fisheries data would be characteristic of the typical fish community in the inner and outer harbor area.

The most numerous fish species found in the NAI study at the three near shore seine sampling stations were Atlantic silversides (*Menidia menidia*) (44 %), striped killifish (*Fundulus majalis*) (16%), mummichog (*Fundulus heteroclitus*) (9%), cunner (*Tautogolabrus adspersus*) (7%), and winter flounder (*Psuedopleuronectes americanus*) (6%). The most numerous fish found in trawl catches (standardized for length of tow and catch for comparison purposes) were scup (*Stenotomus chysops*) (23%), cunner (21%), winter flounder (13%), black sea bass (*Centropristus striata*) (9%), and northern pipefish (*Syngnathus fuscus*) (6%). Alewife (*Alosa pseudoharengus*) appeared in trawl samples in September in lesser numbers but was absent in other months. Atlantic silversides, bay anchovy (*Anchoa mitchilli*) and Atlantic herring (*Clupea harengus*) were also found in the trawling sampling in lesser numbers. Bluefish represented 9.3% of catch at one seine sampling station in the outer harbor area. Although known to utilize Buzzards Bay, blueback herring, sand lance and mackerel were not found in abundance in either the seine or trawling sampling data, most likely being tallied as part of the category of "other species" (MADEP, 2010a).

The bluefish is a wide ranging pelagic species (Robins et al. 1986 in NOAA, 2006) that travels in schools of like-sized individuals and undertakes seasonal migrations. They spawn off the Atlantic coast and juveniles and adults eat whatever taxa are locally abundant. The bluefish diet includes fish, crustaceans and polychaetes (Friedland et al. 1988 in NOAA, 2006). Mackerel is another pelagic schooling fish; they spawn in a wide ranging area off the Atlantic coast. They have a diet of copepod larvae and eggs, the smaller adult copepods, various other minute crustacea, and small fish larvae. Various other planktonic animals also enter regularly into the diet of the mackerel. Juveniles often enter estuaries and harbors in search of food (Bigelow et al., 2002).

The bay anchovy, because of its abundance and widespread distribution in the mid-Atlantic Region, is a very important component food source for many sport and commercial fish (Derickson and Price, 1973; Richards, 1976 in Morton, 1989 in USFWS, 1989) as well as sea

birds. Bay anchovy feed primarily on macrozooplankton, small benthic crustaceans, small mollusks and detritus (Darnell, 1958, 1961 and Odum, 1971 in USFWS, 1989). In the mid-Atlantic region, spawning generally occurs in estuarine waters where salinities are usually over 10 parts per thousand (ppt) (Dovel 1981 in USFWS, 1989). Heinemann (1992) found that anchovy accounted for 6% of the roseate tern diet in 1990 and 4% in 1991.

Alewives and blueback herring (*Alosa aestivalis*) are anadromous species which return to freshwater in the Acushnet River to spawn in the April/May timeframe. Alewife and blueback herring are plankton feeders, subsisting primarily on copepods and pelagic shrimp, as well as on young sand lance and other small fish fry (Bigelow et al., 2002). Herring are an important prey source for many EFH species that occur in the New Bedford Harbor vicinity, such as bluefish (Bowman et al., 2000 in MADEP, 2010a). Heinemann (1992) found that herring-type fish accounted for 8% of the roseate tern diet in 1990 and 11% in 1991.

The sand lance (*Ammodytes americanus*) is an eel-like fish which grows to an average of 25 centimeters (cm) in length, and is widespread in estuarine, open coastal and off shore habitats along the northeastern coast of the United States (Sherman et al. 1981; Morse 1982 in Auster et al. 1986). Sand lances are important in the diet of piscivorous species of fish and birds and it is the primary prey species for the roseate tern. Heinemann (1992) found that sand lance was the most important prey species for roseate terns over the entire season, representing 71% of the diet. Sand lance prey primarily on copepods, but also eat fish eggs and larvae and. Sand lances rely on sandy bottoms for habitat and are found in somewhat patchy distributions. Strong evidence exists that Stellwagen Bank provides spawning habitat for the sand lance (NOAA, 2010). The sand lance was not specifically identified in abundance in the NAI seine and trawl sampling, however, and any sand lance were most likely being tallied as part of the category of "other species" (MassDEP, 2010a).

The Atlantic silverside is a resident fish species of New Bedford Harbor, inhabiting the salt marsh and shallow intertidal areas. Atlantic silversides spawn in the intertidal zone of nearly all major estuaries and tributaries (USFWS, 1983). Heinemann (1992) found that Atlantic silversides represented approximately 10% of the roseate tern diet in 1990 and 11% in 1991 with the tern capture rate more prevalent in the mid-July to early August timeframe. Atlantic silversides grow to about 12 cm and are common in near shore waters, usually on sand or gravel shores and in salt marshes at high tide. Swimming in schools of similarly sized fish, they prey upon zooplankton, shrimp, young squid, worms and algae. They serve as food for other predators such as birds, mackerel and bluefish (URI 2010). Exposure to contaminated sediment during larval and juvenile development may have health implications for this species during later life stages (MADEP, 2010a).

The foraging behavior of the fish species preferred by roseate terns increases the opportunity for these fish to be exposed to PCBs and to bioaccumulate, either because of a longer duration of exposure to contaminated sediment or because of a greater consumption of contaminated forage. These prey species may, in turn, expose roseate terns to PCBs. The potential impacts of the proposed NBH–South Terminal project on the fish species used by foraging roseate terns likely to be found in New Bedford Harbor are discussed in Section V., Effects Analysis, below. As discussed above, the primary prey species for the roseate tern, the sand lance, are widespread and

are not solely confined to New Bedford Harbor. Indeed as also discussed above, sand lance were not found in large numbers in New Bedford Harbor.

C. Physical Conditions – Sediments, Patterns of Circulation, Noise

Sediments – For descriptive purposes, the New Bedford Inner and Outer Harbor have been divided into three areas: upper, lower (also referred to as the inner harbor) and outer harbor based upon geographic features, basin morphology and gradients of contamination. The upper harbor, the area north of the Coggeshall Street Bridge, has PCB contaminant levels ranging from below detection to approximately 4,000 parts per million (ppm). The upper harbor initially had PCB "hot spots" in the range of 100,000 ppm which were removed in 1994 and 1995 as part of EPA's first clean up phase. The lower harbor, which lies between the Coggeshall Street Bridge and the New Bedford Hurricane Barrier, has PCB contamination ranging from below detection to approximately 190 ppm. The outer harbor area is defined as the area lying outside the hurricane barrier (which was constructed in the mid-1960s) and extends out covering approximately 17,000 acres. The outer harbor has sediment PCB levels averaging approximately 1 ppm, with localized areas approaching 50 ppm (USACE, 2010).

Long-term sediment and toxicity monitoring has been conducted in New Bedford Harbor as part of the long term monitoring program for the New Bedford Harbor Superfund site. One of the monitoring stations (Station 253) is located within the proposed dredging area for the NBH – South Terminal project. The long-term sediment monitoring data for Station 253, conducted five times between 1993 and 2009, showed an average PCB concentration of 5.7 ppm and the grain size analysis showed an average 46.9% silt/clay component. Sediment samples were collected in 2010 and 2011 using vibracores and Russian Peat Cores within the footprint for both the proposed dredging area and the proposed facility. (MA DEP, 2012, Section 5). Surface samples from within the proposed dredging areas and the filled facility footprint were collected and analyzed for PCBs (22 NOAA Congeners by Modified EPA Method 8270C). Surface samples (samples collected from 0 to 1 foot) and fifteen Russian Peat Corer locations (five locations within the area to be filled and ten locations from within the dredge footprint) were also analyzed for 13 Priority Pollutant Metals (EPA Method 6020A/7471), SVOCs (EPA Method 8270C), and Total Petroleum Hydrocarbons (EPA Method 8015).

Patterns of Circulation - Although general data regarding circulation conditions and sediment transport within the harbor have been collected, no data exist describing the actual site-specific sediment transport and circulation patterns within the NBH - South Terminal site. Circulation patterns within New Bedford Harbor are primarily driven by meteorological events and mixed semi-diurnal tidal currents (EBASCO, 1991; Howes and Goerhinger, 1996; NBHTC, 1996 in MADEP, 2010a). Flushing of the harbor was determined to take 2 days under winter conditions, and 8 days under summer conditions (Bellmer, 1988 in MADEP, 2010a). Local embayment and channel restrictions produce faster currents. Examples of these locations include: within the opening in the hurricane barrier, within the vicinity of Popes Island, and within the vicinity of the Coggeshall Street Bridge located in the upper harbor. At the Coggeshall Street Bridge, the average ebb tide velocity is 0.7 knots; however, currents as fast as 3.5 knots have been recorded here during ebb tide (USACE (1990) in MADEP, 2010a). In the New Bedford Harbor PCB Flux Study conducted by Woods Hole Group (WHG) on behalf of the USACE for EPA, NBH

sediments and water were identified as a source of PCB contamination to the area outside of the hurricane barrier (outer harbor area) (Woods Hole Group, 2010.)

Noise and Traffic - The NBH- South Terminal is located within the Designated Port Area for the Port of New Bedford, which has been specifically reserved for water dependent industrial uses by the Commonwealth of Massachusetts and interfaces with the Waterfront Industrial and "Industrial B" zoning districts (MADEP, 2010a). The inner harbor contains several marinas, a recreational fleet, historical attractions, commercial fishing fleets, and fish processing/cold storage facilities. Land usage along the shore is a mixture of residential, commercial and industrial uses (MADEP, 2010a). Dredging activities in the harbor for both navigation and remediation of the New Bedford Superfund site adds additional human disturbance to the harbor area. The current level of human disturbance, noise and traffic undoubtedly deters the foraging of shorebirds to some extent.

IV. Roseate Tern Biology

A. Seasonal Distribution

In North America, the roseate tern breeds in two discrete populations; from Nova Scotia south to New York (the Northeast Population) and in the Caribbean. Roseate terns arrive in Massachusetts from late-April to mid-May to nest at just a handful of coastal locations. Massachusetts birds depart from breeding colonies in late-July and August and concentrate in "staging areas" around Cape Cod and the Islands, before departure for wintering grounds in September. Most have departed staging areas and have begun migrating southward (principally to South America) by mid- to late-September (MA NHESP, 2007).

B. Nesting

In Massachusetts, the roseate tern generally nests on sandy, gravelly, or rocky islands. Roseate terns have very specialized habitat requirements; however, they are always found nesting in close association with the common tern (*Sterna hirundo*). Roseate terns, being less aggressive than the common tern, seem to rely on the common terns aggressive tendencies to protect their own nests. Roseate terns usually place their nests under cover in dense vegetation, such as seaside goldenrod *(Solidago sempervirens)* or beach pea *(Lathyrus maritima)*, or under boulders or other structures (e.g. nestboxes or wooden boards). Roseate terns appear to enjoy the security of crevices and structural backing to their nesting sites. Common terns tend to nest in open sandy areas with limited vegetation (Nisbet, 2002 in USACE, 2006).

In Buzzards Bay, terns start arriving at the nesting islands in late-April. Common terns usually begin laying eggs the second week of May and roseate terns begin a few days later. Peak egg-laying takes place from mid-May to mid-June, but eggs may be laid into mid-August. Incubation lasts about three weeks, and after three to four weeks chicks can fly. Fledglings of both species are dependent on their parents for at least several weeks post-fledging. Most terns begin moving in July to pre-migration staging areas in the region (especially on Cape Cod) where they feed and roost before starting migration a few weeks later. By early September, essentially all terns have departed the nesting islands for the pre-migration staging areas. By mid-September, most have

departed the staging areas for the wintering grounds (principally in South America), but some linger at staging areas until mid-October (USACE, 2006).

The islands in Buzzards Bay and Nantucket Sound have been among the most important nesting sites for roseate terns in the northeast. In the most recent inventory of terns prepared by Massachusetts Division of Fisheries and Wildlife (MA DF&W the following results are presented:

> Roseate terns were confirmed to have nested at six sites in 2011. The largest colony was at Bird I., Marion (937 vs. 735 in 2010); productivity was very good, 1.23 fledglings/nest. Ram I., Mattapoisett was the second largest site at 385 pairs (vs. 584 in 2010); productivity also was very good, 1.10 fledglings/nest. Repeated Peregrine Falcon (*Falco peregrinus*) disturbance in May and early June was probably responsible for roseate terns shifting from Ram to Bird. Other sites included Penikese I., Gosnold (34 vs. 37 in 2010; fair to good productivity), S. Monomoy I., Chatham (7 vs. 8 in 2010; 0.29 fledglings/pair), Monomoy I., Chatham (3 vs. 1in 2010; 1.67 fledglings/pair), and Plymouth Beach, Plymouth (≥1 vs. 2 in 2010). Roseate terns were observed carrying fish into the Plymouth colony in 2007, 2008, and 2010 and presumably nested in those years; however, in 2011, a nest and young were confirmed. Roseate terns preparing to nest at Norton Beach, Edgartown before the peak census window were disrupted by a Peregrine Falcon and did not nest (0 vs. 26 in 2010). At Gray's Beach, Yarmouth, three roseate terns (two adults and one sub-adult) consistently were observed flying over the colony together over the course of the breeding season, but they did not land and there was there was no indication of nesting. At a sandbar off Muskeget I., Nantucket in July, a roseate tern pair was courting, scraping, and bringing nesting material to a scrape, but nesting was not confirmed. (MDF&W, 2012)

Bird Island and Ram Island (located approximately 17 km and 9.2 km "as the crow flies," respectively) are the two closest colonies to the NBH- South Terminal project area that are within the typical foraging range (25 km) of the roseate tern.

Bird Island is a 3-acre island located in Buzzards Bay in Marion, MA, southwest of Butler's Point at the entrance of Outer Sippican Harbor. Bird Island is subject to wave action and submergence during storm events, which has eroded the island over time. Sand and gravel areas have given way to the establishment of some areas of salt marsh and two salt pannes. The island is also the location of a historic light house. In 2011, Bird Island supported 937 nesting pairs of roseate terns (MDF&W, 2012).

Ram Island, a 2.5-acre island located 0.8 km southeast of Mattapoisett Neck, Mattapoisett, MA, is composed of eroded glacial till, surrounded by scattered boulders. There is a tidal pond in the center with a small area of low-grade salt marsh, and a storm beach of gravel and shell. Common and roseate terns have been known to breed on the island since the 1930s (Mass Audubon 2010) but the island was eventually overrun with gulls. Suitable conditions for nesting roseate terns were restored in the 1990's by the MDF&W Natural Heritage and Endangered Species Program (MA NHESP; and as of 2011, the island supported 385 nesting pairs of roseate terns (MDF&W, 2012).

In Massachusetts in 2011, the roseate tern population decreased slightly (2.4%) to 1,359 pairs (vs. 1,393 pairs in 2010). The U.S. (or "Northeast") population as a whole increased slightly to 3,042 pairs (vs. 2,970 in 2010). The population declined steeply after 2000, but essentially has been stationary since 2008 – this is close to the 1987 level, when it was first listed as Endangered in the U.S. Since 1985, roseate tern numbers in the Commonwealth e have fluctuated between 1,339 and 2,124 pairs, averaging 1,587 pairs during this time period. (MDF&W, 2012)

C. Staging

Roseate tern staging areas in the New Bedford Harbor general vicinity (within 50 miles) include Monomoy Island and Nauset Beach on Cape Cod, Nantucket Island, and Napatree Point on the Connecticut/Rhode Island border (USFWS, 1998). There were twenty areas of open beach or sand flat sites around Cape Cod identified where roseate terns (and common terns) staged between 24 July and 22 September. Birds from eight different breeding sites were identified among staging flocks (Trull et al., 1999, in USFWS, 2010).

D. Foraging

Roseate terns feed almost exclusively on small and/or juvenile fish, occasionally including crustaceans and insects in its diet. Its feeding habits are fairly specialized, consuming primarily sand lance. Heinemann (1992) found that the roseate terns from Bird Island foraged primarily (95%) on sand lance prior to mid-June (71% over the season). After mid-June, the breadth of the diet increased to include herring, anchovy, silversides, mackerel and bluefish. Roseate terns capture food mainly by plunge-diving (diving from heights of 1-12 meters (m) and often submerging to $\geq$ 50 centimeters (cm), but also by surface-dipping and contact-dipping (MA NHESP, 2007).

Roseate terns feed in bays, tidal inlets, or between islands in Massachusetts. They are known to fly up to 25 km to feed over reliable feeding areas (Nisbet, 1991, Duffy, 1986, Safina, 1990, Heinemann, 1992 in USFWS, 1998). Rock et al., 2007 found an average foraging distance of 7 km from a colony in Country Island, Nova Scotia, Canada. Roseate terns forage in highly specialized situations such as shallow sand bars (less than 3 meters (m) deep) or rip tides where prey fish are swept close to the surface. They will also feed in shallow water (less than 2 m deep) where prey fish cannot stay below the plunge depth. Roseate terns will also take advantage of school feeding of predatory fish or feeding close to double-crested cormorants when smaller fish are driven to the surface. Some roseate terns specialize in stealing fish from other terns Heinemann (1992). Rock et al. (2007) found in a telemetry study in Canada that 90% of foraging was in water less than 5 m deep.

In 1990 and 1991, a study was conducted to assess the foraging locations and ecology of roseate terns breeding on Bird Island in Massachusetts (Heinemann, 1992). Eight survey transects were established in the Buzzards Bay and Vineyard Sound area and roseate tern observation surveys were conducted during the months of June and July in 1990 and 1991. Five of the eight transects went into the New Bedford outer harbor, of which two of these transects went into the inner harbor (north of the Hurricane Barrier). Of the five transects that included the New Bedford outer harbor area, the most southern foraging location in three transects was the West Island area

and, in one transect, a small number of terns (1 to 9 birds) were observed foraging on the west side of Sconticut Neck (outer New Bedford Harbor) (for the location of these areas see Figure 3 – Roseate Tern Foraging Habitat Within 25 km). No roseate terns were identified foraging in the inner harbor area.

The MassDEP (conducted an expanded avian assessment for potential usage in the vicinity of the NBH - South Terminal project for avian nesting and foraging by reviewing existing data. The assessment included a review of a bird survey conducted by the USEPA in 1987, bird observations within Bristol County made via the Massachusetts Audubon Society's online "eBird" system, the species prioritization list associated with Bird Conservation Region 30 (Southern New England Data), information from the Paskamansett Bird Club's 2007 Christmas Bird Count, identifications made by an individual within New Bedford from 2005-2008, and observations made for the Mass Audubon Society's Breeding Bird Atlas 2. The conclusion of this assessment was that "These surveys indicate that the Common and Roseate Terns likely do not travel inside of the New Bedford Hurricane Barrier, and if they do, they do so infrequently and have not been noted within the surveys in question." (MassDEP, 2010b).

Of the roseate tern nesting colonies in Massachusetts, only Bird Island and Ram Island are within the foraging range for roseate terns (approximately 25 km) to the New Bedford Harbor. Bird Island is located approximately 17 km from New Bedford Harbor but terns would most likely follow a water route during foraging which extends the flying distance from Bird Island to New Bedford Harbor to the outer-most foraging range. Heinemann (1992) stated that "Roseate Terns from the Bird Island do not forage in the immediate vicinity of New Bedford Harbor, although they can be found in significant numbers near West Island and Ram Island 6-9 km away." Therefore, it is unlikely that Bird Island roseate terns forage in the New Bedford Harbor area during nesting season. However, Ram Island is located 9.2 km from New Bedford Harbor. The Heinemann (1992) tern foraging study was conducted prior to the restoration of Ram Island and as such, may not account for Ram Island roseate terns foraging in the New Bedford Harbor area during nesting season since the mid-1990's.

Little information is known about the movements or ecology of the terns during migration to and from wintering areas or moving from nesting and staging areas. Theoretically, they may use New Bedford Harbor for foraging during this time. Potential risks to migrating roseate terns related to NBH – South Terminal project could include effects from increased shipping traffic, noise, oil spills, etc. The potential impact to foraging roseate terns from Ram Island and migrating roseate terns is discussed in the Section V., Effects Analysis.

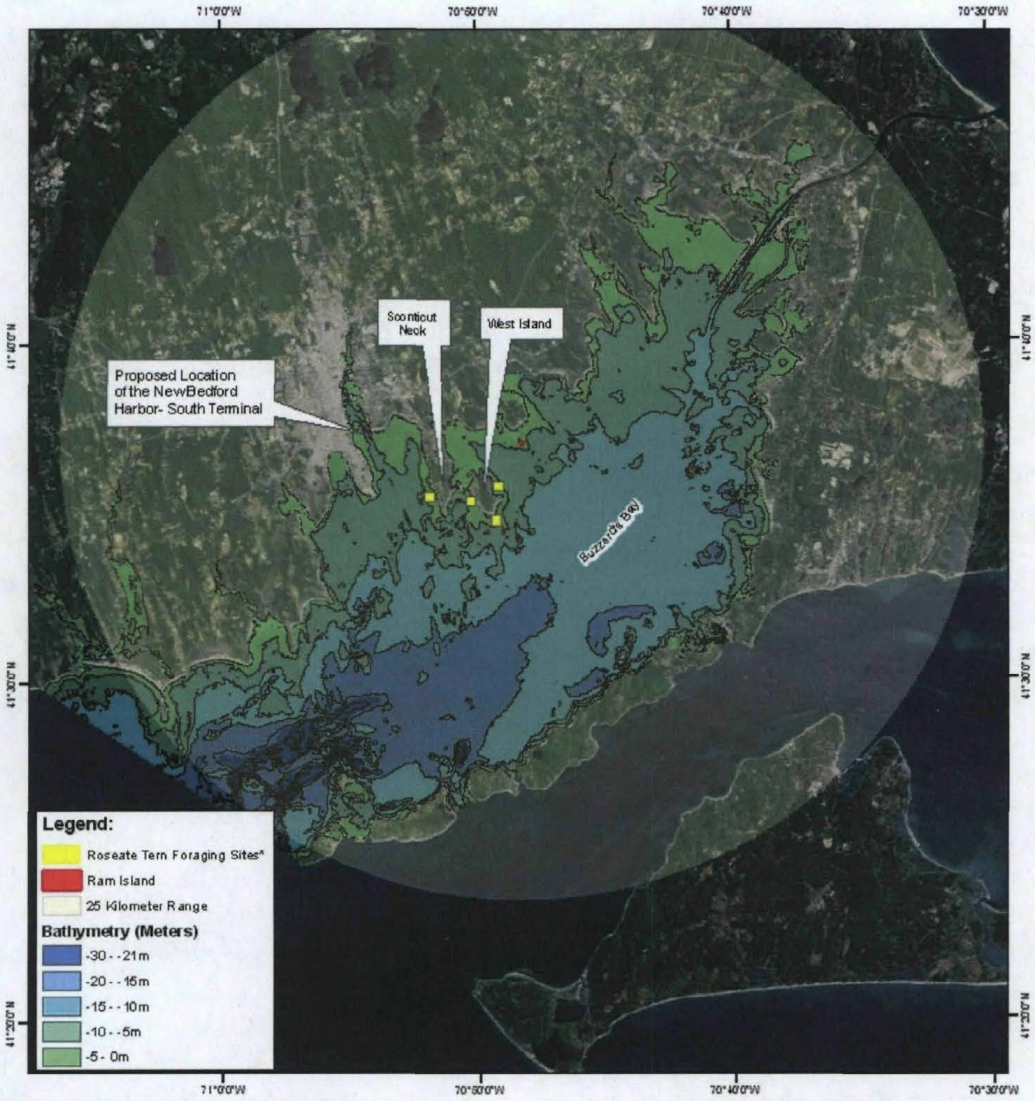


FIGURE 3: ROSEATE TERN FORAGING HABITAT WITHIN 25 KM RANGE RAM ISLAND, BUZZARD'S BAY, MA

0 8,000 16,000 32,000 48,000 Feet

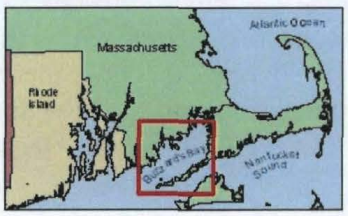
0 3,200 6,400 12,800 19,200 Meters

1:276,699

*Source: Heinemann, Dennis. 1992. Foraging Ecology of *Roseate Terns Breeding on* Bird Island, Buzzard's Bay, MA

2009 Aerial Imagery from ArcGIS Map Service

GCS WGS 1984



V. Effects Analysis

A. Direct Loss of Salt Marsh, Intertidal and Subtidal Habitat

Permanent direct adverse impacts to aquatic resources from constructing the NBH-South Terminal project would include the filling of 1.94 acres of intertidal area; 4.06 acres of shallow, near-shore sub-tidal area; 0.18 acres of salt marsh, and 0.67 acres of shallow sub-tidal area that will be dredged and partially filled with piles and a concrete blanket. This 0.67 acre area will also be shaded with a concrete platform. These aquatic resource areas were found to support abundant benthic and shellfish resources and are used as fisheries spawning and nursery habitats.

Permanent impacts from dredging associated with the proposed project includes 7.02 acres of near-shore, sub-tidal land which will be dredged in feet from between -1 and -6 Mean Lower Low Water (MLLW) to between -30 and -32 MLLW[2]; and 8.46 acres of near-shore, sub-tidal land that will be dredged in feet from -1 and -6 MLLW to -14 MLLW.

Temporary impacts associated with the proposed project include 8.76 acres of near-shore sub-tidal area that will be dredged from between -1 and -6 MLLW to -45 MLLW to create a Confined Aquatic Disposal cell which will later be filled and capped; 6.17 acres of near-shore, sub-tidal areas that will be dredged from -4 to -6 MLLW to between -6 and -7 MLLW (Gifford Street Channel Realignment and Mooring Mitigation Areas); 8.29 acres of sub-tidal area will be dredged from -20 to -20 MLLW to -30 MLLW (South Terminal Channel)[3]; and 15 acres of sub-tidal area that will be dredged from -20 to -30 MLLW for -30 MLLW (Maintenance Dredging of Federal Navigation Project).

A total of approximately 22.33 acres of intertidal and subtidal resource areas would be permanently altered due to filling and dredging during the construction process. The direct effect to marine resources caused by filling and dredging intertidal and subtidal areas include permanent loss of spawning and foraging habitat, reduction in the availability of food supply, and loss of refuge areas from predators.

A total of 38.22 acres of near shore subtidal and subtidal would be temporarily impacted during dredging. Temporary impacts would include elevated turbidity, the resuspension and mobilization of contaminants during the construction process, and human disturbance (vessel traffic, noise, etc.) associated with the post-construction operation of the terminal (MassDEP 2012). Temporary impacts from construction noise will potentially occur as the project involves the insertion of piles into substrate to provide a foundation for the terminal bulkhead and may involve blasting to remove rock in the area of the terminal and in shipping channels.

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[2] This figure represents 3.68 acres that will definitely be dredged, and an additional 3.34 acres that are associated with a potential extension of the deep-draft quayside dredging area to the south and potential additional widening of the deep-draft channel. See MassDEP 2012a at pp. 2-4 and 9.

[3] This figure represents 7.01 acres that will definitely be dredged, and an additional 1.28 acres that are associated with a potential extension of the deep-draft quayside dredging area to the north. See MassDEP 2012a at pp. 3 and 10.

B. Foraging by Nesting and/or Migrating Roseate Terns

Ram Island is located 9.2 km from New Bedford Harbor which is within the 25 km foraging distance for roseate terns and as such there is some potential for Ram Island roseate terns to forage in the New Bedford Harbor area during nesting season. In 2009, Ram Island supported 645 roseate tern pairs; 20.6% of the northeast population in 2009. Of that number, only a portion would be expected to forage at any one time in the direction of New Bedford Harbor. In addition, roseate terns forage in highly specialized situations such as shallow sand bars or rip tides where prey fish are swept close to the surface. New Bedford Harbor does not exhibit these habitat characteristics. The southernmost foraging areas, located around West Island and the west side of Sconticut Neck (outer New Bedford Harbor), could also be used by Ram Island roseate terns, and Heinemann (1992) identified many other better suited foraging sites in Buzzards Bay that are also within the range of foraging Ram Island terns. No roseate terns were identified foraging in the inner harbor area by Heinemann (1992), though, as mentioned above, this survey predated the restoration of suitable nesting conditions on Ram Island.

In addition, the MassDEP conducted an assessment for potential avian usage of the NBH – South Terminal area by reviewing a wide variety of existing avian survey data. The conclusion of this assessment was that "These surveys indicate that the Common and Roseate Terns likely do not travel inside of the New Bedford Hurricane Barrier, and if they do, they do so infrequently and have not been noted within the surveys in question." (MassDEP 2012).

While terns migrating to and from wintering, nesting and staging areas also have the potential to forage in New Bedford Harbor, it is not considered to provide high quality foraging and does not provide nesting habitat for the roseate tern. Trull et al. (1999) in USFWS, 2010, suggested that at least half of the entire northeast population of roseate terns was concentrated around Cape Cod at the time of staging. These staging areas are located 40 miles or more from New Bedford Harbor, which is beyond the foraging range for roseate terns. Therefore, it would be expected, based upon existing survey data, that only occasional or transient birds would attempt to use New Bedford Harbor for foraging during migration and staging based upon existing survey data.

There are areas of roseate tern foraging habitat identified around West Island and the east side of Sconticut Neck (Heinmann, 1992), which are within the foraging range of Ram Island roseate terns and would likely be preferred over foraging in the inner NBH project area because they are closer to Ram Island. In addition, because roseate terns forage in waters up to approximately 5 meters in depth and as such, there is a large amount of potential foraging habitat in areas external to the New Bedford Harbor area (see Figure 3 – Roseate Tern Foraging Habitat within 25 km). In addition, the significant degree of existing human related disturbance in the harbor is a deterrent for foraging birds (as discussed below). Therefore, it would be expected that only occasional transient roseate terns, if any, would use the New Bedford inner harbor for foraging during nesting, migration or staging.

C. Effects on Prey Species in Shallow Water Habitat

Project related impacts on the prey species preferred by the roseate tern are dependent on the mobility, life history, food preference and spawning behavior of the species. Non-mobile or

slow-moving benthic organisms, including slow moving invertebrates (food for prey species) may be buried or trapped by filling during construction of the NBH–South Terminal. More mobile species of fish would likely avoid the disturbance areas. Spawning habitat for the pelagic species such as mackerel and bluefish, which spawn in at sea, or for the anadromous herring which spawns in fresh water (in the Acushnet River), would be least likely to be directly affected by the filling of intertidal and subtidal habitat. Species such as the sand lance, bay anchovy which spawns in estuarine waters and bluefish, herring and mackerel, the juveniles of which, may utilize the NBH–South Terminal intertidal area for foraging could potentially be impacted by the project. However, these species were not well represented in the Normandeau Associates near shore sampling or trawl sampling and as such do not appear to utilize the area to a great extent.

The Atlantic silverside is a resident of the intertidal area, which makes it most susceptible to impacts associated with the direct filling of the 1.94 acres of intertidal resources, 0.67 acres of shallow sub-tidal area that will be dredged and partially filled with piles and a concrete blanket and 4.06 acres of shallow near-shore sub-tidal habitat. The Atlantic silverside spawns in intertidal areas, comprised 44% of the three near shore seine sampling stations, and represents approximately 10% of the roseate tern diet (Heinemann, 1992). However, the Atlantic silverside is a wide spread species, occurring from Nova Scotia to Florida and is abundant in every major estuary (USFWS, 1983).

Overall, the intertidal resources that will be affected by the proposed project represent a small portion of the total potential spawning, nursery and foraging habitat in New Bedford Harbor. Furthermore, the roseate tern prefers primarily sand lance and a range of other prey species which support its dietary requirements during the spring, summer, and fall in the northeast. It is unlikely that the potential impact of the NBH–South Terminal project on the Atlantic silverside population or other foraging juvenile prey species will affect the occasional or transient roseate terns that may use the New Bedford Harbor for foraging. Although certain areas will be eliminated as a potential foraging site for roseate terns, as explained above, 1) only occasional or transient birds would be expected to use the inner harbor area for foraging, 2) there are several more preferred feeding sites in the Buzzards Bay area (as shown on Figure 3 – Roseate Tern Foraging Habitat Within 25 km) that are anticipated to be the focus of foraging roseate terns, 3) the preferred prey base is largely absent from the New Bedford area and 4) the amount of potential preferred forage fish spawning habitat that will be eliminated will be negligible.

D. Dredging Impacts to Prey Fish in Sub-tidal Environment

Dredging effects on roseate tern foraging may include increased exposure of prey fish to elevated turbidity and higher levels of contaminants in the water column from the dredging processes. Though direct mortality to prey fish would not be expected, sub-lethal impacts could occur, such as decreased reproduction or bioaccumulation of contaminants in benthic organisms that the prey fish feed upon. Dredging will impact approximately 38.22 acres of subtidal area in order to create an adjacent deep water channel and mooring area.

The direct effects of dredging on fisheries include destruction of eggs or spawning areas, physical impairment (e.g., turbidity-induced clogged gills resulting in suffocation, or abrasion of

sensitive epithelial tissue), behavior impairment (changes in migration patterns) or physiological impairment due to acute or chronic toxicity from exposure to contaminants within the dredge sediments. Some physical impairment of resident fish species within the harbor would be expected. Pelagic fish are more likely to avoid the turbidity plumes and leave that portion of the harbor occupied by the sediment plume. Anadromous fish could be temporarily impacted by any sediment plume that was present as they pass through it to freshwater spawning areas.

To better understand the effects of dredging in the New Bedford Harbor Superfund site, the EPA Atlantic Ecology Division in Narragansett, RI, conducted extensive research with regard to water column contaminant accumulation in shellfish tissues. Blue mussels (*Mytilus edulis*) were selected for use in the study because they have been shown to accumulate PCBs in their tissues proportional to the concentration of PCBs in the water that they filter. Mussels were deployed at three sites; the Coggeshall St. Bridge in the upper harbor, the NBH Hurricane Barrier in the lower harbor, and approximately 1000 yards east of West Island. In order to quantify any dredging and operational related impacts, mussels were deployed at three different times; before dredging (Pre Operational), during dredging of PCB contaminated areas (Hot Spot Remediation) and after dredging (Post Operational). After the mussels were deployed for a period of 28 days, they were retrieved from the field and analyzed for PCB concentrations in their tissues (EPA, 2009, unpublished. B.J. Bergen and W.G. Nelson, U.S. EPA, Atlantic Ecology Division, Narragansett, RI).

Results of the study indicate that, over a period of twelve years (1987 to 1999), PCB bioaccumulation levels were relatively constant, which leads to the conclusion that operational dredging in the NBH had minimal impact on PCB bioaccumulation in mussels. The data showed that PCB concentrations do not increase during dredging periods in blue mussels and as such, it was reasonable to assume that dredging does not lead to increases in PCB concentrations in other biota in the harbor (EPA, unpublished. B.J. Bergen and W.G. Nelson, U.S. EPA, Atlantic Ecology Division, Narragansett, RI).

Given that only occasional or transient roseate terns would be expected to use the NBH during breeding and migration, we believe that roseate terns are unlikely to be adversely affected as a result of this project. Should a few birds choose to forage in the project area during dredging operations, the risks of exposure to PCBs resulting from the effect of dredging on their prey would be extremely low. This conclusion is supported by long term trends which show that total PCBs have declined 12% since 1972 in tern breeding colonies in Buzzards Bay, MA (EPA, 2008). This decline in PCB levels in tern eggs, though not specifically linked to the remedial activities at the NBH Superfund site, coincides with declines in sediment PCB concentrations from those activities.

E. Noise and Traffic

New Bedford Harbor is a highly industrialized area with noise levels related to the operation and repair of over 500 commercial fishing vessels, operation of dozens of fish processing plants, multiple cargo ship receiving facilities, multiple ship-yards, ferry boats, cruise ships, and repair yards. This activity produces a significant quantity of noise particularly in the spring, summer, and early fall, during which the activity within the harbor is at its peak. Although roseate tern

foraging would also be at its peak during this time (MassDEP, 2010b), the elevated activity within the harbor area is likely to deter shorebirds from foraging there.

The construction and operation of the NBH-South Terminal will involve increased truck traffic and noise impacts in the project vicinity. It is estimated that operations will be conducted on an as-needed basis, and could occur 24 hours per day, 365 days per year (shipping activities and/or offloading from fishing vessels). The NBH-South Terminal is located within the Designated Port Area for the Port of New Bedford, which has been specifically reserved for water dependent industrial uses by the Commonwealth of Massachusetts and is within the Waterfront Industrial and "Industrial B" zoning districts (MassDEP, 2010a). As discussed above, the current level of human activity in the harbor is likely to be a deterrent to shorebirds foraging in the area. Increased noise and traffic from construction and operational activities at the terminal may further deter roseate terns from using the area. However, this is not likely to adversely affect the roseate tern since even apart from the NBH South Terminal Project, the use of the New Bedford inner harbor by roseate terns is expected to be limited to occasional and transient individuals and there are several and more preferred areas terns may use for foraging in Buzzards Bay.

F. Oil Spills and Shipping Traffic

Increased vessel traffic and/or the potential for uncontrolled releases of oil to surrounding waters as a result of the operation and maintenance of the NBH – South Terminal project present additional potential vulnerabilities to terns foraging in Buzzard's Bay. An oil spill in 2003, the Bouchard No. 120 (B-120) oil spill in Buzzards Bay, Massachusetts, resulted in moderate oiling of Ram Island and slight oiling of Bird and Penikese Islands. During this event, roseate terns were hazed to discourage them from settling into nesting habitat until it was cleaned of oil. As a result, many tern pairs moved to other islands, and/or delayed nesting, which resulted in reduced productivity at Ram Island by an estimated 350 chicks (USFWS, 2008).

To determine the threat to avian wildlife, the Massachusetts DEP relied upon an oil spill threat analysis of vessel traffic prepared by Nuka Research & Planning Group LLC (MADEP, 2009 cited in MADEP, 2012.) Nuka Research & Planning Group LLC considered the existing oil spill threat for New Bedford Harbor from vessel activity within shipping lanes; from increased vessel traffic due to the construction of the NBH–South Terminal project; and from use of the facility as a maritime terminal after the initial offshore renewable energy project is completed. The analysis determined the relative increase in oil spill threat after the first year of operation of the new terminal for Regional Transit Vessels is 0.77% for the South Coastal/New Bedford area, 0.75% for the Dartmouth/Fairhaven/Marion/ Mattapoisett/Wareham/Westport area, and 0.75% for the Cape and the Islands. Details of this analysis may be found in the document entitled the State Enhanced Remedy in New Bedford, South Terminal and dated August 25, 2010 (MASSDEP 2012). In addition, Spendelow et al. (2008) (in USFWS 2008) examined survival rates of roseate terns over a 19-year period and did not detect a lower survival of the birds nesting at the colonies near the Bouchard No. 120 (B-120) oil spill compared to those nesting at other study sites in New York and Connecticut. Therefore, it is unlikely that roseate terns will be adversely affected by the small increased threat of oil spills or increased traffic as a result of the NBH–South Terminal project.

G. Ecological Benefits of the Project

In its current state, New Bedford Harbor presents a limited risk to foraging transient roseate terns within the harbor and from the export to adjacent areas of PCB contaminated forage fish (e.g., sand lance, alewife, blue fish, etc.). The dredging associated with this project will reduce the levels and amounts of PCBs and other contaminants in the sediments within the harbor areas that are to be dredged. The material will be disposed/confined in the CDFs or CADs. This will reduce future potential for resident and transient fish species and other organisms to be exposed to these contaminants. The potential benefits may be illustrated in the long-term trends that show that total PCBs have declined 12% in tern breeding colonies in Buzzards Bay, MA since 1972 (EPA, 2008).

VI. Determination of Effects on the Roseate Tern

From the above analysis, EPA concludes that the proposed NBH–South Terminal project is unlikely to adversely affect the roseate tern. The project site contains neither nesting habitat nor migratory staging area habitat for roseate terns. Therefore, the project would have no direct effect on such habitat. In addition, the project is sufficiently distant from available roseate tern nesting habitat and migratory staging area habitat, that it will have no indirect effect on these habitats, either.

Furthermore, the project would be unlikely to have any effect on roseate terns foraging during nesting or migration because roseate terns are not expected to use the project area for foraging to any significant degree. Although the distance from the project location to the Ram Island and Bird Island roseate tern breeding colonies is within the estimated foraging range of roseate terns, there are foraging sites closer to these colonies that have site characteristics preferred by foraging roseate terns. Based on existing literature and known feeding habitats, roseate terns use specialized sites for feeding where currents or rip tides bring prey species to the surface, and these conditions do not exist in the project area but do exist at other locations in or around Buzzards Bay. Moreover, already existing noise and vessel traffic in the harbor are likely to deter any potential foraging in the harbor by roseate terns.

In light of the above considerations, there is, at most, only a small likelihood that a transient roseate tern might seek to use the project area for foraging during nesting and migration. If such a transient roseate tern did seek to forage in the project area, it is highly unlikely that it would encounter any contamination, or that its prey sources would have been reduced in any meaningful way, as a result of the project.

Finally, as mentioned above, current noise and vessel traffic in the harbor are likely deterrents to the use of the harbor by roseate terns for foraging. As such, additional noise from the project is not expected to cause an adverse effect. However, in the unlikely event that roseate terns enter the inner harbor to forage, noise and vessel traffic would likely serve to drive the birds away from the South Terminal site. Therefore, injury as a result of foraging during dredging is highly unlikely. In addition, the increased threat over existing conditions to migrating roseate terns due to increased vessel traffic and potential oil spills would be minimal.

VII. Conclusion

EPA concludes that, though the proposed NBH-South Terminal project may affect the roseate tern, the project is unlikely to adversely affect the species.

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IX. List of Contacts Made and Preparers

Judy Johnson, U.S. Army Corps of Engineers, New England District, Concord, MA
Jay MacKay, U.S. Army Corps of Engineers, New England District, Concord, MA
Matt Schweisberg, U.S. EPA New England, Boston, MA
William Nelson, U.S. EPA Atlantic Ecology Division, Narragansett, RI
Ralph Abele, U.S. EPA New England, Boston, MA
Jackie Leclair, U.S. EPA New England, Boston, MA
Susi von Oettingen, U.S. FWS, New England Field Office

Figure 4 Hurricane Barrier Swale Mitigation – Existing Conditions

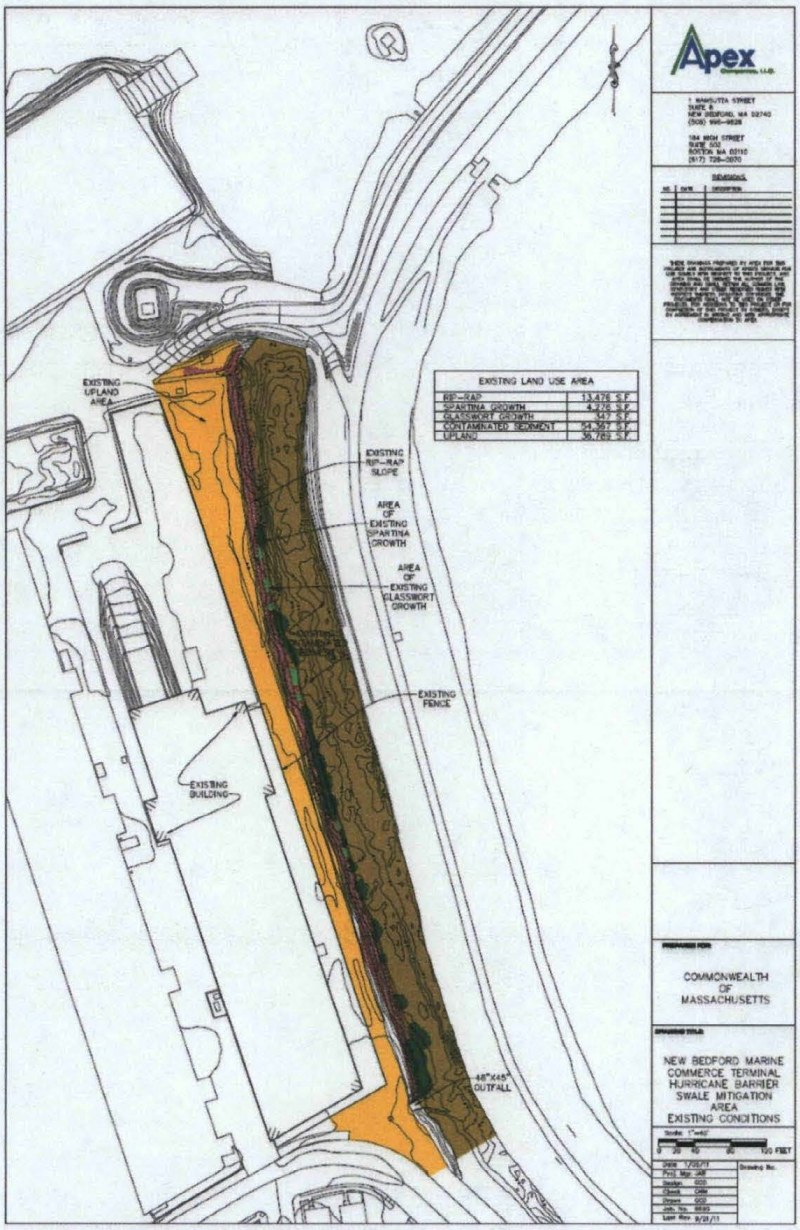
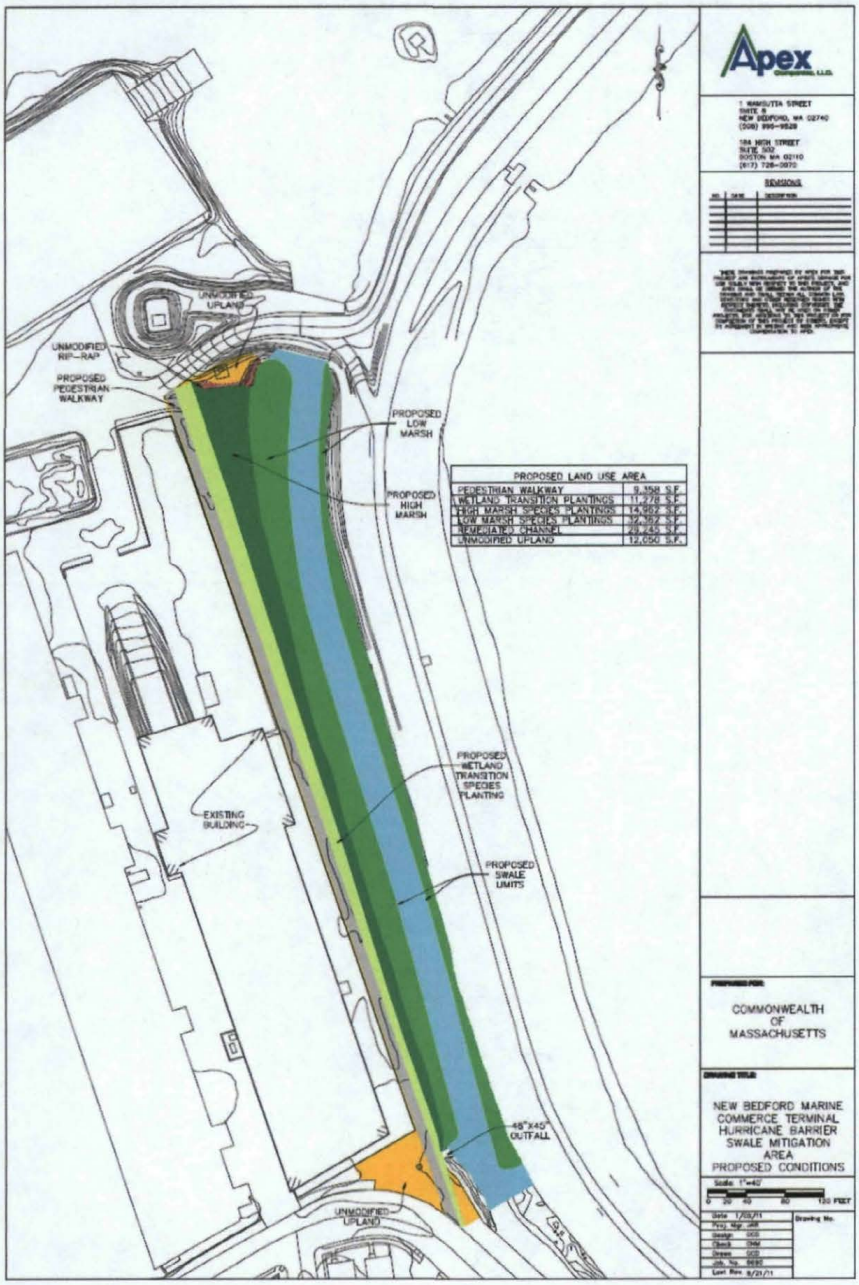


Figure 5 Hurricane Barrier Swale Mitigation Area Proposed Conditions



PROPOSED LAND USE AREA	
PEDESTRIAN WALKWAY	9,158 S.F.
WETLAND TRANSITION PLANTINGS	11,778 S.F.
HIGH MARSH SPECIES PLANTINGS	14,582 S.F.
LOW MARSH SPECIES PLANTINGS	32,352 S.F.
REMEDIATED CHANNEL	29,435 S.F.
UNMODIFIED UPLAND	12,050 S.F.

EPA Draft Determination for the Proposed South Terminal Project
New Bedford Harbor State Enhanced Remedy

Appendix L
Determination of Compliance
Floodplain Management Executive Order
Executive Order 12898

ENVIRONMENTAL PROTECTION AGENCY
REGION I

SOUTH TERMINAL PROJECT, NEW BEDFORD NPL SITE

DRAFT DETERMINATION OF COMPLIANCE WITH CERCLA AND THE NATIONAL CONTINGENCY PLAN WITH RESPECT TO THE REQUIREMENTS OF FLOODLAIN MANAGEMENT -- EXECUTIVE ORDER 11988

PROJECT NAME: STATE ENHANCED REMEDY IN NEW BEDFORD SOUTH TERMINAL, NEW BEDFORD, MASSACHUSETTS
PROJECT PROPONENT: Department of Environmental Protection, Commonwealth of Massachusetts

NATIONAL PRIORITY LIST SITE: New Bedford Harbor

1.1 Project Description: The Commonwealth of Massachusetts proposes the development of an approximately 28-acre marine terminal capable of supporting offshore renewable energy development and other future uses. The facility would also provide a site for the disposal of navigational dredged material associated with the State Enhanced Remedy ("SER") during construction of the facility, and would support staging of additional dredged material for beneficial reuse during operation of the facility. The facility would be located at the South Terminal area in lower New Bedford Harbor. The proposal is described in detail in the document entitled State Enhanced Remedy in New Bedford, South Terminal and its appendices, dated January 18, 2012 and submitted by the Massachusetts Department of Environmental Protection ("MassDEP") on behalf of the Commonwealth (hereafter referred to as MassDEP 2012). The MassDEP has updated and supplemented its January 18, 2012 submission with two additional significant submissions (including attachments), dated June 18, 2012 (hereafter MassDEP 2012a) and June 29, 2012 (hereafter MassDEP 2012b).

The project's components include:

1. Installation of a 1200 linear foot bulkhead in the Harbor, and placement of approximately 142,000 cubic yards of dredged material (clean sand) behind the bulkhead, resulting in the filling of intertidal habitat, shallow, near-shore sub-tidal habitat, and salt marsh. This filled structure, referred to as a confined disposal facility ("CDF"), will be adjacent to approximately 21.4 acres of upland that, together with the filled structure, will comprise the terminal facility;

2. Dredging of shallow, near-shore, sub-tidal habitat and deeper sub-tidal habitat to provide navigational access to and berthing at the terminal; to realign the Gifford Street Boat Ramp Channel and create new mooring areas (to mitigate impacts to recreational users from the South Terminal dredging); and to potentially conduct maintenance dredging in the Federal Navigation Project channel and turning basin;

3. Dredging of shallow, near-shore, sub-tidal habitat to create a confined aquatic disposal ("CAD") cell, identified as "CAD Cell 3," which will then be filled with contaminated dredged material from the above-described navigational dredging.

4. Disposal of contaminated dredged material from the above-described navigational dredging into CAD Cell 3 as well as into existing CAD cell 2 and capping of CAD cell 1 and the "Borrow Pit"); and

5. Compensatory mitigation to address impacts to wetlands, intertidal habitat, subtidal habitat, shellfish resources and floodplains.

1.2 Basic Project Purpose: EPA has determined that the basic project purpose is to develop a marine terminal that will provide infrastructure capable of supporting the development of offshore renewable energy facilities as well as other future uses (such as container shipping, break-bulk cargo shipping, bulk cargo shipping, short-seas shipping). A secondary purpose is to provide a site for the disposal of, and staging for beneficial reuse of, material dredged from navigational dredging associated with the State Enhanced Remedy ("SER").

1.3 Water Dependency: The construction of a marine terminal is considered to be a water dependent activity because it requires access to or proximity to waters of the U.S. in order to meet the basic project purpose. The project's secondary purpose -- disposal and storage of dredged material -- is not a water dependent activity.

2.0: Authority: This document constitutes EPA Region I's (the "Region") draft determination regarding Executive Order 11988 as applied to the State Enhanced Remedy and proposes to find that the Executive Order 11988, as applied to remedial decisions under CERCLA, is satisfied subject to the conditions included herein. This draft determination characterizes Executive Order 11988 as a condition that is a "To Be Considered" ("TBC") under the relevant guidance documents relating to Section 121 of the CERCLA and implementing regulations promulgated hereunder, commonly referred to the National Contingency Plan, 40 CFR Part 300. As a TBC, the EPA has determined, as a policy matter, that the Executive Order's substantive requirements, as described below, shall be complied with as part of the State's Enhanced Remedy. For the reasons described below, Executive Order 11988 is not considered to be an applicable or relevant and appropriate requirement, whose substantive compliance is legally mandated by CERCLA section 121d)(2).

2.1: CERCLA: Under Section 121(d)(1) of CERCLA, [r]emedial actions selected under this section or otherwise required or agreed to by the President … shall attain a degree of cleanup of hazardous substances, pollutants, and contaminants released into the environment and of control of further release at a minimum which assures protection of human health and the environment. Such remedial actions shall be relevant and appropriate under the circumstances presented by the release or threatened release of such substance, pollutant, or contaminant.

2.2 CERCLA: Section 121(d)(2)(A) states, in relevant part, that 'with respect to any hazardous substance, pollutant or contaminant that will remain onsite, if (i) any standard, requirement, criteria or limitation under any Federal environment law [enumerating specific federal laws] or

(ii) any promulgated standard, requirement, criteria, or limitation under a State environmental or facility siting law that is more stringent than any Federal standard...is legally applicable to the hazardous substance or pollutant or contaminant concerned or is relevant and appropriate under the circumstance of the released or threatened release of such hazardous substance or pollutant...the remedial action...shall require...a level or standard of control...which at least attains such legally applicable or relevant and appropriate standard, requirement or limitation....

2.3: CERCLA Compliance with Other Laws Manual: Interim Final (August 1988)
This EPA guidance document states that, except where specific statutory exceptions apply, CERCLA remedies must meet Applicable and Relevant and Appropriate Requirements of other laws. Simply described, an applicable requirement is a cleanup standard, standard of control and other substantive environmental protection requirements, criteria or limitations **promulgated under Federal or State law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site.** Relevant and appropriate requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations **promulgated under Federal or State law** that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstances at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to a particular site. [emphasis added]

2.4: Publication 9280.0-03 EPA A540/R-94/019 Considering Wetlands at CERCLA Sites (May 1994)

This EPA Guidance document issued by EPA in May 1994 states that "Two issues of considerable importance on the nation's environmental agenda are (1) loss of wetlands and other aquatic habitat, and (2) the impacts, potential or actual, to human health and the environment for Superfund sites.. ..Superfund actions must meet the substantive requirements of the Floodplain Management Executive Order (E.O.) 11988) and the Protection of Wetlands Executive Order (E.O.) 11990.... As a Federal Agency, EPA must follow executive orders." The guidance continues: "A partial list of TBCs can be found on page 1-85 of the Compliance with Other Laws Manual. Some examples include NPDES ground water and water quality guidance documents, policies for the Office of Water, EPA/Army NOAA, and Executive Orders. **EO 11998, relating to floodplain protection and Executive Order 11990 relating to wetlands protection are not legally enforceable, so they are TBC (to be considered) rather than ARAR.**

3.0: Based on the law and guidance above, EPA has determined the Executive Order 11988 is not an "applicable or relevant and appropriate" requirement under Section 121 of CERCLA and the circumstances of this decision but shall, as a matter of policy under the particular circumstances presented by this project, be complied with as part of the proposed State Enhanced Remedy. This determination is based on a finding that the Executive Order contains requirements applicable to federal agencies that "should be complied with" under the relevant CERCLA policy guidance documents.

3.1 Executive Order 11988 C.F.R. Part 9—Floodplain Management

Executive Order 11988, setting out requirements for federal agencies in the management of floodplain issues, was issued on May 24, 1977 in furtherance of the National Environmental Policy Act of 1969, among other federal statutes, "in order to avoid to the extent possible the long and short term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development whenever there is a practicable alternative."

Relevant portions of the Order read as follows:

[A]s President of the United States of America, in furtherance of the National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 *et seq.*), ... in order to avoid to the extent possible the long and short term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative, it is hereby ordered as follows:

Section 1. Each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities for (1) acquiring, managing, and disposing of Federal lands, and facilities; (2) providing Federally undertaken, financed, or assisted construction and improvements; and (3) conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities.

Sec. 2. In carrying out the activities described in Section 1 of this Order, each agency has a responsibility to evaluate the potential effects of any actions it may take in a floodplain; ... reflect consideration of flood hazards and floodplain management; and to prescribe procedures to implement the policies and requirements of this Order, as follows:

(a)(1) Before taking an action, each agency shall determine whether the proposed action will occur in a floodplain...

(2) If an agency has determined to, or proposes to, conduct, support, or allow an action to be located in a floodplain, the agency shall consider alternatives to avoid adverse effects and incompatible development in the floodplains. If the head of the agency finds that the only practicable alternative consistent with the law and with the policy set forth in this Order requires siting in a floodplain, the agency shall, prior to taking action, (i) design or modify its action in order to minimize potential harm to or within the floodplain, consistent with regulations issued in accord with Section 2(d) of this Order, and (ii) prepare and circulate a notice containing an explanation of why the action is proposed to be located in the floodplain. ...

3.2 Compliance with Requirements of Executive Order 11988

The three basic requirements of Executive Order 11988 are satisfied by the proposed State Enhanced Remedy as noted below:

1) Executive Order 11988's First Requirement: Before taking an action, each agency shall determine whether the proposed action will occur in a floodplain. In 1987, the Army Corps of Engineers assessed the impacts that floodplain filling (and flood capacity loss) may have upon the flood levels within New Bedford Harbor when its Hurricane Barrier is closed and storm water from the Acushnet River watershed flows into the basin. See "Hydrology of Floods, New Bedford Harbor, Massachusetts" completed by the Hydrologic Engineering Section of the Water Control Branch, Engineering Division of the Department of the Army Corps dated September 1987. Based on that analysis, MassDEP concludes that the relevant information indicates that 44,100 cubic yards of fill equated to approximately 27.33 acre feet of fill material will be placed between elevation =2.0 and elevation =6-- NGVD due to the South Terminal Project. (MassDEP 2012 at pp. 41-43.)

In sum, the Massachusetts Department of Environmental Protection calculates in its application to EPA for the State Enhanced Remedy that the floodplain filling resulting from its proposed South Terminal Project will occur in a floodplain and will result in 27.33 acre-feet of flood storage loss behind the hurricane barrier in New Bedford harbor.

2) Executive Order 11988's Second Requirement: If an agency has determined to, or proposes to conduct, support, or allow an action to be located in a floodplain, the agency shall consider alternatives to avoid adverse effects and incompatible development in the floodplain.

In light of the fact that the action (i.e. the State Enhanced Remedy) is proposed in a floodplain, EPA must consider whether alternatives exist that avoid adverse effects and incompatible development in the floodplain. Because the project purpose is a marine industrial terminal capable of supporting off-shore renewable energy development, the Project is by necessity water dependent. The floodplain will necessarily be impacted because there is no practicable way to avoid development in the floodplain in constructing a marine terminal that will provide very large, geologically stable infrastructure capable of supporting the development of offshore renewable energy facilities.

Further, any alternative is viable only if it is legal under federal law. To be legal under CERCLA, an alternative must meet all applicable and relevant and appropriate requirements (ARARs) as discussed above. Because EPA has tentatively determined that for CERCLA purposes, compliance with the Clean Water Act and the Rivers and Harbors Act is satisfied only at the South Terminal State Enhanced Remedy Alternative site (See "EPA's Draft Determination of Compliance with Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899" (hereinafter referred to "Draft Determination of Compliance with Sections

404 and 10,"), the South Terminal site is the only viable site among the alternatives addressed in that evaluation.

Thus, any terminal site meeting the project purpose must by its nature be located in a floodplain. And among the many alternatives evaluated for compliance with the Clean Water Act and the Rivers and Harbors Act, only the South Terminal site is a legally viable alternative.

3) Executive Order 11988's Third Requirement: If the head of the agency finds that the only practicable alternative consistent with the law and with the policy set forth in this Order requires siting in a floodplain, the agency shall, prior to taking action, (i) design or modify its action in order to minimize potential harm to or within the floodplain,
As explained above, EPA has tentatively determined that the only practicable alternative consistent with the law and with the policy set forth in Executive Order 11988 will require siting the SER in a floodplain. Thus, EPA will design or modify its action in order to minimize potential harm to or within the floodplain consistent with regulations issued in accord with Section 2(d) of this Order."[1] The relevant regulation issued in accord with Section 2(d) of this Order provides: The Agency shall also act to restore and preserve the natural and beneficial values of floodplains. The Agency shall also act to minimize potential harm to the floodplain as part of the analysis of all alternatives under considerations.

The South Terminal SER alternative is described in detail in EPA's Draft Determination of Compliance with Sections 404 and 10.

As part of its proposal, MassDEP anticipates filling approximately 0.18 acres of salt marsh, 1.94 acres of intertidal habitat, and 4.07 acres of shallow subtidal habitat in order to construct the solid fill wharf. The MassDEP has taken steps to minimize the solid fill by redesigning the structure so that an additional 0.67 acres of shallow intertidal habitat, which the MassDEP had originally planned to completely fill, will now be incorporated into a pile-supported apron adjacent to the wharf and will be only partially filled with riprap on the bottom. In its application for the South Terminal Project, MassDEP notes that with respect to floodplain concerns in particular, construction of the South Terminal project will result in some flood storage loss due to filling within the footprint of the facility. The effects of this loss would be experienced most notably under the circumstance of a major coastal storm when the New Bedford Hurricane Barrier would be closed and heavy rain from the Acushnet River watershed would collect behind the barrier. MassDEP's analysis was completed utilizing a combination of 100-year flood elevations associated with FEMA flood maps as well as an analysis of the impact

[1] [Note: Section 2(d) of the Executive Order required that each federal agency issue or amend existing regulations and procedures within one year to comply with this Order. This requirement was satisfied, when, on January 5, 1979, EPA issued its Statement of Procedures on Floodplain Management and Wetlands Protection to implement Executive Orders 11988 (Floodplain Management) and 11990 (Protection of Wetlands) by its inclusion in 40 CFR Part 6 as Appendix A. As part of an EPA rulemaking October 19, 2007 EPA removed the Statement as an appendix to the rule. That latter rulemaking provides that "**The Statement remains in effect.**"

of filling within New Bedford Harbor conducted by the US Army Corps of Engineers. Based on that analysis, the MassDEP calculates that the floodplain filling resulting from its proposed South Terminal Project would result in 27.33 acre-feet of flood storage loss.

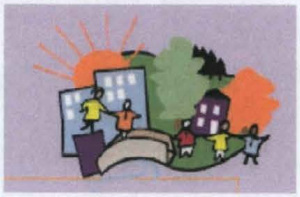
In order to restore the loss of flood storage capacity of the floodplains, MassDEP has proposed mitigation that would compensate for the flood storage capacity loss at a greater than one for one ratio. In MassDEP's "Responses to USEPA's 6/26/12 Questions" supplementing its Response to USEPA Comments on the January 18, 2012 Submission by the MassDEP, it asserts that the plans for the Marsh Island mitigation project indicate that the Marsh Island project will result in an increase in flood storage capacity of 39.67 acre-feet, which is more than enough to compensate for the anticipated 27.33 acre-feet loss from construction of the South Terminal project.[2] One of the primary beneficial floodplain values identified for the area affected by this project is flood prevention. As a result of the Marsh Island mitigation project, that primary beneficial value will be restored.

EPA's determination that the SER meets the requirements of Executive Order 11988 is expressly conditioned on the completion of the Marsh Island mitigation project. With respect to other natural and beneficial values of floodplains, it is worth noting that as part of the State Enhanced Remedy, the Commonwealth will undertake mitigation measures related to environmental impacts related to floodplain values other than flooding. These mitigation measures include the creation of winter flounder habitat, the creation/restoration of salt marsh and the reseeding of shellfish. All of these measures serve to advance the goal of preserving and restoring the beneficial values of floodplains. For a more complete description of these mitigation measures, see EPA's Draft Determination of Compliance with Sections 404 and 10.

4 Executive Order 11988's Fourth Requirement: Each agency shall provide opportunity for early public review of any plans or proposals for actions in floodplains. This document and its attendant public comment period provide that early public review opportunity.

[2] The Marsh Island restoration project is outside the scope of this proposed South Terminal Project. EPA has not received any information from the Commonwealth to indicate that the flood storage created by the Marsh Island restoration project has been identified as a floodplain mitigation measure for any other activity in New Bedford Harbor.

How to Ensure Effective Community Engagement at Construction Projects: Lessons Learned from Two CARE Communities in Connecticut



The lessons described in this document are based on the collective experience of stakeholders working on or impacted by construction activities in two urban areas in Connecticut. We offer these reflections as a resource to others facing the challenge of ensuring effective community engagement on fast-moving projects, especially in neighborhoods where there are economically or otherwise disadvantaged populations with a history of perceiving that their needs have been ignored.

Construction projects are often located near urban residential neighborhoods because of the large concentration of aging infrastructure. However, the close proximity of these projects to people's homes may result in major impacts. In addition, many urban dwellers, especially high risk residents such as children and the elderly are already burdened with a multitude of environmental and public health hazards, ranging from lead paint poisoning, to safety and exposure issues at vacant lots, to asthma made worst by poor air quality.

At the same time, construction projects must operate within the constraints of project specifications, demanding schedules, and limited budgets, and must comply with local, state and federal regulations. This mixture sometimes leads to quality of life and environmental health impacts, which may lead to resentment and conflict. Therefore, we hope these lessons will be considered by all parties early on in any construction project in order to ensure meaningful public involvement, to ease the burden on affected communities, and to minimize construction-related conflicts. A summary of the lessons learned outlined in this document is provided below.

Pre-planning

- Plan and budget
- Coordinate between design and construction
- Know the key players and their roles
- Identify community contacts

Public Meetings

- Strategize on when and where to hold public meetings
- Develop meeting plans in consultation with a range of stakeholders
- Coordinate meeting announcements to avoid unrealistic or polarizing expectations
- Consider using neutral facilitators who can help turn a potentially explosive meeting into a productive session

Communication

- Establish methods of communication
- Use a community liaison
- Be accessible to the community
- Communicate key information about project activities
- Respond to key community concerns
- Know when there are opportunities to participate
- Develop effective outreach materials

Minimize Environmental and Public Health Impacts

- Implement best practices or guidelines
- Increase enforcement
- Include emergency preparedness

Green New Haven CARE Project
CT Coalition for Environmental Justice - Bridgeport CARE Project

BACKGROUND

I. Bridgeport

Bridgeport CARE, a program of the Connecticut Coalition for Environmental Justice (CCEJ) funded by EPA, works with the city and dozens of private, government and non-profit partners to set priorities for reducing pollution and to devise ways to address it. CARE members expressed concerns about a high-priority public utility project that involved laying a new transmission line spanning a substantial geographic area. As a result of the project, the level of activity connected with a construction material (gravel) recycling facility in Bridgeport increased in duration and intensity, becoming an around-the-clock nuisance to the neighboring community. Due to the potential impact to traffic during the day, Conn DOT required that the work take place at night. The vibrations and noise associated with the night work were particularly intolerable to the residential community. When the level of frustration reached a boiling point, Bridgeport CARE decided to arrange meetings between residents and industry representatives to negotiate improvements for people living with problems of dust, fumes, noise, and the visual blight to the neighborhood.

Recognizing that it would be difficult to have a constructive dialogue with tension running so high, Bridgeport CARE reached out to EPA New England's Alternative Dispute Resolution (ADR) Program. The ADR Program provided trained neutral facilitators to assist the stakeholders in the design and conduct of these meetings. To enhance their effectiveness, the EPA facilitators teamed with a respected community member in the facilitation of one of the more challenging meetings.

The meetings led to a host of short and long-term measures to be implemented by the stakeholders, often working in collaboration with each other. For example, one outcome was the creation of a committee of residents and public utility project staff to develop an alternative route through the neighborhood for construction trucks traveling to the construction material storage facility. Another especially effective short-term fix was Conn DOT's placement of an inspector at the site to enforce truck drivers' around-the-clock compliance with state regulations to reduce the noise and pollution impacts to the neighborhood. Other improvements included trucks reducing speed through neighborhood, compliance with maximum weight requirements, better signage, and enforcement of Connecticut's anti-idling law.

II. New Haven

As a result of the intervention in Bridgeport, EPA's Regional ADR Program was contacted by CCEJ to assist with an escalating situation in the City Point neighborhood of New Haven due to an I-95 highway widening project. Citizens in the City Point area had serious concerns about impacts to their neighborhood and houses from the fast-moving project. Emotions flared up when a row of

mature trees that had served as a noise and visual buffer between the neighborhood and the highway were removed without notice to the community. Other concerns included air quality, late night noise, severe vibrations, lack of communication, and other impacts that might be associated with a major construction project and close proximity to an interstate highway. They were particularly concerned about potential structural damages to historic homes with stone and gravel foundations as well as immediate replacement of sound barriers.

As in Bridgeport, but in a way that was tailored to the parties and circumstances in New Haven, a series of facilitated meetings were convened. The agendas for these meetings were developed in consultation with community representatives and agency project managers, among other stakeholders. At the meetings themselves, residents expressed their concerns in a thoughtful way, the project managers/implementers explained their plans and constraints, and the participants together developed ideas and steps that could be taken to improve the situation.

Early into the process, EPA's ADR Program made contact with a Connecticut-based community mediator and began to partner with New Haven's Community Mediation Center. The Community Mediation Center took over the facilitation role. Many of the stakeholders' ideas have been implemented and the dialogue continues.

LESSONS LEARNED

Pre-planning

- **Plan and budget:** In construction projects conducted near residences, especially overnight construction, planning community engagement activities and adequately budgeting resources (time, money, and in-kind efforts) is crucial and will help ensure an effective public involvement process. Public involvement commitments such as advance notification of commencement of major phases and periodic public information meetings should be included in project specifications and discussed during the pre-construction meeting. Any public involvement commitments (e.g. contractor attendance at meetings) should be **clearly stated in the contract** documents so the contractors bidding on the work are aware of them. Any work that may be needed, to address potential community concerns such as sound barriers, should be initially addressed early in the budget period and may be deleted later if deemed unnecessary.

- **Coordinate between design and construction:** For the state transportation agency responsible, coordination between design units and construction units is important. There is a process in place that requires project engineers to keep a commitment file for each project. Project managers should ensure that these commitments are communicated during each

phase of the project. Developing written summaries of commitments to communities after final design meetings can be part of the design unit responsibilities, or can be done by community organizations in the form of a letter to the agency confirming their understanding of the commitments.

- **Know the key players and their roles:** The agencies and contractors involved with a project should familiarize themselves with the community, its history, groups, and issues related to the project's activities. Community members should also know the Agency personnel, project managers, and contractors implementing the project, and most importantly, who is responsible for what at a project.

- **Identify community contacts:** The agency leading the project and the impacted community should work together to identify community groups and leaders, individual stakeholders, experts, local officials, neighborhood organizations, neighborhood revitalization zones, local libraries, churches, health and environmental organizations to measure interest in the issues and to request help reaching their members and others they believe may have an interest. Your state environmental agency or the EPA also may be able to provide assistance with identifying these important community contacts. Visit the following website for EPA and state contact information: http://www.epa.gov/region1/ej/programcontacts.html.

Public Meetings

- **Strategize on when and where to hold public meetings:** Hold public meetings prior to the start of the project to explain the construction timeline, work plan, and address residents concerns. However, one meeting is not enough. Continue to hold regular meetings throughout the project timeline on a regularly scheduled basis even if there are few issues for a particular meeting. It is easier to cancel a regular meeting than to schedule one in the middle of a controversy. Choose meeting locations and times that are convenient for residents. List the start and end times for meetings.

- **Develop meeting plans in consultation with a range of stakeholders:** Public meetings should be scheduled and the agenda developed collaboratively. Representatives of the community and the project managers (DOT, FHWA, contractors, etc.) should have meaningful input into the scope, timing, duration, and content of public meetings to address community concerns. There are often multiple agencies and even multiple levels of government involved in a project. When planning a meeting, efforts should be taken to ensure all participating agencies will be represented.

- **Coordinate meeting announcements to avoid unrealistic or polarizing expectations:** Meeting notices should be consistent with the agreed upon goals for the meeting. Community advocates should resist the temptation to craft provocative notices that will attract attention but prime participants for a fight.

- **Consider using neutral facilitators who can help turn a potentially explosive meeting into a productive session:** Simply inviting all of the stakeholders to sit down together without a realistic plan for how to manage the discussion can do more harm than good. The assistance of skilled neutral facilitators or mediators will enhance the likelihood that an angry and frustrated community, stressed project managers who feel under attack, and other public officials or agency representatives with their own agendas, will be able to have a constructive exchange.

Communication

- **Establish methods of communication:** Research how the community and affected public receive information and learn which sources they trust. Determine the best method for communicating with the community or affected public (e.g., electronically, mailings, meetings, door-to-door contact, advertisements, posters at construction site, radio stations, community newspapers, local cable channel, telephone, etc.). Be sure to reach agreement with the community on the chosen methods of communication.

- **Use a community liaison:** The agency leading the project and the impacted community should work together to identify a community liaison or steering committee that will assist with disseminating project information to affected residents. Similarly, the agency's single point of contact should be disseminating information and questions to the appropriate departments, contractors, or subcontractors.

- **Be accessible to the community**: The agency leading the project should identify a person who the community can contact if there are issues or concerns. Post contact information at the site. Be sure that someone can be reached outside of normal work hours for emergency situations.

- **Communicate key information about project activities**: Notify residents in advance about use of alternative routes (include official detour routes) around construction sites, dates and times when the construction will take place (e.g., night work), types of construction activities ("highly disruptive work"), potential impacts of construction activities

(e.g. traffic, loss of telephone service and other utilities), and locations of access and construction staging areas. Where possible, use before and after photos to illustrate the purpose of the work. Keep the community informed and involved as you work though barriers (e.g. extra costs, delays, adverse findings, weather and seasonal conditions). Post job signs that describe the activity, not just the name of the agency, and include an information and/or emergency hotline or website, if relevant.

- **Respond to key community concerns:** Listen to the concerns of the public. Develop options for responses to those concerns. Incorporate changes to the processes that address the most important issues, taking into account the limitations of the project, also incorporate the changes that are easy to make. Make it clear what changes are being incorporated into the project in response to community concerns.

- **Know when there are opportunities to participate**: The agencies and contractors involved with the project should help educate and provide technical assistance to the community about opportunities to participate in the decision making process as well as identifying possible options for improving the conditions surrounding the project.

- **Develop effective outreach materials**: Ensure all communications are clear, easy to read (plain English or non-English languages), and accurate. Include a contact name and number, and provide alternative contacts for non-English speakers. Be familiar with the languages spoken and be prepared to provide interpreters at meetings and translate outreach materials, when necessary.

Minimize Environmental and Public Health Impacts

- **Implement best practices or guidelines**: Implement construction best practices or guidelines to reduce noise and vehicle idling, utilize retrofitted equipment, control dust, etc. (See an initial list of references below).

- **Increase enforcement:** Increase enforcement of regulatory violations of concern to the residents that may affect community health, safety, or quality of life.

- **Include emergency preparedness**: If dealing with a hazardous substance or if there is a potential for fires or explosions, establish a process/procedure for quickly notifying residents at greatest risk. Work with first responders to find out what procedures and protocols already exist. Work with stakeholders to designate an evacuation route from the community or city, if necessary. The city may already have a route established that can be referenced.

REFERENCES

- EPA's Public Involvement Policy: http://www.epa.gov/publicinvolvement/public/index.htm
- How-To Brochures For Effective Public Involvement: http://www.epa.gov/publicinvolvement/brochures/index.htm
- Tools for Public Involvement: http://www.epa.gov/publicinvolvement/involvework.htm
- Rhode Island "Green During Construction Phase" Initiative: www.lungne.org/
- City of Boston Environment Department Guidelines for Construction: www.cityofboston.gov/environment/pdfs/construction_guidelines.pdf
- National Cooperative Highway Research Program. Best Management Practices for Environmental Issues Related to Highway and Street Maintenance http://ntl.bts.gov/lib/21000/21800/21818/PB99143489.pdf
- Tools and Best Practices Supporting the Recovery Act: http://www.epa.gov/recovery/resources.html
- U.S. Institute for Environmental Conflict Resolution: http://www.ecr.gov/
- EPA Alternative Dispute Resolution Contacts: http://www.epa.gov/adr/cprc_adrcontacts.html
- Diesel Engine Retrofits in the Construction Industry: A How To Guide: http://www.mass.gov/dep/air/diesel/conretro.pdf
- Diesel Exhaust in New England: http://www.epa.gov/region1/eco/diesel/assets/pdfs/diesel_brochure.pdf
- Construction Bid Specs: http://www.epa.gov/region1/eco/gb3/pdfs/ConstructionVehicleRetrofitSpecs.pdf
- Emergency Planning and Community Right-To-Know Act (EPCRA): http://www.epa.gov/oecaagct/lcra.html

EPA Draft Determination for the Proposed South Terminal Project
New Bedford Harbor State Enhanced Remedy

Appendix M
Determination of Compliance
Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations
Executive Order 12898

Executive Order 12898 – Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

Under Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations), "[t]o the greatest extent practicable and permitted by law . . . each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States." *See* Executive Order 12898, 59 Fed. Reg. 7,629 (Feb. 16, 1994), § 1-101. Furthermore, "[e]ach Federal agency shall conduct its programs, policies, and activities that substantially affect human health or the environment, in a manner that ensures that such programs, policies, and activities do not have the effect of . . . subjecting persons (including populations) to discrimination under, such, programs, policies, and activities, because of their race, Color, or national origin." *Id.* § 2-2. With respect to public process, the Executive Order also authorizes federal agencies to "translate crucial public documents, notices, and hearings relating to human health or the environment for limited English speaking populations," and requires federal agencies to "work to ensure that public documents, notices, and hearings relating to human health or the environment are concise, understandable, and readily accessible to the public." *Id.* §§ 5-5(b)-(c). In addition, the state of Massachusetts has an Environmental Justice Policy promulgated by the Massachusetts Executive Office of Environmental Affairs which identifies environmental justice populations and requires enhanced review of impacts and enhanced public participation opportunities for agency activities that may affect these populations.

Massachusetts Department of Environmental Protection's (MassDEP) analyzed the census tracts located wholly or partially within or along the truck access route (Route 18) in order to identify potential environmental justice populations. Based on the percentages of minority and low-income populations, MassDEP identified all of the block groups in the study area as environmental justice areas. This approach to identifying environmental justice populations is consistent with *CEQ's Environmental Justice Guidance Under the National Environmental Policy Act, Appendix A Guidance for Federal Agencies on Key terms in Executive Order 12898.* MassDEP then considered the existing and potential traffic, noise, and air impacts to these census block groups. Based on information provided by MassDEP, the proposed project's additional traffic, noise and air impacts are expected to be minimal, and therefore, are not expected to have disproportionately high and adverse human health or environmental effects on minority or low-income populations. See " State Enhanced Remedy in New Bedford, South Terminal (1/18/12 Submittal),'" Massachusetts Department of Environmental Protection, pp. 282-295. EPA feels that MassDEP appropriately evaluates the impacts to environmental justice populations.

EPA wants to emphasize the importance of continued community outreach and involvement throughout the project. Community input should be meaningfully considered and concerns addressed to the greatest extent practicable. We continue to

recommend that the meetings be held in the affected community at reasonable times (evening) to give everyone an opportunity to attend and that translators are provided during the meetings to allow residents not fluent in English to participate. We also recommend that meeting announcements be communicated via ethnic media (radio, websites, newspapers) to enhance public participation in the affected communities and that all documents continue to be translated in appropriate language(s), and copies made available via public libraries and community centers.

In its discussion of mitigation measures (p. 292), the MassDEP indicates that a Construction Management Plan (CMP) will be required in order to minimize construction-related impacts. MassDEP's "Response to EPA Comments (6/18/12)" provides more details about the CMP. The CMP will provide steps for proactive minimization and mitigation of construction impacts including dust, traffic, noise, vibration, and visual impacts, as well as other types of construction impacts. The CMP will:

- Include a section on Public Involvement and Information which will describe a process for informing the public about progress of construction and upcoming construction-related activities.
- Identify a point of contact for the project during the construction phase of the project.
- Define measures to minimize air quality impacts. Such measures could include wetting soil surfaces and covering soil piles.
- Examine options to provide short term fence line monitoring for PM10 along the boundary with the nearest residential area.

Contractors will be encouraged to use diesel oxidation catalyst retro-fitted vehicles and equipment. An air monitoring program will be conducted throughout the construction process. Information will be made available to the surrounding community in an easily understandable format. A sound management plan should be developed to define the construction noise sources and mitigation measures to be taken to minimize sound impact from those sources. To minimize noise impacts to the surrounding community, measurements will be collected daily for noise along the property boundary.

EPA feels that MassDEP is planning an appropriate approach to mitigating construction-related impacts through the development of a CMP. We are encouraged to see a proactive approach to communicating information about the project with the impacted community, as well as, providing a point of contact for the community during the construction phase. We continue to strongly recommend that construction best practices or guidelines be used as the CMP is finalized.

Finally, EPA continues to recommend that the requirements of the Massachusetts Executive Office of Environmental Affairs environmental justice policy continue to be applied to this project. EPA also recommends that the attached fact sheet entitled, "How to Ensure Effective Community Engagement at Construction Projects: Lessons Learned from Two CARE Communities in Connecticut" be considered (Attachment 1).

EPA Draft Determination for the Proposed South Terminal Project
New Bedford Harbor State Enhanced Remedy

Appendix N
Determination of Compliance
Invasive Species Executive Order 13112

Executive Order 13112 Invasive Species

On February 3, 1999, Executive Order 13112 was issued directing federal agencies to review their actions to enhance the control and management and prevent the spread of invasive species. The federal action in question is the inclusion of the South Terminal Port Facility within the State Enhanced Remedy for the New Bedford Superfund Site.

As a multipurpose marine terminal capable of supporting offshore renewable energy development (and other future uses), the proposed port has the potential to facilitate the spread of invasive species in a number of ways. The initial wind energy development project is expected to require 26 separate deliveries of wind turbine components by international vessels. Ocean-going vessels are the most prominent vector for the transportation of invasive species. This occurs in ballast water, bilge water and along the hull. Second, the construction of the facility itself will result in the placement of a new bulkhead into the inner harbor. The new uncolonized surface of the bulkhead represents an opportunity for new invasive species to establish a foothold or for invasive species that may already be within our waters to spread even further.

Compliance with existing international agreements and federal and state regulations should prevent the discharge of bilge water. Bilge water generally contains oil and thus discharging water with oil into the marine environment is covered by Section 311 of the Clean Water Act, the Act to Prevent Pollution from Ships, and the international agreement MARPOL Annex I. All of these prohibit the discharging of untreated oil to navigable waters of the United States.

The Commonwealth states that the freighters entering New Bedford with renewable energy components will be fully laden and as a result will have minimal need for ballast water. The submission states that if there is a need for ballast water disposal, the ballast will be "collected and disposed of in accordance with all requisite regulations." MassDEP 2012 at p. 265. The jack-up barges and other construction support vessels do not carry ballast water.

The presence of foreign vessels, the use of jack-up barges from outside of New England waters and the new bulkhead surface at the proposed terminal represent a risk of spread or colonization of invasive species. Executive Order 13112 describes Federal Agency duties:

> not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless, pursuant to guidelines that it has prescribed, the agency has determined and made public its determination that the benefits of the such actions clearly outweigh the potential harm caused by invasive species, and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions.

Consistent with this executive order, EPA has tentatively determined that it is prudent for the Commonwealth to institute a post-construction monitoring program at the terminal on the new bulkhead for the presence of invasive species. The bulkhead represents a reasonable intervention point to find any potential new introductions from foreign vessels.

In addition, EPA has reviewed the Commonwealth's proposed Invasive Species Management Plan (ISMP) (MassDEP, 2012a, Attachment P), and believes that a modified ISMP, in conjunction with the requirements of the Compensatory Mitigation Plan described in Section 7.3 of Appendix E, would be adequate to control the spread of invasive plant populations within the proposed wetland restoration area that could prevent successful mitigation of impacts to wetlands. Such modified ISMP must be incorporated as part the Commonwealth's Compensatory Mitigation Plan, which will be a condition of EPA's authorization.

EPA Draft Determination for the Proposed South Terminal Project
New Bedford Harbor State Enhanced Remedy

Appendix O
Determination of Compliance
Fish and Wildlife Coordination Act (16 U.S.C. §661-667e)

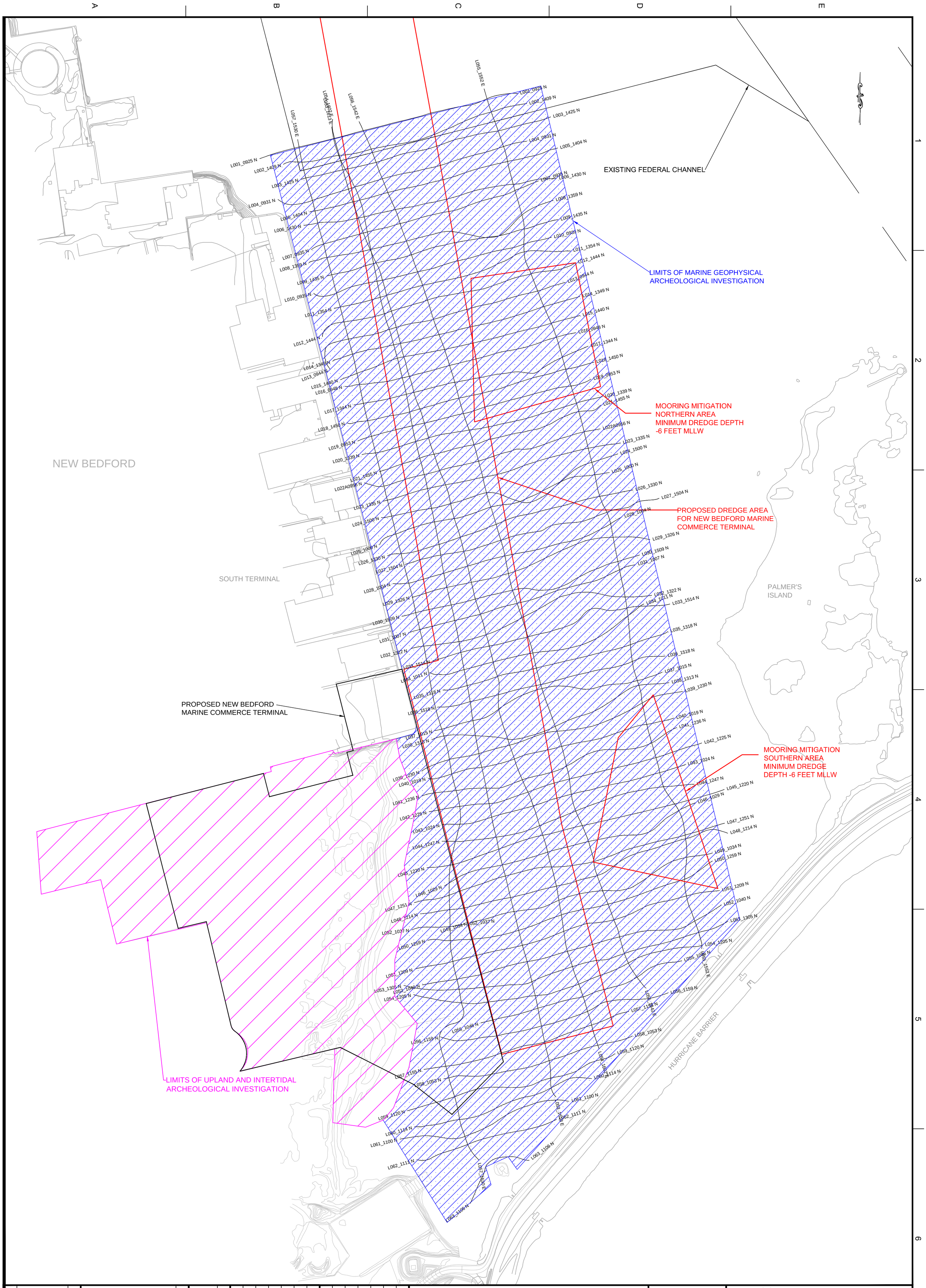
Fish and Wildlife Coordination Act ("FWCA"), 16 U.S.C. §661-667e

The Act of March 10, 1934, authorizes the Secretaries of Agriculture and Commerce to provide assistance to and cooperate with Federal and State agencies to protect, rear, stock, and increase the supply of game and fur-bearing animals, as well as to study the effects of domestic sewage, trade wastes, and other polluting substances on wildlife.

Amendments enacted in 1946 require consultation with the U.S. Fish and Wildlife Service ("FWS") and the fish and wildlife agencies of States where the "waters of any stream or other body of water are proposed or authorized, permitted or licensed to be impounded, diverted . . . or otherwise controlled or modified" by any agency under a Federal permit or license. Consultation is to be undertaken for the purpose of "preventing loss of and damage to wildlife resources."

The FWS's primary objective under the FWCA is to ensure that approved project plans include necessary means and measures to guarantee the conservation of fish and wildlife resources. Full participation in the process – the collective procedures mandated by the FWCA – is essential to the accomplishment of FWS and FWCA objectives. This process includes consultation, which involves informal and formal participation in all phases of project planning, construction, operation, and maintenance; reporting of findings and recommendations, which is the formal culmination of mandated surveys and investigations; and consideration and implementation, which, technically, are action agency activities but that may be significantly influenced by FWS actions and continued participation in the planning and decision making process.

By letter dated February 3, 2012 EPA, transmitted to FWS the Commonwealth's January 18, 2010 submission regarding the proposed South Terminal Project. EPA subsequently transmitted copies of the June 18 and 29, 2012 submissions to FWS. In the February 3, 2012 letter EPA advised FWS that as EPA performs its evaluation of the project and develops a draft decision document, it would closely coordinate with FWS regarding both the FWCA and the Endangered Species Act and seek comment on key portions of the decision package. EPA's tentative conclusions regarding potential impacts to fish and wildlife from the project and potential mitigation measures are discussed in sections 5, 6 and 7 of the Draft Determination of Compliance with Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. EPA will consider any comments provided by FWS during the public comment period regarding the project and EPA's draft decision document as it formulates its final decision, consistent with FWCA.



APEX

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PROJECT NO.	6690
CADD FILE	HIST_ST_DREDGE_recover
DESIGNED BY	JER
DRAWN BY	JER
CHECKED BY	
DATE	06/08/2012
DRAWING SCALE	1"=250'
GRAPHIC SCALE	SCALE: 1"=250' 0 125 250 500
SHEET TITLE	LIMITS OF GEOPHYSICAL AND ARCHEOLOGICAL EXPLORATION
DRAWING NO.	1 OF 1

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Scale: 1"=150'

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Date 3/24/10	Drawing No.
Proj. Mgr.	
Design	
Check CM	
Drawn GCD	
Job. No. 6615	
Last Rev. 7/7/10	

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PROPOSED
CONFIGURATION A2

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Last Rev. 7/7/10	

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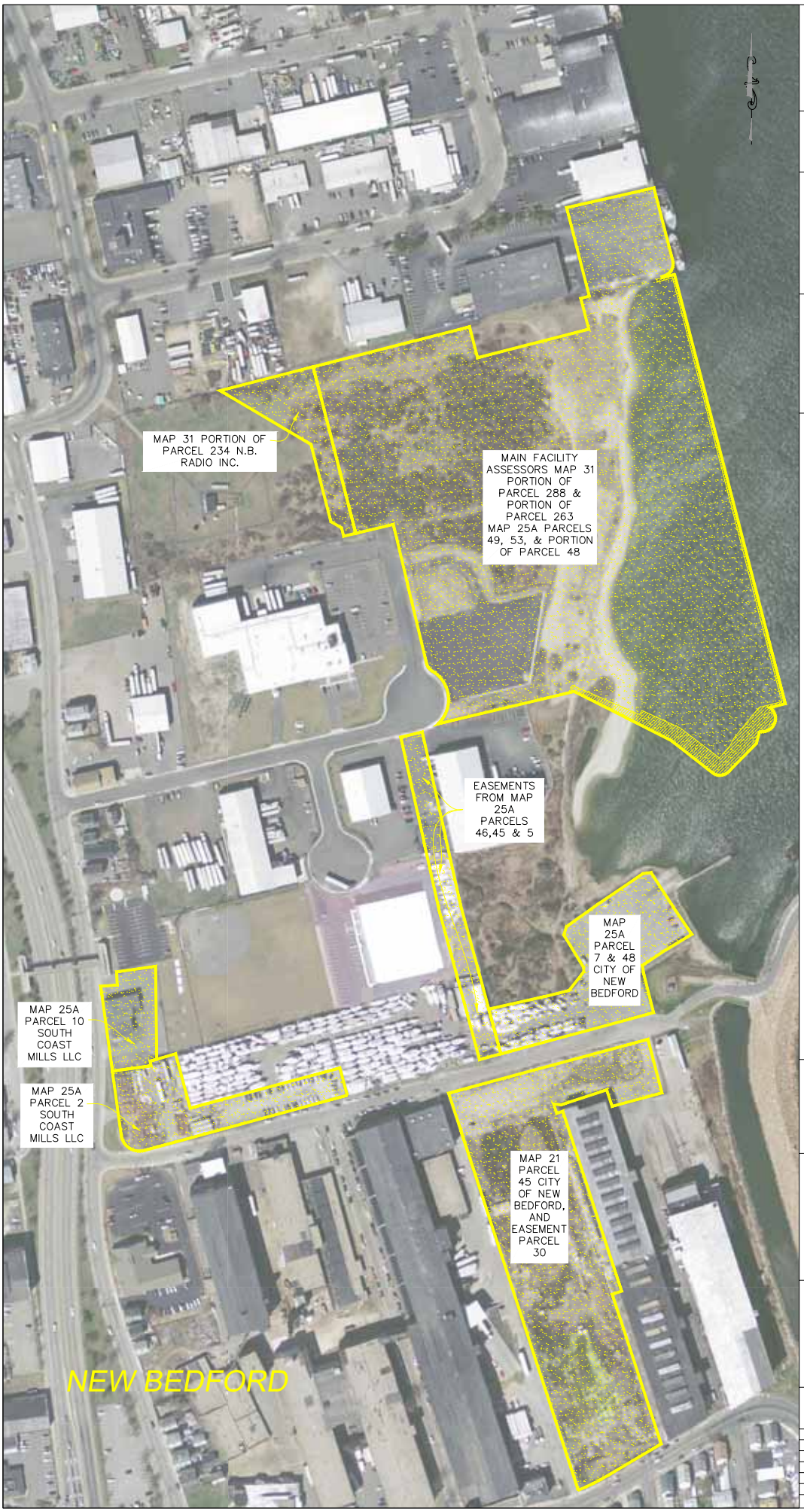

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(617) 728-0070

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Cultural Resources Background Study And Archeological Sensitivity Assessment

South Terminal Marine Infrastructure Park City Of New Bedford, Bristol County, Massachusetts

Prepared for
APEX COMPANIES, LLC
Boston, Massachusetts

Prepared by
JOHN MILNER ASSOCIATES, INC.
Croton-On-Hudson, New York

SEPTEMBER 2012

CULTURAL RESOURCES BACKGROUND STUDY AND ARCHEOLOGICAL SENSITIVITY ASSESSMENT

SOUTH TERMINAL MARINE INFRASTRUCTURE PARK

CITY OF NEW BEDFORD, BRISTOL COUNTY, MASSACHUSETTS

PREPARED FOR

APEX COMPANIES, LLC
184 HIGH STREET
BOSTON, MASSACHUSETTS 02110

BY

T. ARRON KOTLENSKY, RPA

JOEL I. KLEIN, PH.D., RPA

JOHN MILNER ASSOCIATES, INC.
1 CROTON POINT AVENUE
CROTON-ON-HUDSON, NEW YORK 10520

SEPTEMBER 2012

MANAGEMENT SUMMARY

John Milner Associates, Inc. (JMA) conducted cultural resources background study and archeological sensitivity assessment for an approximately 103-acre Study Area associated with upland portions of the proposed South Terminal Marine Infrastructure Park (the Project Area), a.k.a. the New Bedford Marine Commerce Terminal, located along the Acushnet River estuary in the City of New Bedford, Bristol County, Massachusetts. The investigation was conducted on behalf of Apex Companies, LLC, engineering consultant to the Commonwealth of Massachusetts. The purpose of this research is to identify any previously recorded archeological or historic sites that are in the Study Area, and assess if any previously unrecorded and potentially significant archeological or historic sites, which could be affected by Project-related development, construction and/or operation, could exist within the Study Area. The results of this study are intended to support the environmental impact analyses which may be required as part of Federal, State, or municipal permitting and approval processes.

Historic cartography depicts four textile mill sites (the Potomska, Acushnet, Hathaway, and Dartmouth Mills) dating from the late nineteenth into the early-twentieth centuries within the Study Area. No above ground remnants of the structures that comprise the Potomska and Acushnet mills are extant. Most of the structures that comprised the Hathaway and Dartmouth mills are extant. Historic cartography also indicates that at least twenty-nine residential structures were once located within the Study Area but were subsequently demolished. Twenty-three of these were company housing associated with the Acushnet Mills. The locations of these residences and their associated yard areas constitute, in JMA's opinion, an area of archeological sensitivity.

A final Project configuration has not yet been selected. Depending upon the final configuration, demolition of some small, existing, relatively modern structures may be required. Preliminary evaluation indicates that none of these structures possess historic significance.

Demolition of the Potomska and Acushnet mill buildings in the 1930s removed any critical features and data associated with the former textile mills that may have been used for evaluating the sites for eligibility for listing on the National Register of Historic Places (NRHP). In particular, the central portion of the Study Area containing the site of the no longer extant Potomska Mills was evaluated in 2010 and the MHC determined that no additional cultural resources background research or archeological sub-surface investigation is necessary in the upland portions of that area.

In the event that Project-related construction activities include grading or excavation more than 12 inches below present ground surface within the area of the former Acushnet Mills company housing, JMA recommends a Phase 1B archeological survey of that area to test for the presence of intact archeological features and deposits associated with the former dwellings. Specifically, JMA further recommends that such testing consist of remote sensing (i.e., ground penetrating radar) to more efficiently determine the presence of archeological features (building footprints, privy vaults, wells, and/or cisterns) rather than archeological test excavations. Ground disturbance of less than 12 inches is highly unlikely to affect any archeological remains that may be present. In the event that ground disturbance is limited to less than 12 inches no additional cultural resources background research or archeological sub-surface investigation is recommended

TABLE OF CONTENTS

Management Summary
Table of Contents

List of Tables
List of Figures
List of Photographs

1.0 INTRODUCTION 1
1.1 Purpose and Goals of the Investigation 1
1.2 Study Area Location 1
1.3 Project Description 1

2.0 BACKGROUND RESEARCH 3
2.1 Geology, Soils, and Existing Conditions 3
2.2 Previously Recorded Cultural Resources 3
2.3 History of the Study Area 4

3.0 ARCHEOLOGICAL SENSITIVITY ASSESSMENT 13
3.1 Prehistoric-Period Archeological Sensitivity 13
3.2 Historic-Period Archeological and Architectural Sensitivity 13
3.3 Prior Ground Disturbance 15

4.0 CONCLUSIONS AND RECOMMENDATIONS 16

5.0 REFERENCES CITED 18

Figures

Photographs

Appendix I: NRCS Soil Report for the Study Area

Appendix II: MHC Correspondence

LIST OF TABLES

Table 1. Commonly occurring soils found within the Study Area.

Table 2. Archeological sites located within one mile of the Study Area.

Table 3. Historic architectural resources identified by the MHC located within the Study Area.

LIST OF FIGURES

Figure 1. Detail of the *New Bedford North, M.A.* and *New Bedford South, M.A.* (USGS) 7.5-minute topographic quadrangles showing the location of the current Study Area, as well as the previous Project Area (JMA June 2010).

Figure 2. Aerial photography view (2009) depicting the location of the current Study Area, as well as the previous Project Area (JMA June 2010), and locations and angles of photographs referenced in the report.

Figure 3. Detail from an illustrated aerial view of New Bedford, Massachusetts, 1876, showing the northern portion of the Study Area. From *View of the City of New Bedford, Mass*. Drawn and published by D. H. Bailey and Company.

Figure 4. Detail of the1881 *Atlas of New Bedford City, Massachusetts*, showing the Study Area.

Figure 5A. Detail of the 1888 Sanborn *Insurance Maps of New Bedford and Fairhaven, Massachusetts*, showing structures in the northern half of the Study Area.

Figure 5B. Detail of the 1888 Sanborn *Insurance Maps of New Bedford and Fairhaven, Massachusetts*, showing structures in the southern half of the Study Area.

Figure 6A. Detail of the 1893 Sanborn *Insurance Maps of New Bedford and Fairhaven, Massachusetts* (Sheet 46), showing structures in the northern portion of the Study Area.

Figure 6B. Detail of the 1893 Sanborn *Insurance Maps of New Bedford and Fairhaven, Massachusetts* (Sheet 52), showing structures in the northern portion of the Study Area.

Figure 6C. Detail of the 1893 Sanborn *Insurance Maps of New Bedford and Fairhaven, Massachusetts* (Sheet 51), showing structures in the southern portion of the Study Area.

Figure 7. Detail of the 1895 *New Topographical Atlas of Surveys, Bristol County, Massachusetts*, showing the Study Area.

Figure 8A. Detail of the 1906 Sanborn *Insurance Maps of New Bedford and Fairhaven, Massachusetts* (Sheet 72), showing structures in the northern portion of the Study Area.

Figure 8B. Detail of the 1906 Sanborn *Insurance Maps of New Bedford and Fairhaven, Massachusetts* (Sheet 82), showing structures in the northern portion of the Study Area.

Figure 8C. Detail of the 1906 Sanborn *Insurance Maps of New Bedford and Fairhaven, Massachusetts* (Sheet 86), showing structures in the southern portion of the Study Area.

Figure 8D. Detail of the 1906 Sanborn *Insurance Maps of New Bedford and Fairhaven, Massachusetts* (Sheet 88), showing structures in the southern portion of the Study Area.

Figure 9A. Detail of the 1911 *Atlas of the City of New Bedford Massachusetts*, showing the northern portion of the Study Area.

Figure 9B. Detail of the 1911 *Atlas of the City of New Bedford Massachusetts*, showing the southern portion of the Study Area.

Figure 10A. Detail of the 1924 Sanborn *Insurance Maps of New Bedford and Fairhaven, Massachusetts* (Sheet 50), showing structures in the northern portion of the Study Area.

Figure 10B. Detail of the 1924 Sanborn *Insurance Maps of New Bedford and Fairhaven, Massachusetts* (Sheet 55), showing structures in the southern portion of the Study Area.

Figure 10C. Detail of the 1924 Sanborn *Insurance Maps of New Bedford and Fairhaven, Massachusetts* (Sheet 56), showing structures in the southern portion of the Study Area.

Figure 10D. Detail of the 1924 Sanborn *Insurance Maps of New Bedford and Fairhaven, Massachusetts* (Sheet 60), showing structures in the southern portion of the Study Area.

Figure 10E. Detail of the 1924 Sanborn *Insurance Maps of New Bedford and Fairhaven, Massachusetts* (Sheet 61), showing structures in the southern portion of the Study Area.

Figure 11. Aerial photography view (2009) depicting the location of the current Study Area, as well as the previous Project Area (JMA June 2010), and location of archeologically sensitive area.

LIST OF PHOTOGRAPHS

Photograph 1. Southern elevation of a former spinning mill building of the Dartmouth Manufacturing Company. View to the northwest.

Photograph 2. Southern elevation of a former "weaving shed" building of the Dartmouth Manufacturing Company. View to the northwest.

Photograph 3. Partial view of the southern elevation of a former spinning mill of the Dartmouth Manufacturing Company and an adjoining former office building of the company. View to the northeast.

Photograph 4. Partial view of the southern elevation of a former spinning mill building of the Dartmouth Manufacturing Company and its adjoining clock tower. View to the northwest.

Photograph 5. View along Harbor Street between separate spinning mill buildings of the Dartmouth Manufacturing Company (to the right) and the Hathaway Manufacturing Company (to the left). View to the north.

Photograph 6. Partial view of the southern elevation of a former spinning mill building of the Hathaway Manufacturing Company (currently occupied by New England Demolition & Salvage), with a former weaving mill building in the background. View to the northwest.

Photograph 7. An additional partial view of the southern elevation of a former spinning mill building of Hathaway Manufacturing Company, with a former spinning mill building of the Dartmouth Manufacturing Company and its adjoining clock tower in the background. View to the northeast.

Photograph 8. Mixed-use office building fronting on Cove Street, currently occupied by Hawthorn Medical Associates. View to the northeast.

Photograph 9. Multi-family detached dwellings fronting on Gifford Street/Morton Court. View to the northeast.

Photograph 10. Single- and multi-family detached dwellings fronting on Gifford Street/Morton Court. View to the southeast.

Photograph 11. View of open lots between residential dwellings fronting on Morton Court, with former mill buildings associated with the Hathaway Manufacturing Company in the background, view to the east.

Photograph 12. An additional view of single- and multi-family detached dwellings fronting on Gifford Street/Morton Court. View to the southeast.

Photograph 13. Single-family detached dwellings fronting on Gifford Street. View to the southeast.

Photograph 14. Mixed-use office and treatment services building fronting on Gifford Street. View to the north.

Photograph 15. View of open marginal lot at the corner of Gifford Street and Front Street. View to the north.

Photograph 16. Oblique view of former buildings of the Hathaway Manufacturing Company, bordering on Gifford Street. View to the southeast.

Photograph 17. View of salvaged-brick storage yard. View to the northeast.

Photograph 18. Northern elevations of former spinning and weaving mill buildings of the Hathaway Manufacturing Company. View to the southeast.

Photograph 19. Additional view of northern elevations of former spinning and weaving mill buildings of the Hathaway Manufacturing Company. View to the southwest.

Photograph 20. View of former spinning and weaving mill buildings of the Hathaway Manufacturing Company (to left, right), with smokestack visible in the background. Open space in between the buildings once occupied by a now-razed mill building. View to the south.

Photograph 21. View of vacant lot, once occupied by mill buildings associated with the Hathaway Manufacturing Company. View to the southwest.

Photograph 22. View along Harbor Street between separate spinning mill buildings of the Dartmouth Manufacturing Company (to the left) and the Hathaway Manufacturing Company (to the right). View to the south.

Photograph 23. Northern elevations of former spinning mill buildings of the Dartmouth Manufacturing Company. View to the southeast.

Photograph 24. View of Bayline, Inc. boatyard lot, fronting on Gifford Street. View to the northwest.

Photograph 25. Western elevation of a former weaving shed building of the Dartmouth Manufacturing Company. View to the southeast.

Photograph 26. Paved extension of the Bayline, Inc. boatyard. View to the northwest.

Photograph 27. Eastern elevation of a former weaving shed building of the Dartmouth Manufacturing Company. View to the southwest.

Photograph 28. Shoreline of the Acushnet River, looking towards the eastern margin of the site of the former Potomska Mills site. View to the north.

Photograph 29. Overview of storm barrier channel, access bridge, and paved extension of boatyard in background. View to the northwest.

Photograph 30. Overview of eastern end of Gifford Street, with the northern ends of former mill buildings of the Dartmouth Manufacturing Company visible to the left. View to the west.

Photograph 31. Overview of eastern elevation of former weaving shed building of the Dartmouth Manufacturing Company, with storm barrier drainage channel visible in the foreground. View to the west.

Photograph 32. Oblique overview of eastern elevation of former spinning mill building of the Dartmouth Manufacturing Company, with storm barrier and drainage channel visible in the foreground. View to the south.

Photograph 33. Overview of North Coast Seafoods plant and surrounding open space, with truck turning circle in foreground. View to the northwest.

Photograph 34. Overview of Sea Gold Seafood Products plant and surrounding open space. View to the west.

Photograph 35. Overview of truck turning circle and surrounding open space. View to the north.

Photograph 36. Overview of parking area between Sea Gold Seafood Products plant and Fleet Fisheries plant. View to the south.

Photograph 37. North Coast Seafoods plant, fronting on Blackmer Street. View to the northeast.

Photograph 38. Overview of open space adjacent to the southwest corner of the North Coast Seafoods place, fronting on Blackmer Street. View to the northwest.

Photograph 39. Overview of truck loading and parking area adjacent to NWD, Inc. warehouse. View to the north.

Photograph 40. Tractor-trailer parking area fronting on Blackmer Street. View to the southwest.

Photograph 41. Additional view of tractor trailer parking fronting on Blackmer Street. View to the southeast.

Photograph 42. Single-family detached dwelling fronting on Blackmer Street. View to the southwest.

Photograph 43. Single-family detached dwellings fronting on South Front Street. View to the east.

Photograph 44. Overview of baseball field, accessed off of South Front Street. View to the southeast.

Photograph 45. Overview of single-family detached dwellings and a garage fronting on South Front Street. View to the northwest.

Photograph 46. Overview of park area fronting on South Front Street, adjacent to baseball field. View to the north.

Photograph 47. Former "United Social Club" building, fronting on South Front Street. View to the northwest.

Photograph 48. Open lot adjacent to United Social Club building, with baseball field in background. View to the east.

Photograph 49. Young Cape Verdean Athletic Association, Inc. building, fronting on South Front Street. View to the southeast.

Photograph 50. Single- and multi-family detached dwellings fronting on South Front Street. View to the northeast.

Photograph 51. Overview of open lot fronting on South Front Street. View to the northeast.

Photograph 52. Additional overview of open lot fronting on South Front Street. View to the southeast.

Photograph 53. Seatrade International building and surrounding fronting on South Front Street. View to the northeast.

Photograph 54. Cablos Seafood building, at the corner of South Front Street and Potomska Street. View to the southwest.

Photograph 55. Overview of open space and fenced storage area along Potomska Street. View to the east.

Photograph 56. Overview of intersection between Potomska and Wright Streets, with M. F. Foley building in background. View to the northeast.

Photograph 57. Overview of fenced parking area fronting on Wright Street. View to the northeast.

Photograph 58. C. P. Brodeur, Inc./CAT building at the intersection of Potomska and Wright Streets. View to the southwest.

Photograph 59. Overview of parking area fronting on Wright Street. View to the southeast.

Photograph 60. Overview of fenced parking area adjacent to Fairside Shellfish buildings, fronting on Wright Street. View to the north.

Photograph 61. Warehouse located along Wright Street. View to the southeast.

Photograph 62. Overview of additional fenced parking area adjacent to Oceans Alive Scallops Corporation building, fronting on Wright and Hassey Streets. View to the north.

Photograph 63. Overview of fenced parking area adjacent to M. F. Foley building, fronting on Wright Street. View to the northwest.

Photograph 64. Overview of fenced area fronting on Wright Street. View to the south.

Photograph 65. Overview of additional fenced parking area adjacent to Oceans Alive Scallops Corporation building, fronting on Wright Street. View to the northeast.

Photograph 66. Overview of Shuster Corporation building at the corner of Wright and Hassey Streets. View to the southeast.

Photograph 67. Overview of parking area adjacent to the Shuster Corporation building at the corner of Wright and Hassey Streets. View to the southeast.

Photograph 68. Eastman Fisheries building and parking area fronting on Hassey Street. View to the east.

Photograph 69. Overview of parking area adjacent to the Eastman Fisheries and Northern Wind plant. View to the northeast.

Photograph 70. Overview of Hassey Street, with Northern Wind plant to the left. View to the south.

Photograph 71. Overview of intersection of Hassey Street and South Street. View to southwest.

Photograph 72. Overview of fenced area at intersection of Hassey Street and South Street. View to the southeast.

Photograph 73. Seatrade International building, fronting on South Street. View to the south.

Photograph 74. Parking area adjacent to Seatrade International building and Mariner Seafood Marketing building, fronting on South Street. View to the south.

Photograph 75. Mariner Seafood Marketing building and fenced parking area fronting on South Street. View to the south.

Photograph 76. Mariner Seafood Marketing building and fenced parking area fronting on South Street. View to the southwest.

Photograph 77. Fenced storage area adjacent to Mariner Seafood Marketing building fronting on South Street. View to the southeast.

Photograph 78. Hercules/LCR marine supply building at the corner of South Street and MacArthur Drive. View to the southeast.

Photograph 79. M. F. Foley building along MacArthur Drive. View to the southeast.

1.0 INTRODUCTION

1.1 PURPOSE AND GOALS OF THE INVESTIGATION

John Milner Associates, Inc. (JMA) conducted cultural resources background research relevant to approximately 103-acre Study Area associated with upland portions of the proposed South Terminal Marine Infrastructure Park (the Project Area), a.k.a. the New Bedford Marine Commerce Terminal, located along the Acushnet River estuary in the City of New Bedford, Bristol County, Massachusetts (Figures 1-2). The investigation was conducted on behalf of Apex Companies, LLC, engineering consultant to the Commonwealth of Massachusetts. The purpose of this research is to identify any previously recorded archeological or historic sites that are in the Study Area, and assess if any previously unrecorded and potentially significant archeological or historic sites, which could be affected by Project-related development, construction and/or operation, could exist within the Study Area. The results of this study are intended to support the environmental impact analyses which may be required as part of Federal, State, or municipal permitting and approval processes.

1.2 STUDY AREA LOCATION

The Study Area encompasses an approximately 103-acre property fronting along the Acushnet River estuary in the City of New Bedford, Bristol County, Massachusetts (Figures 1-2). It is bound to the east by the Acushnet River estuary and nearby Palmers Island, to the south by Cove Street, to the west by South Front Street and Potomska Street, and to the north by South Street. The Study Area contains multiple parcels of land, some of which are improved by two-story former mill buildings (Photographs 1-7, 16, 18-23, 27, 31, 32), some of which are improved by one and two story residential structures (Photographs 9, 10, 12, 13, 42, 43, 45, and 50), many of which are improved by one-story existing fish processing plants (Photographs 33, 34, 36, 37, 68-78), some of which are improved by one-story industrial buildings and enclosed lot storage areas (Photographs 17, 24, 26, 39, 51, 53-58, 60-67, and 79), some of which are improved by single story professional offices and a private club building (Photographs 8, 14, 47, and 49), and open developed and undeveloped spaces (Photographs 11, 15, 25, 28-30, 35, 38, 40, 41, 44, 46, 48, 52, and 59). A cultural resources background for part of the central portion of the Study Area was prepared in 2010 (JMA 2010). The location of the previous study area is shown on Figures 1 and 2.

1.3 PROJECT DESCRIPTION

The Project includes construction of a Confined Disposal Facility (CDF) in support of construction of a multi-purpose terminal, the primary purpose of which will be the support of offshore renewable energy activities. The Project will involve the use of dredge spoils to construct a filled facility adjacent to New Bedford Harbor. The completed Project will include the extension of the existing South Terminal bulkhead to the south for approximately 1,000 linear feet. In addition to this extension, several ancillary, upland properties will be included into the facility, which will create an approximately 28.25 acre facility (approximately 6.18 acres of which will be below the High Tide Line and are therefore outside of the Study Area), with 1,200 linear feet of bulkhead space that could support deep-draft vessels (the maximum draft along a portion of the bulkhead will be -32 MLLW).

Three proposed future configurations are currently under consideration, and therefore the selection of the upland ancillary properties has not yet been completed. Depending upon the final configuration, demolition of some existing relatively modern structures may be required. These include a small structure on the east side of South Front Street; a small A-frame structure originally constructed to support shipbuilding operations, and a small shack, both located at the boatyard on the north side of Gifford Street; and a radio tower and small sheet-metal support building located northeast of the intersection of South Front and Blackmer Streets.

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 1,000 linear feet. The bulkhead will be constructed of circular cofferdams filled with dredged material.
- The bulkhead will turn inward and head to shore, curving inward to avoid impact to paleosols that have been delineated in separate intertidal and subtidal historic cultural investigations.
- The southern portion of the bulkhead would be dredged to -14 MLLW.
- The northern area in front of the bulkhead would be dredged to -32 MLLW. A channel from the new bulkhead area would be installed (dredged to -30 MLLW), extending to the existing federal turning basin.
- Surficial, contaminated sediment will be dredged and placed into a Confined Aquatic Disposal Cell (CAD Cell) north of the Route 6 Bridge.
- Dredged material would be placed behind the bulkhead to fill the area to grade.
- The material behind the bulkhead would be 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.
- The remainder of the facility would be cleared and graded to meet the top of the bulkhead grade to create a relatively flat facility.
- The facility would be finished with a layer of Dense Graded Aggregate.

2.0 BACKGROUND RESEARCH

2.1 GEOLOGY, SOILS, AND EXISTING CONDITIONS

The Study Area is located in the southern portion of Bristol County, along an estuary of the Acushnet River, which empties into Buzzards Bay (Figure 1). The Study Area lies within the Seaboard Lowland Section of the New England Province, which is within the greater Appalachian Highlands physiographic division. The Study Area contains a mix of graded and developed and previously developed land that borders on the Acushnet River estuary to the east (Pickering 2010). Two soil map units denote the soil types within the Study Area, which are composed of developed, filled or heavily graded deposits, with standing structures or not, related to intensive previous land use (Appendix I). Table 1 provides a summary of soil units within the Study Area (USDA 1981).

Table 1. Commonly occurring soils within the Study Area.

Name	Soil Horizon Depth in(cm)	Color	Texture, inclusions	Slope %	Drainage	Landform
Udorthents, smoothed (Ud)	Variable; site specific; typically excavated or filled land	Variable; site specific	Variable; site specific	< 15	Typically well-drained	Adjacent to developed areas
Urban land (Ur)	Variable; site specific; typically paved or covered with structures	Variable; site specific	Variable; site specific	< 15	Typically well-drained	Developed areas

2.2 PREVIOUSLY RECORDED CULTURAL RESOURCES

JMA reviewed the archeological and architectural site files of the Massachusetts Historical Commission to identify previously recorded archeological and architectural sites located within one kilometer of the Study Area. JMA identified four previously recorded historic period archeological sites within one kilometer of the Study Area and no prehistoric sites within one kilometer of the Study Area (Table 2). One of the four historic sites lies within the Study Area boundaries (Potomska Mills/Howland Factory; see *Section 2.3* for further discussion of this property).

Table 2. Archeological sites located within one kilometer of the Study Area.

MHC Site Identifier	Site Name	Time Period	Description	Distance from Study Area
NBE-HA-08	Potomska Mills/Howland Factory	19th-20th centuries	Cotton textile factory	Within Study Area
NBE-HA-09	Acushnet Mills/worker housing	1882-1931	Mill complex and 22 houses	.5km S of Study Area
NBE-HA-07	Palmer Island lighthouse	1849-1941	Lighthouse and keeper's house	.5km E of Study Area
NBE-HA-12	Nathan and Polly Johnson House	1826-present	Domestic structures	1km NW of Study Area

JMA also identified twenty-five standing architectural resources located within the Study Area that are

listed as historic buildings by the Massachusetts Historical Commission (MHC) (Table 3). These resources are discussed in further detail below (Section 3.2).

Table 3. Historic architectural resources identified by the MHC located within the Study Area.

MACRIS Inventory No.	Property Name	Street Address	Year
NBE.599	Dartmouth Manufacturing Company Textile Mill	Cove St	1896
NBE.598	Hathaway Textile Mill - Office	97 Cove St	1927
NBE.1085	Hathaway Textile Mill - Weave Shed #3	97 Cove St	1899
NBE.2276	Hathaway Textile Mill - Gate House #2	97 Cove St	1889
NBE.2277	Hathaway Cotton Textile Mill - Spinning Mill #1	97 Cove St	1889
NBE.2278	Hathaway Cotton Textile Mill - Picker House	97 Cove St	1889
NBE.2279	Hathaway Cotton Textile Mill - Boiler House	97 Cove St	1889
NBE.2280	Hathaway Cotton Textile Mill - Engine Room	97 Cove St	1933
NBE.2281	Hathaway Cotton Textile Mill - Carding Room	97 Cove St	1905
NBE.2282	Hathaway Cotton Textile Mill - Weave Shed	97 Cove St	1889
NBE.2283	Hathaway Cotton Textile Mill - Cloth Room	97 Cove St	1893
NBE.2284	Hathaway Cotton Textile Mill - Picker House	97 Cove St	1905
NBE.2285	Hathaway Cotton Textile Mill - Carding Room	97 Cove St	1893
NBE.2286	Hathaway Cotton Textile Mill - Spinning Mill #2	97 Cove St	1893
NBE.2287	Hathaway Cotton Textile Mill Building #17	97 Cove St	1911
NBE.2288	Hathaway Cotton Textile Mill Building #18	97 Cove St	1933
NBE.2289	Hathaway Cotton Textile Mill - Boiler House	97 Cove St	1933
NBE.2290	Hathaway Cotton Textile Mill Building #20	97 Cove St	-
NBE.2291	Hathaway Cotton Textile Mill Building #24	97 Cove St	1899
NBE.2292	Hathaway Cotton Textile Mill - Weaving Mill #2	97 Cove St	1893
NBE.2293	Hathaway Cotton Textile Mill - Waste House	97 Cove St	1898
NBE.2294	Hathaway Cotton Textile Mill - Cotton House #2	97 Cove St	1898
NBE.2295	Hathaway Cotton Textile Mill - Cotton House #3	97 Cove St	1898
NBE.2296	Hathaway Cotton Textile Mill - Factory Building	97 Cove St	-
NBE.601	Acushnet Textile Mills Business Office	460 South Front St	1890

There are no previously identified properties within or immediately adjacent to the Study Area that have been listed on or determined eligible for listing on the National Register of Historic Places.

2.3 HISTORY OF THE STUDY AREA[1]

Prehistoric and Contact Period Overview

Eastern North American prehistory is usually discussed in terms of three major cultural/temporal periods. These periods are referred to as the Paleoindian, Archaic, and Woodland. Within each of these periods, differing cultural configurations can be described in terms of adaptations to the natural and social environments. This tripartite construct constitutes the taxonomic mainstay of Northeastern archeology, and

[1] This section is adapted from a background research and sensitivity analysis prepared by JMA (2000) for the New Bedford Superfund Site. The study area for that investigation included the present Study Area.

is the basic framework in which any treatment of New England prehistory must be discussed. It is recognized, however, that the concepts upon which the divisions are based may be inadequate for understanding the dynamics of cultural change that occurred through time in different regions of the Northeast (Hoffman 1985; Nicholas 1987; Snow 1980; Starna 1979). This section outlines the major cultural/temporal periods as they apply to greater southeastern New England.

The penetration and settlement of Eastern North America was initiated during the Paleoindian Period (*circa* 12,500-10,000 radiocarbon years before present [yrs BP]). Colonization of the region followed final deglaciation and the establishment of vegetation capable of supporting grazing and browsing animals. Initial settlement is believed to have proceeded from the south and Paleoindian groups may have moved into southern New England as a consequence of expanding hunting territories (Kelly and Todd 1988). The demographic pattern that characterizes the initial use of new territories emphasizes small groups, high mobility, and considerable population in- and out-flow (Lerner 1984:64). These trends, and an overall low population density during the Paleoindian Period, likely account for the paucity of sites and even stray artifact finds for this period in comparison to later periods.

The demise of the Pleistocene megafauna and the major environmental changes that occurred in the early Holocene (*circa* 10,000 yrs BP) forced readjustments on the part of Paleoindian groups in New England. In New England, new tools and new Studyile point forms make their appearance. The inferred changes in subsistence and settlement systems, along with these new tool forms, are the hallmarks of a new tradition. The adaptive changes are not well understood, although essential cultural continuity has been suggested (Snow 1980:171).

The concept of the Archaic Period, developed for Eastern North America by Ritchie (1932), is used to describe this new adaptation. The Archaic Period is customarily divided into three segments, Early, Middle, and Late, that together date to between *circa* 10,000 and 2,700 yrs BP. The construct was developed by Ritchie to describe the occupations of the Lamoka Lake site in New York State, and over time has undergone many changes (Starna 1979).

As introduced, the term denoted an early cultural level in which subsistence was oriented around a broad spectrum economy based on hunting, fishing, and gathering. Although the shift to this economy had its roots in the previous period, these trends became more evident and fully developed through time. Evidence of the changes in technology and subsistence was manifest in the appearance of specialized tool types not previously recorded. Manos, mortars, and pitted stones indicate a more intensive exploitation of plant foods in the Archaic than during the preceding period. Netsinkers, fishhooks, and harpoons are evidence for greater reliance on fishing. Expansion of the Archaic subsistence base is also represented in food remains which demonstrate the hunting of deer, elk, raccoon, and many smaller mammals. Birds, turtles, fish, and shellfish were also procured. In addition to subsistence changes, the introduction of axes, adzes, and celts suggest the beginning of heavy woodworking and the construction of substantial structures.

Throughout the period there is an increase in the diversity of site types and the number of microenvironments exploited by Archaic peoples. Over time, the principal camps from this period became larger, more numerous, more complex, and contained increased quantities of occupational debris. Larger, denser populations and the tendency toward more permanent residential settlements increase through time. The size of the territory regularly exploited by each social group probably decreased as well, given an

observed tendency to rely upon local raw materials to meet everyday needs. In the northeast, these band level hunter-gatherers exploited their territories with a pattern of seasonal movements. Because food resources vary spatially and temporally, efficient exploitation was accomplished through different technologies and social organizations. These varying adaptations to local environmental conditions are reflected in the diversity in material assemblages from area to area.

The final Archaic sub-period is the Terminal Archaic, also referred to as the Transitional Period and the Susquehanna Tradition. As first described by Witthoft (1953), this complex is recognized by distinct changes in material culture. Primary among the technological changes identified by Witthoft and later, by others (e.g., Kinsey 1972), was the rapid adoption of a tool complex based on large, broad-bladed stemmed points. Containers in the form of steatite bowls also begin to appear. The changes recognized in the archeological record are usually presented as evidence for the intrusion into the region of a new cultural tradition (Snow 1980:244-249). The new projectile point forms are believed to be cognates of types found to the southwest, "where there was a major center of development from a Savannah River-like predecessor" (Dincauze 1975:27). The intrusive groups are believed to have been small and are not thought to have been assimilated into resident populations (Dincauze 1975:27). At least one researcher believes that there is little evidence that permits a differentiation between Late and Terminal Archaic cultures, and that subsistence strategies, choice of lithic materials, technology, and population distribution seem to have been continual throughout the two periods (Hoffman 1985:66). It has further been suggested that Terminal Archaic materials in northern New England indicate a population in-movement, while such materials in southern New England represent diffusion and culture contact between groups (Snow 1980:247-248).

Despite the occurrence of pottery at certain sites, this complex remains assigned to the Archaic Period as suggested by Snow (1980). Terminal Archaic sites are fairly numerous in New England and projectile points representative of the complex have been recovered at many sites. Within two miles of the project area, the Blue Feather site in Acushnet produced a large, broad-bladed Susquehanna Tradition projectile point (Simon et al. 1980:32).

The Woodland Period (*circa* 2,700–400 yrs BP [AD 1600]) in the Northeast represents the culmination of the economic and social trends of the preceding periods. The period is defined in terms of its material culture by the consistent use of pottery. Ceramic technology becomes increasingly sophisticated and artifact styles show interaction with peoples from within and between territories, allowing for a more precise definition of social groupings. Archaic hunting and gathering bands evolved into semi-sedentary village dwellers who intensively exploited the resources around them, while maintaining strong economic and social ties with groups well outside their own territory. By the end of the Woodland Period, sedentary lifestyles based on corn agriculture were the rule throughout the region. Kin-based, “tribal” level socio-political organizations were the basic fabric of society.

Although the Woodland Period is typically subdivided into Early, Middle, and Late sub-periods on the basis of ceramics in the Eastern United States, a tight ceramic classification and chronology is lacking for the southeastern New England area. Consequently, artifact comparisons and interpretations still rely heavily upon earlier data and analyses from New York (Smith 1950), Connecticut (Rouse 1947), Rhode Island (Fowler 1956), and Ritchie's work on Martha's Vineyard (1969b).

Snow (1980), who combines the Early and Middle Woodland sub-periods into an Early Horticultural Period (*circa* 2,700–1,000 yrs BP), suggests that a rather diffuse subsistence adaptation predominated during this time. An important addition to the diet of Woodland peoples was shellfish, which became increasingly available *circa* 2,500 yrs BP with the stabilization of post-glacial sea-level rise and the establishment of coastal mud flat and salt marsh environments. Indeed, an increasing orientation toward coastal environs and resources is documented throughout the long Woodland Period (Dincauze 1974; Thorbahn et al. 1980; Mulholland 1988; Edens and Kingsley 1994). One outcome of this process is the occurrence of numerous shell midden sites all along the New England coastal zone (e.g., Shaw 1989; Cross and Shaw 1991; Edens and Kingsley 1994).

More profound changes occurred during the Late Woodland sub-period (*circa* 1,000–400 yrs BP). Corn was grown by at least 1,160 yrs BP (based on an uncalibrated radiocarbon date) on Martha's Vineyard (Ritchie 1969:32) and full acceptance of an agricultural lifeway quickly developed in the region with beans, squash, and other cultigens playing an integral part. A settlement pattern of villages on main streams at the heads of estuaries, associated with a variety of subsidiary sites, is suggested by Snow (1980:332). During the summer, the population was probably dispersed with small farmsteads serving as the basic settlement unit. As noted, shellfishing in coastal environments increased through the Middle to Late Woodland Period, with increasing numbers of shell midden sites occurring (e.g., Edens and Kingsley 1994).

Woodland Period sites are known in the vicinity of the study area. The Swift site (Thorbahn 1983) lies just north of the study area boundary, and produced Middle and Late Woodland components. According to the MHC site forms, the Burt School site is located just east of the boundary; here, amateur archeologists recovered numerous untyped pottery sherds. Talmage (1982:27) notes several Woodland Period sites north of the Study area. On the south coast of Cape Cod, the Willowbend site (Shaw 1989) is a shell and earth midden site dating to the Early through Late Woodland; the nearby Baxter Neck site (Cross and Shaw 1991) was not a shell midden, but demonstrated exploitation of coastal resources from the Late Archaic through Late Woodland Periods. Further afield, at least 10 Woodland Period sites are known on Conanicut Island in Narragansett Bay (Kingsley and Roulette 1990). Numerous Woodland sites are also known on the Rhode Island mainland (e.g., Morenon et al. 1986).

During the early part of the Contact Period, *circa* AD1600, Native Americans known as the Wampanoag (also referred to as the Pokanoket) were documented as inhabiting southeastern Massachusetts, including Cape Cod, Martha’s Vineyard, and Nantucket, as well as eastern Rhode Island (i.e. east side of Narragansett Bay). The Wampanoag were longstanding allies of the Massachusetts to the north, and traditional enemies of the Narragansett to the west (Gookin 1972 in Salwen 1978:171). The exact date of first contact with Europeans is uncertain, though one source puts it as early as Verrazano’s AD 1524 visit to Narragansett Bay (Wroth 1970 in Salwen 1978:171). Later contacts included Gosnold (AD 1602), Pring (AD 1603), Champlain (AD 1605-1606), and Hudson (AD 1609) (Salwen 1978:171). Bragdon (1996:xi) characterizes southern New England as “Ninnimissinouk,” an indigenous term used to refer to the people of the region. Included among the Ninnimissinouk were groups known as the Pawtucket, Massachusett, Narragansett, Peqout, and the Wampanoag. The term “Wampanoag” designates the descendants of the Pokanokets, or the people associated with the sachem Massasoit and the village of Pakanokick noted by John Smith in 1614 (Bragdon 1996:20-25; Grumet 1990:134).

There is little primary documentation pertaining to Wampanoag lifeways; however, Bragdon (1996) recently reviewed all available accounts for a reconstruction of Ninnimissinouk culture at the time of European contact (*circa* AD 1500-1650). Along the coastal zone, a form of "conditional" sedentism with restricted seasonal shifts in subsistence and settlement prevailed (Bragdon 1996:57-59). A more extensive settlement pattern with seasonal movements between the coastal zone and the interior is envisioned by other authors (e.g., DePaoli and Farkas 1982:33-34). Coastal areas were occupied to exploit fertile agricultural soils and estuarine and marine resources such as seals, fish, and shellfish (Speck 1948). Fish were often taken through the use of weirs. Cultivated plants may have included maize, kidney bean, squash, Jerusalem artichoke, and tobacco (Salwen 1978:160-162). The archeological evidence for corn agriculture in southern New England is rather tenuous leading Ceci (1990) to conclude that maize horticulture intensified in response to European contact and the development of the wampum trade (Bragdon 1996:37-38). In the coastal region, populations resided in series of small dispersed villages or hamlets.

Certainly the single most devastating event resulting from European/Native American contact was the introduction of foreign diseases to the latter. The epidemic of AD 1616-1619 decimated the Ninnimissinouk populations by as much as 90 percent, especially in interior locations; groups residing on the offshore islands fared better (Salwen 1978:171). Subsequent to the epidemics, the weakened Wampanoag suffered persistent attacks by the Narragansett to the west. With the arrival of the colonists at Plymouth, the Wampanoag sachem Massasoit and his brother Quadenquina offered a formal friendship treaty, into which the colonists and Native Americans entered. Massasoit had hoped to form an alliance with the colonists, principally to help fend off the Narragansetts (Salwen 1978:171-172).

In any event, King Philip's War in AD 1675-1676 effectively wiped out large portions of the Wampanoag population. Groups living on Cape Cod and the offshore islands did not join Philip in his efforts and thus were able to maintain their villages there (Salwen 1978:172). Nevertheless, the Wampanoag and all other New England Native American societies never recovered from the decimation and disenfranchisement resulting from their loss of the war, and the post-war era witnessed the continual decline and marginalization of the Native American groups in New England. The Wampanoag Tribe of Gay Head (Martha's Vineyard, Massachusetts) is recognized by the Federal Government, as are the Mashantucket Peqout and Mohegan Tribes in Connecticut, and the Narragansett Tribe in Rhode Island.

Historic Period Context

The land that comprises the city of New Bedford, as well as Acushnet, Fairhaven, Dartmouth, and Westport, was purchased from Massasoit, Grand Sachem of the Wampanoag and his son, Wamsutta in 1652 by 36 European settlers. The tract was named Dartmouth and was incorporated in 1654. The town's early settlement was sparse and consisted of scattered farmsteads and garrisons. During King Philip's War (1675-1676), the Indians overran the settlement and burnt most of the homes (Ricketson 1858:34). After the war, the settlers returned and rebuilt. Following a pattern common throughout Southeastern New England after the war, the settlers chose to establish a village at the head of the Acushnet River rather than disperse into scattered farmsteads. Throughout the first half of the eighteenth century, the Village of Acushnet remained the region's center; however, members of the Russell family began purchasing land along the Acushnet River and the overlooking heights within the present city of New Bedford. In 1765, Nantucket whaling merchant Joseph Rotch purchased ten acres of land from Joseph Russell II and moved his business to New Bedford (Leary 1999). Rotch brought experience, capital and technological innovation, and he and his sons

began to develop the future New Bedford as a whaling port (Leary 1999). The Town of New Bedford developed rapidly and by 1771 321 dwellings, 119 shops and warehouses stood in New Bedford and Fairhaven (Vanasse Hangen Brustlin, Inc. 1996:16).

On September 5th, 1778, British troops occupied New Bedford. During their brief stay, they burnt eleven dwellings, twenty shops, a ropewalk, and 34 vessels anchored in the harbor (Ricketson 1858:75; 289). After the end of the Revolutionary War, a number of Nantucket merchants relocated to New Bedford and promptly developed a complex network of finance, shipbuilding, ship supply, and marketing (Georgianna and Aaronson 1993:12). In recognition of the growth of the village established by the Russell family, Bedford Village was designated as the town of New Bedford in 1787 (Leary 1999).

During the decades prior to the Civil War, New Bedford became the leading whaling port in the world (Georgianna and Aaronson 1993:12). By 1857, the city was home to 329 whaling outfits and ships, 10,000 men were engaged in whaling, and $12,000,000 in local capital was invested in these enterprises (Burgy 1932:34).

Because of the prominence of whaling, New Bedford had few other industries in the early nineteenth century. In 1815, a rope walk was located along the Acushnet riverfront in the south part of the city, and a furnace was located on the riverfront near the foot of Madison Street. The northern waterfront was lightly developed with several piers extending into the river. J. Congdon's 1834 map of New Bedford shows a grist mill in the north and west-central portions of the city, while two salt works were in operation in the south peninsula area. Several small cotton factories had been established in the city, the earliest dating from 1811 (Burgy 1932:34).

By the second half of the nineteenth century, the American whaling industry faced severe trouble. During the Civil War, a number of New Bedford whaling vessels were sold to form a major portion of the "Stone fleet," sunk off the harbors of Charleston and Savannah to enforce a naval blockade (Hicks 1907:41). In 1871, the entire Arctic whaling fleet, including 32 ships from New Bedford, was lost when ice floes returned earlier than normal. The total monetary loss to New Bedford was over $1 million (Georgianna and Aaronson 1993: 13; Hicks 1907:41). In 1876, the ice took 12 additional ships from New Bedford's fleet (Georgianna and Aaronson 1993:13). Similar losses occurred in 1888 and 1897.

Improving technology greatly reduced the demand for whale oil. Kerosene largely replaced whale oil for lighting. With the discovery of petroleum in Pennsylvania in 1859, an economical substitute for whale oil lubricant became available (Clayton and Whitley 1975:24). The whaling industry continued in New Bedford until the early twentieth century but became a progressively less important part of the city's economy. The last whaling voyage from the city was made in 1925 by the schooner *John R. Manta* (Leary 1999).

Even during the heyday of whaling, farsighted New Bedford businessmen saw the advantages of enlarging the economic base of the city. Cotton mills had proved profitable in other parts of New England. By 1833, thirteen cotton mills were in operation in nearby Fall River (ODHS 1975:204). U.S. cotton production doubled between 1840 and 1860. By the start of the Civil War, 600 cotton mills were in operation throughout New England (Georgianna and Aaronson 1993:19).

One New Bedford businessman, Samuel Rodman, Jr., a major investor in the Pocasset Mill in Fall River, sought to bring the cotton manufacturing industry to New Bedford by organizing the New Bedford Steam Company in 1846. This attempt was unsuccessful (ODHS 1975:204).

Despite this failure, some New Bedford capitalists saw potential for the cotton milling industry in the city. The city's damp climate minimized static electricity and maximized the fragile cotton fiber's elasticity and break strength (Dunwell 1978:112). The Acushnet River allowed relatively inexpensive shipping of coal and cotton. Sufficient manpower was available, as was investment capital.

The first New Bedford successful cotton mill owners studied the milling business before setting up their own factories. Their initial problem was to decide what goods to produce. Calculations were made to determine which type of goods would produce the maximum profit. The conclusion was that fine sheeting could be made a cost of 12 cents per yard and sold for 14 cents. They decided to concentrate on this product and to produce it by the mule spinning method (Ware 1931:107-108).

Significant industrial enterprises within the Study Area

Since the late nineteenth century, four textile manufacturers have represented the most ambitious and longest-lasting industrial enterprises that have occupied the largest portions of the Study Area. In 1871, a joint-stock company established the earliest of these enterprises, the Potomska Mills, which expanded to include two mills by 1877 within the same site (Figures 3, 4, 5A, 6B, 7, 8B, 9A, and 10B; Sayer 1889: 154; Ellis 1892). The footprint of the former Potomska Mills largely falls within the boundaries of the study area formerly surveyed by JMA in 2010. A municipal history of New Bedford outlined the impressive make-up of the Potomska Mills in the late 1880s:

> The Potomska mills are two in number, located on South Water street, and manufacture fine lawns, sateens, print cloths, cretonnes, jeans, etc. Potomska mill No. 1 was erected in 1871 and went into operation with a capital of $600,000. This mill is four hundred twenty-seven by ninety-two feet in area and four stories high, with a weaving shed one hundred eight by ninety-seven feet, one story high. It is provided with forty-eight thousand spindles and one thousand six looms.
>
> Potomska mill No. 2 was built in 1877, when the capital stock was increased to $1,200,000. The main building is three hundred forty-eight by ninety-two feet in area, four stories high, with an ell one hundred eighty-four by ninety-two feet, two stories high, a weaving shed one hundred eighty-four by ninety-two feet, one story high, and a picker house seventy-one by forty-seven feet, two stories high, all of brick. This mill has fifty-eight thousand three hundred twenty-eight spindles and one thousand four hundred twenty-eight looms. The total number of spindles in both mills is therefore one hundred six thousand three hundred twenty-eight and the total number of looms two thousand four hundred twenty-four. Both mills are driven by Corliss double twenty-eight inch cylinder, five-foot stroke engines, of eight hundred horse power each. The two mills employ about eleven hundred operatives. The company owns twenty-six four-tenement houses, which are rented to help (Sayer 1889: 154).

Ownership operated the Potomska Mills into the twentieth century, expanding the site with the addition of a third mill in 1924 (Sanborn 1924) but closed the entire site during the 1930s due to the ongoing economic depression. The Works Progress Administration razed the mill buildings and other site elements in 1935 and 1936 (Taber 1937). Following demolition of the Potomska Mills in the 1930s, no private or public entities intensively redeveloped the overall site in ways that compared with previous uses, leaving much of the property to be reclaimed by open field vegetation. A 1950 Sanborn map indicates that no structures remained standing within the Study Area by that time.

Following the sustained success of the Potomska Mills and other textile manufacturers in New Bedford, a joint-stock company organized the Acushnet Mills in 1882 with an initial capital stock of $750,000 (Pease and Hough 1889:157). Beginning with the guidance of its first directors, many of whom were associated with other successful textile operations in New Bedford, the Acushnet Mills remained successful for several decades, producing a range of fabrics that early on included "[s]ilesias, sateens, and goods for the printer," and eventually including silk and rayon fabrics by the 1920s (Pease and Hough 1889:157; MHC 1977a). Beginning with a single mill building located south of the Potomska Mills (Blackmer Street) in 1883, the Acushnet Mills had expanded by the mid-1890s to include a second mill, that together encompassed an area bordered by Blackmer Street to the north, (South) Front Street to the west, Gifford Street to the south, and the Acushnet River shoreline to the east (Figures 5B, 6C, 7, 8C, 9B, 10C; Everts and Richard 1895). The operators of the mill also built twenty-three tenement houses adjacent to the mill site along Blackmer Street for mill workers and their families (MHC 1977a; Everts and Richard 1895). By the 1920s, the Acushnet Mills, similar to other textile operators in New Bedford and throughout New England, began to lose out to competition from emerging textile mills in the southern states that were beginning to produce products of similar quality but at significantly reduced cost (Wolfbein 1944). By 1929, the Acushnet Mills had ceased operation and by 1933 the core of the mill buildings had been razed and salvaged by the Works Progress Administration, leaving only the mill office building fronting on South Front Street standing (MHC 1977a).

In 1888, several of the directors of the Acushnet Mills and other New Bedford mills financed the Hathaway Mills, with the first buildings of the mill built directly southwest of the Acushnet Mills in 1889 (Figures 6C, 7, 8D, 9B, 10D; Ellis 1892:462). From its outset, the Hathaway Mills specialized in the manufacture of fine cotton goods, and quickly grew with two periods of expansion during the 1890s that greatly profited the mill's owners through the late 1910s (MHC 1977b). Despite the heightened competition from southern textile producers in the 1920s and the severe economic downturn later in the decade, the Hathaway Mills continued to be profitable by shifting to the production of rayon, a then-novel semi-synthetic fabric that was quickly gaining in demand (Thomas 1986:186). Boosted by rayon production, especially during World War II for the production of parachutes, the Hathaway Mills survived into the post-war decades as one of the last remaining textile producers in New Bedford, becoming a key mill within the larger Berkshire-Hathaway textile conglomerate that formed in 1955 (Thomas 1986:186). Under Berkshire-Hathaway, the original Hathaway Mills remained in operation until 1985, when Warren Buffet, who had begun quietly shifting Berkshire-Hathaway away from textiles manufacture to finance and insurance in the 1960s, opted to close the mill due to mounting financial losses (Thomas 1986:189). Despite the end of textile production within the mill, several of its core buildings remain standing and presently in use by several smaller businesses specializing in warehousing and light manufacture.

The Dartmouth Mills was the last textile mill to be established wholly within the Study Area (Figures 9B, 10E). Unlike the three previously discussed mills, the Dartmouth Mills was founded independent of the established network of directors that had formed many of the other textile mills in New Bedford (Lamb 1911:441-443; Wolfbein 1944). Organized by James W. Allen and Abbott P. Smith in 1895 for manufacturing a general array of cotton fabrics, the first mill buildings were built within the following year, followed by large additional expansions over the next fifteen years (MHC 1977c). Following much of the same historical arc as other New Bedford textile makers, the Dartmouth Mills prospered through the World War I years but began to struggle against southern textile makers by the onset of the Depression. After an unsuccessful liquidation effort in the early 1930s, the Dartmouth Mills were reorganized as the "Naushon Mills" (MHC 1977c). In 1938 in a further effort to keep the mill in operation, the federally-subsidized Reconstruction Finance Corporation provided a loan for $370,000 to the reorganized mill for modernization, while the City of New Bedford relieved the mill of unpaid tax burdens (Wolfbein 1944:136-137). These efforts helped keep the Dartmouth Mills in operation through the following war years, but could not prevent the close of textile production under Naushon in 1948 (MHC 1977c). The Hathaway Mills purchased the former buildings of the Dartmouth Mills later that same year, but it is unclear as to whether or not they were operated as part of Hathaway's adjacent mill. Several of the buildings of the Dartmouth Mills remain standing, in all likelihood due to their rapid purchase by Hathaway.

3.0 ARCHEOLOGICAL SENSITIVITY ASSESSMENT

3.1 PREHISTORIC-PERIOD ARCHEOLOGICAL SENSITIVITY

There are no previously recorded prehistoric archeological sites or resources located within the Study Area or within one kilometer of the Study Area. Previous studies have identified several prehistoric sites within the Acushnet and Paskamanset River drainages, which suggest that any intact soils within the Study Area could contain unidentified prehistoric archeological resources (Office of Public Archaeology 1988; JMA 2000). In addition, contact and historic period accounts identify a potential prehistoric site known as "Smoking Rocks" near the northern margin of the Study Area that served as a meeting site for local native groups (Office of Public Archaeology 1988:26). However, the location of this site is highly conjectural given the imprecise nature of the accounts. At the same time, given the documented degree of disturbance of soils within the Study Area, there is a low probability that previously unrecorded and undisturbed prehistoric sites exist within the boundaries of the Study Area.

3.2 HISTORIC-PERIOD ARCHEOLOGICAL AND ARCHITECTURAL SENSITIVITY

As previously discussed, various manufacturing companies developed large portions of the Study Area for steam-powered textile mill sites beginning in the 1870s and continuing on into the late 1900s. Although several structures related to these industries have been demolished (especially in the cases of the previously mentioned Potomska and Acushnet Mills, which were both completely razed in the early 1930s), the overall footprints of any substantial masonry or even frame structures associated with these buildings may remain intact below present grade within the Study Area. However, given the general nature of these industries (mainly textile manufacture) and their overall above-grade vertical orientation (especially with regards to the Potomska and Acushnet Mills site, which included multi-storied buildings), the most useful site elements for documentation and interpretation for these mill buildings were removed during demolition. As a result, sub-surface archeological excavation of remaining structural footprints has a low potential for yielding data irretrievable through background research and synthesis. In particular, a review of current aerial photography and a recent site reconnaissance confirmed that no substantial above ground structures related to either the Potomska or the Acushnet Mills remain standing within the Study Area (compare Figure 2 with Figures 10B and 10C). In addition to the demolition of the both of the Potomska and Acushnet Mills, two of the larger buildings of the Hathaway Mills have been demolished since 1924 (number 3 weave shed and number 8 carding shed; see Figure 10D), and one of the larger buildings of the Dartmouth Mills (number 4 weave shed; see Figure 10E). Although its textile mill was largely located north of the Study Area, the City Manufacturing Corporation owned several smaller structures on a parcel of land that occupied the northwestern corner of the Study Area at different points in time (see Figures 5A, 6A, 8A, and 10A); none of the structures associated with the City Manufacturing Corporation remain standing.

Apart from industrial buildings, period maps provide details on the locations of at least twenty-nine former residential and commercial structures that were located along the streets that border and run through the Study Area (see Figures 10B through 10D). Six of these structures front on South Front Street, Morton Court, and Cove Street and appear to have been detached dwellings or other auxiliary buildings; in most cases, the locations of these former structures are now open lots. The other twenty-

three identified structures were company houses owned by the Acushnet Mills and were located in two rows paralleling Blackmer Street (MHC 1977b; see Figure 10C). Pedestrian reconnaissance of the area encompassing the former company houses revealed no visible foundation remains or other structural features related to any of the twenty-three houses (see Photograph 40 for overview). Although probably not included with the construction of the original mill in 1883, the owners of the Acushnet Mills had built their twenty-three workers' houses for their expanding operation by 1895 (comparison between Figures 5B and 6C). The houses remained standing in 1924 and may have been razed when the buildings of the Acushnet Mills were demolished in the 1930s; the houses do not appear in a 1961 aerial image of New Bedford (Figure 10C; NETR 2012).

Given their period of construction, the Acushnet Mills company housing in all likelihood did not initially include sanitary sewage connections to a larger municipal waste treatment system. (JMA contacted the New Bedford Department of Public Infrastructure and was advised that no information pertaining to underground sewage systems in this area was available). Each house may, therefore, have included an outside privy. An alternative possibility, given the close proximity of the houses to the shore of the Acushnet River (less than 800 feet), is that a raw sewage drain(s) may have connected the two rows of houses with the river. However, such a design would not preclude the existence of privies, but could also have a way to flush away privy waste as it accumulated. JMA contacted the Department of Public Infrastructure and was advised that no information pertaining to underground sewage systems in this area was available.

As there is a possibility that each house included a privy that may have been replaced by indoor flushing toilets at a later date, intact privy features may contain household-related archeological assemblages that began to accumulate when a privy became disused following the introduction of a flush toilet to the dwelling. In addition, each house may have also included a well or rainwater collection cistern prior to the introduction of municipal water service. These features could have also accumulated household wastes following the introduction of municipal water service. As such, the area encompassed by the former company houses of the Acushnet Mills, especially the backyard areas where shaft features (privies, wells, cisterns) would most likely have been located, is considered to be archeologically-sensitive.

Various architectural surveys of New Bedford have identified historic mill structures throughout the city; more specifically, these studies identified several of the standing buildings associated with the Hathaway and Dartmouth Mills sites, both mills located wholly within the Study Area (MHC 1977, 1981; Office of Public Archaeology 1988; Heath 2005; New Bedford Economic Development Council 2008; see Table 3, above). Table 3 lists twenty-five (25) historic structures that are located within the Study Area, as listed by the Massachusetts Historical Commission. Of these, twenty-three (23) are mill buildings, with twenty-two (22) associated with the Hathaway Mills, and the other mill building associated with the Dartmouth Mills. The remaining two structures listed by the MHC are both former mill office buildings: one located at 97 Cove Street, which served the Hathaway Mills and is currently occupied by Hawthorn Medical Associates (Photograph 8), and another located at 460 South Front Street, which served the Acushnet Mills (repurposed as a meeting hall for the "United Social Club" and currently unoccupied; Photograph 47). Of these twenty-five total identified structures, none are slated for demolition according to the currently proposed project plans. In addition to these structures, eighteen (18) detached dwellings dating to the late nineteenth/early twentieth century are located within the Study Area. Seventeen of the

dwellings front along South Front Street, with the last fronting on Blackmer Street. A private social club (Young Cape Verdean Athletic Association) occupies an earlier structure as well, fronting on South Front Street. None of these twenty-six (26) additional structures are slated for demolition under the various Project alternatives under consideration. All other remaining structures located within the Study Area are more recent in construction and are mostly associated with the local fishing and seafood industry. A notable exception is a radio mast, located within the area formerly occupied by the Potomska Mills. Both the radio mast and an adjacent sheet-metal-clad structure are of more recent construction as well; current project plans call for the demolition of the radio tower and the nearby structure.

3.3 PRIOR GROUND DISTURBANCE

As previously discussed, most areas within the Study Area have been subjected to some degree of disturbance through nineteenth and twentieth century activities that included grading, filling, and the construction of large industrial buildings. In addition to disturbance from these activities, much of the area bordering the river shoreline has been filled to create land above grade to the pre-1870s shoreline. As a result, the Study Area contains little intact soil stratigraphy that would predate the intensive construction of any mill sites and other structures within the Study Area.

4.0 CONCLUSIONS AND RECOMMENDATIONS

One previously recorded historic-period archeological site, the Potamska Mills (MHC No. NBE-HA-08), is located within the Study Area. Three additional historic sites are located within one kilometer of the Study Area. No prehistoric archeological sites have been recorded within one kilometer of the Study Area. There are no previously identified National Register of Historic Places (NRHP)-listed/properties located within or immediately adjacent to the Study Area.

Period maps depict four textile mill sites (the Potomska, Acushnet, Hathaway, and Dartmouth Mills) dating from the late nineteenth into the early-twentieth centuries within the Study Area. No above ground remnants of the structures that comprise the Potamska and Acushnet mills are extant. Most of the structures that comprised the Hathaway and Dartmouth mills are extant. Historic cartography also indicates that at least twenty-nine residential structures were once located within the Study Area but were subsequently demolished. Twenty-three of these were company housing associated with the Acushnet Mills. The locations of these residences and their associated yard areas constitute, in JMA's opinion, an area of archeological sensitivity.

A final Project configuration has not yet been selected. Depending upon the final configuration, demolition of some existing relatively modern structures may be required. These include a small structure on the east side of South Front Street; a small A-frame structure originally constructed to support shipbuilding operations, and a small shack, both located at the boatyard on the north side of Gifford Street; and a radio tower and small sheet-metal support building located northeast of the intersection of South Front and Blackmer Streets. Preliminary evaluation indicates that none of these structures possess historic significance.

In the opinion of JMA, no additional cultural resources background research or archeological sub-surface investigation is necessary in the upland portions of the Study Area. Although archeological remnants (such as buildings foundations) of both the Potomska and Acushnet Mills may exist within the Study Area (MHC site forms were prepared on the basis of documentary research only) the demolition of the mill buildings in the 1930s removed any critical features and data associated with the former textile mills that may have been used for evaluating the sites for eligibility for listing on the National Register of Historic Places (NRHP). In particular, the central portion of the Study Area containing the site of the no longer extant Potamska Mills (see Figure 7) has been previously evaluated (JMA 2010). JMA concluded that no additional cultural resources background research or archeological sub-surface investigation is necessary in the upland portions of that area. On July 6, 2010 the MHC concurred with this conclusion (Appendix II).

As was determined for the Potomska Mills, any archeological remains of the Acushnet Mills would provide little in the way of important information relating to the history of either mill, or cotton textile manufacturing in general, that cannot be better obtained from non-archeological sources. Additionally, the extensive layout and building activities related to the original construction of the Acushnet Mills probably impacted, if not entirely disturbed/removed, any archeological deposits and features related to previous land use, including any Native American occupation.

In the event that Project-related construction activities include grading or excavation more than 12 inches below present ground surface within the area of the former Acushnet Mills company housing (see Figures 10C and 11), JMA recommends a Phase 1B archeological survey of that area to test for the presence of intact archeological features and deposits associated with the former dwellings. Specifically, JMA further recommends that such testing consist of remote sensing (i.e., ground penetrating radar) to more efficiently determine the presence of archeological features (building footprints, privy vaults, wells, and/or cisterns) rather than archeological test excavations. Ground disturbance of less than 12 inches is highly unlikely to affect any archeological remains that may be present.

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FIGURES

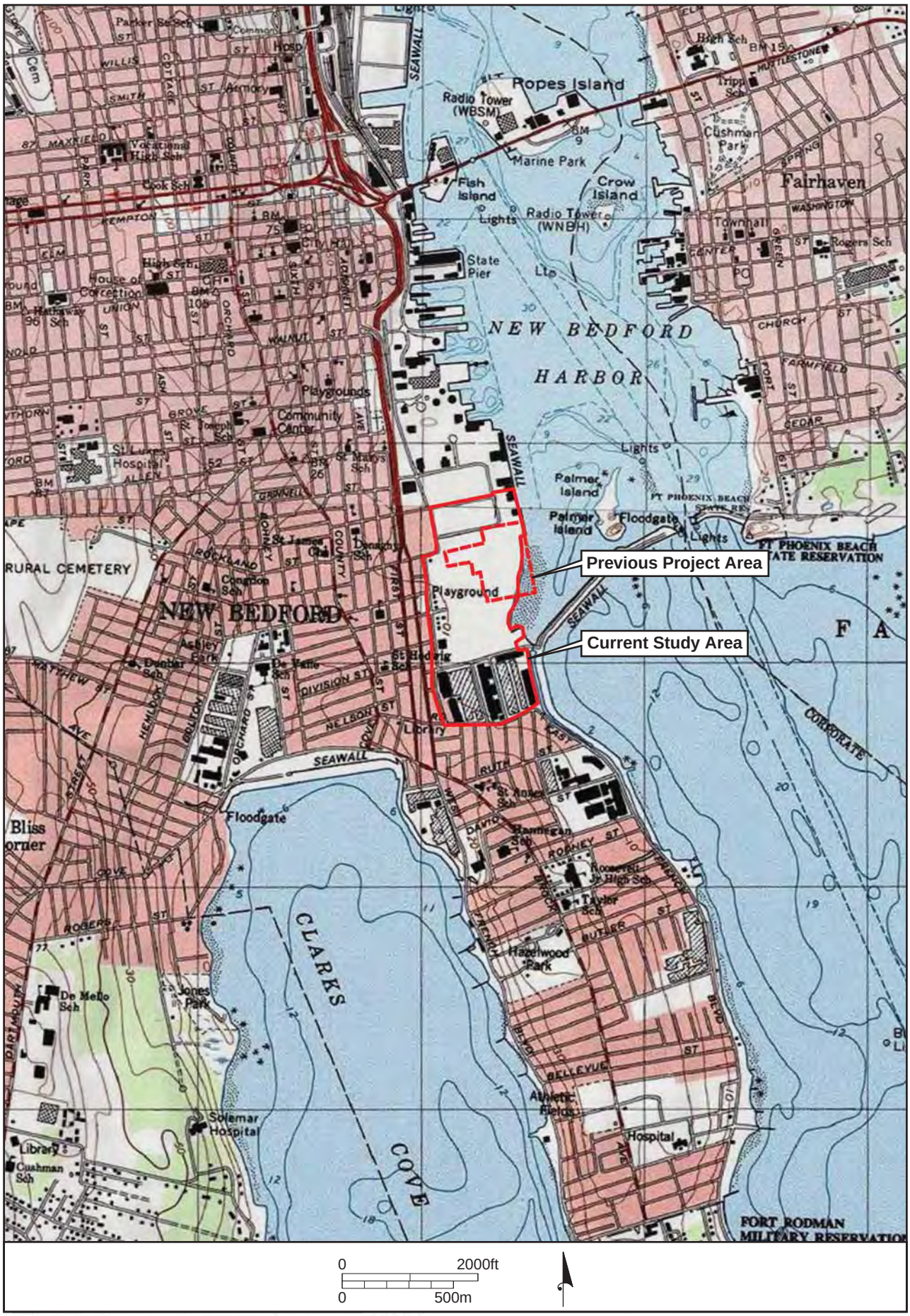


Figure 1. Detail of the *New Bedford North, M.A.* and *New Bedford South, M.A.* (USGS) 7.5-minute topographic quadrangles showing the location of the current Study Area, as well as the previous Project Area (JMA June 2010).

Figure 2. Aerial photography view (2009) depicting the location of the current Study Area, as well as the previous Project Area (JMA June 2010), and locations and angles of photographs referenced in the report.

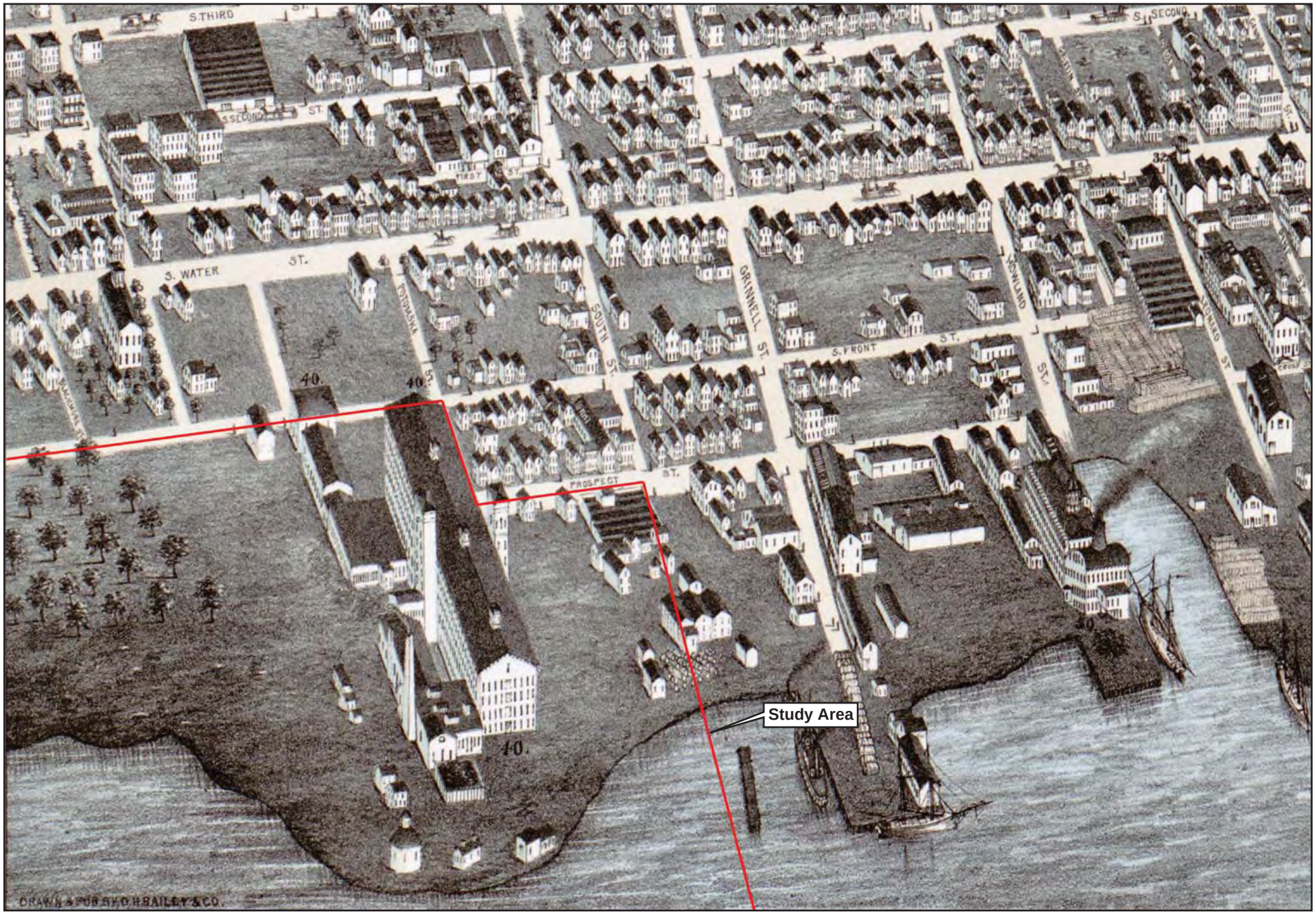


Figure 3. Detail from an illustrated aerial view of New Bedford, Massachusetts, 1876, showing the northern portion of the Study Area. From *View of the City of New Bedford, Mass*. Drawn and published by D. H. Bailey and Company.

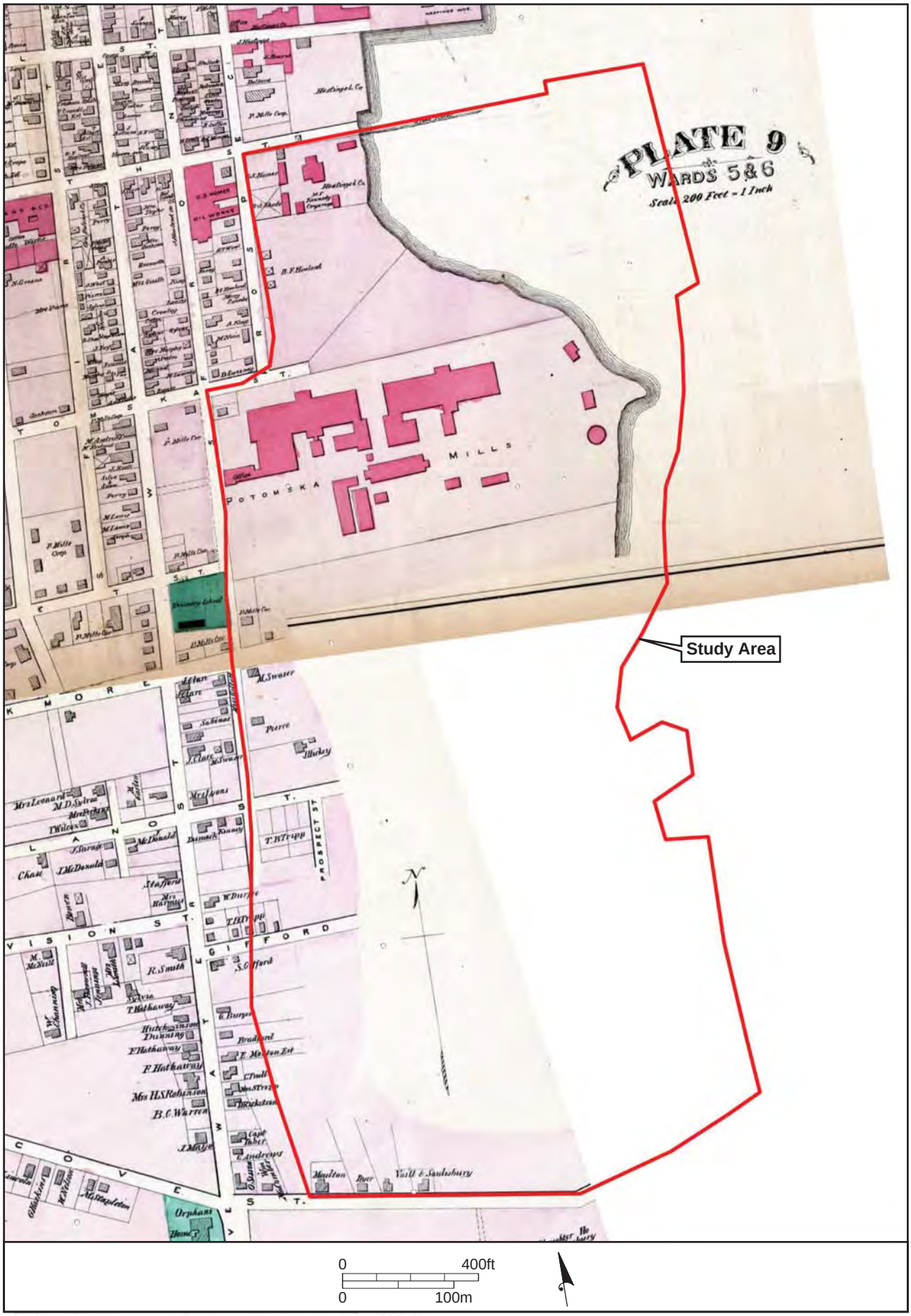


Figure 4. Detail of the1881 *Atlas of New Bedford City, Massachusetts*, showing the Study Area.

Figure 5A. Detail of the 1888 Sanborn *Insurance Maps of New Bedford and Fairhaven, Massachusetts*, showing structures in the northern half of the Study Area.

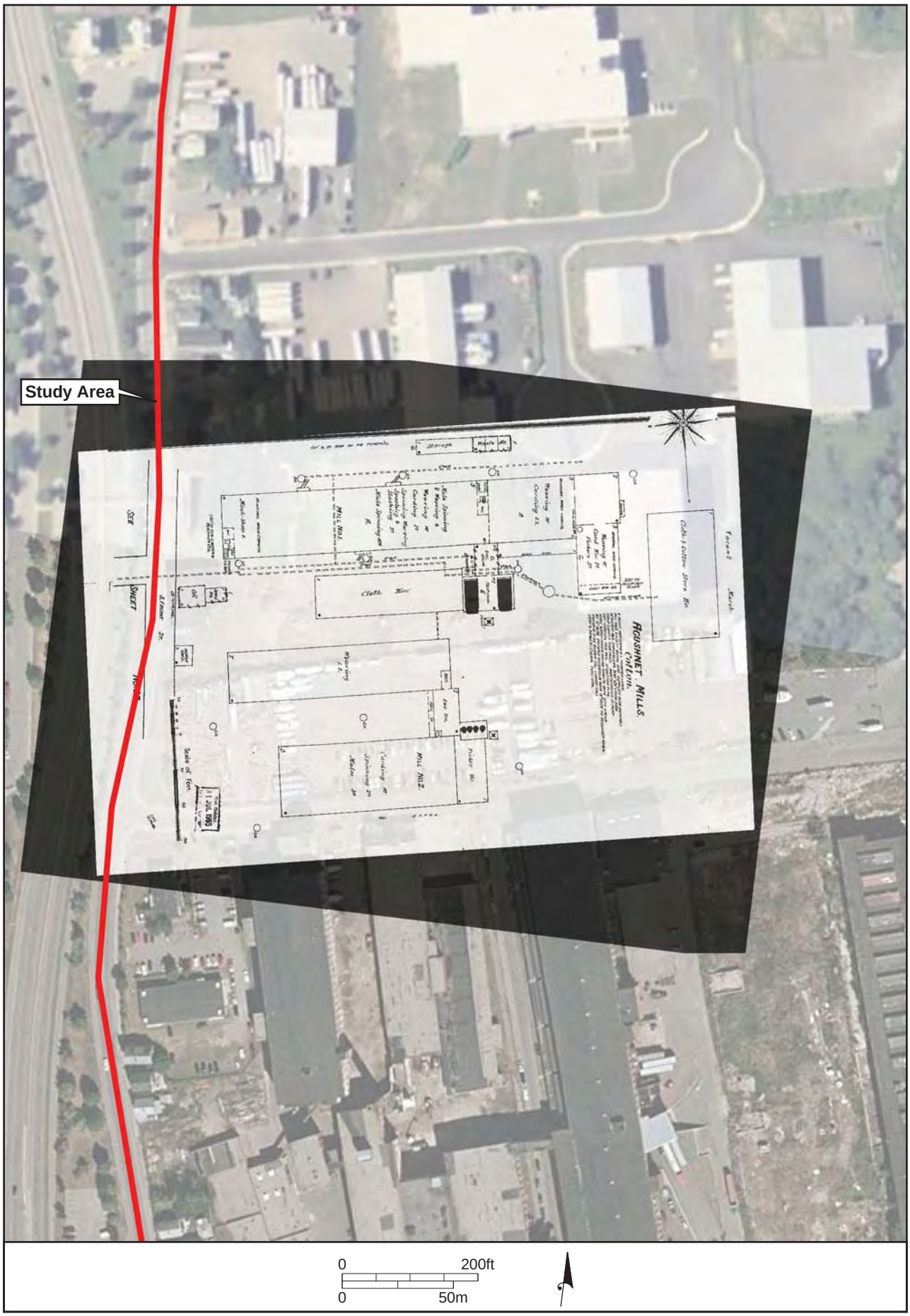


Figure 5B. Detail of the 1888 Sanborn *Insurance Maps of New Bedford and Fairhaven, Massachusetts*, showing structures in the southern half of the Study Area.

Figure 6A. Detail of the 1893 Sanborn *Insurance Maps of New Bedford and Fairhaven, Massachusetts* (Sheet 46), showing structures in the northern portion of the Study Area.

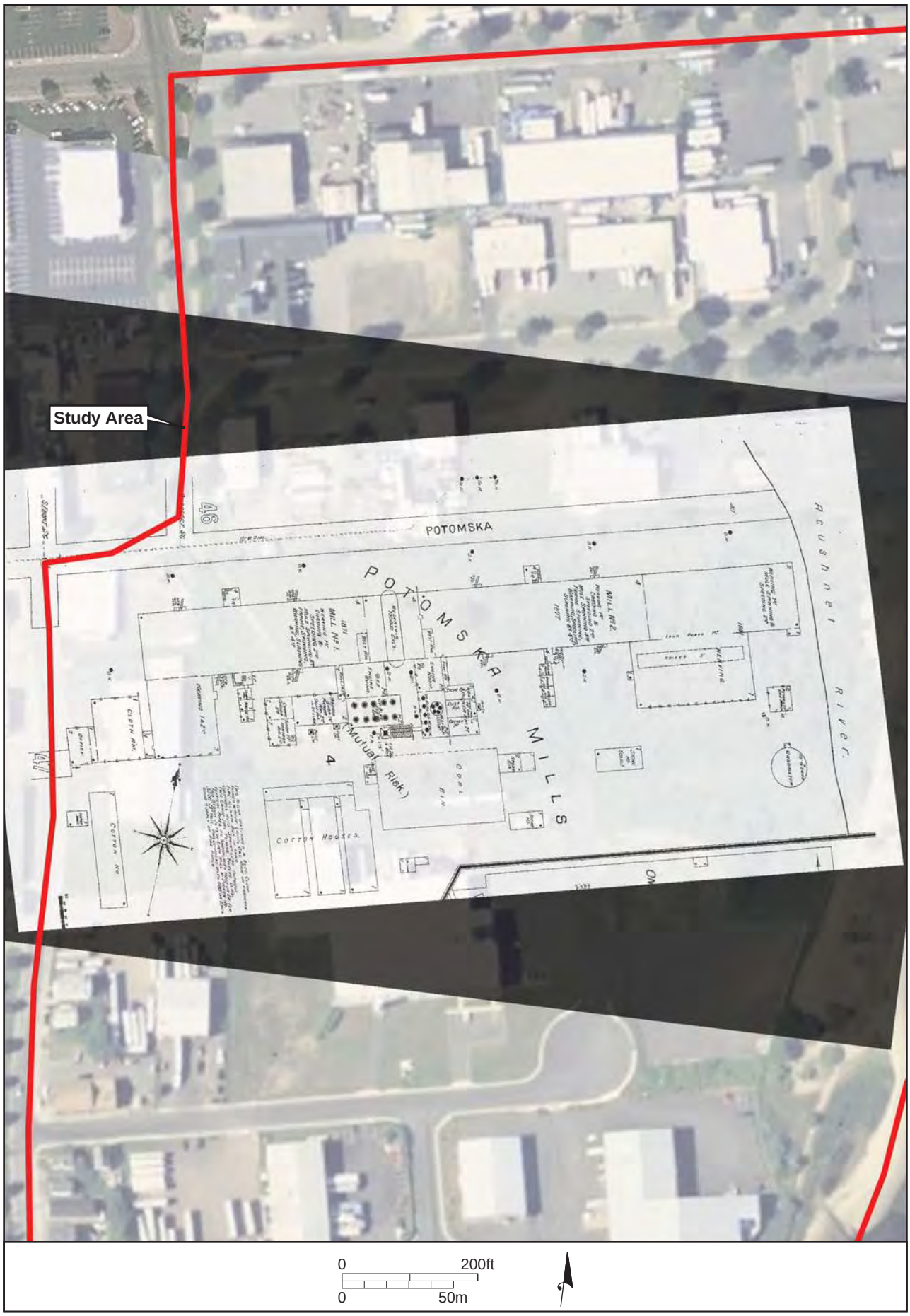


Figure 6B. Detail of the 1893 Sanborn *Insurance Maps of New Bedford and Fairhaven, Massachusetts* (Sheet 52), showing structures in the northern portion of the Study Area.

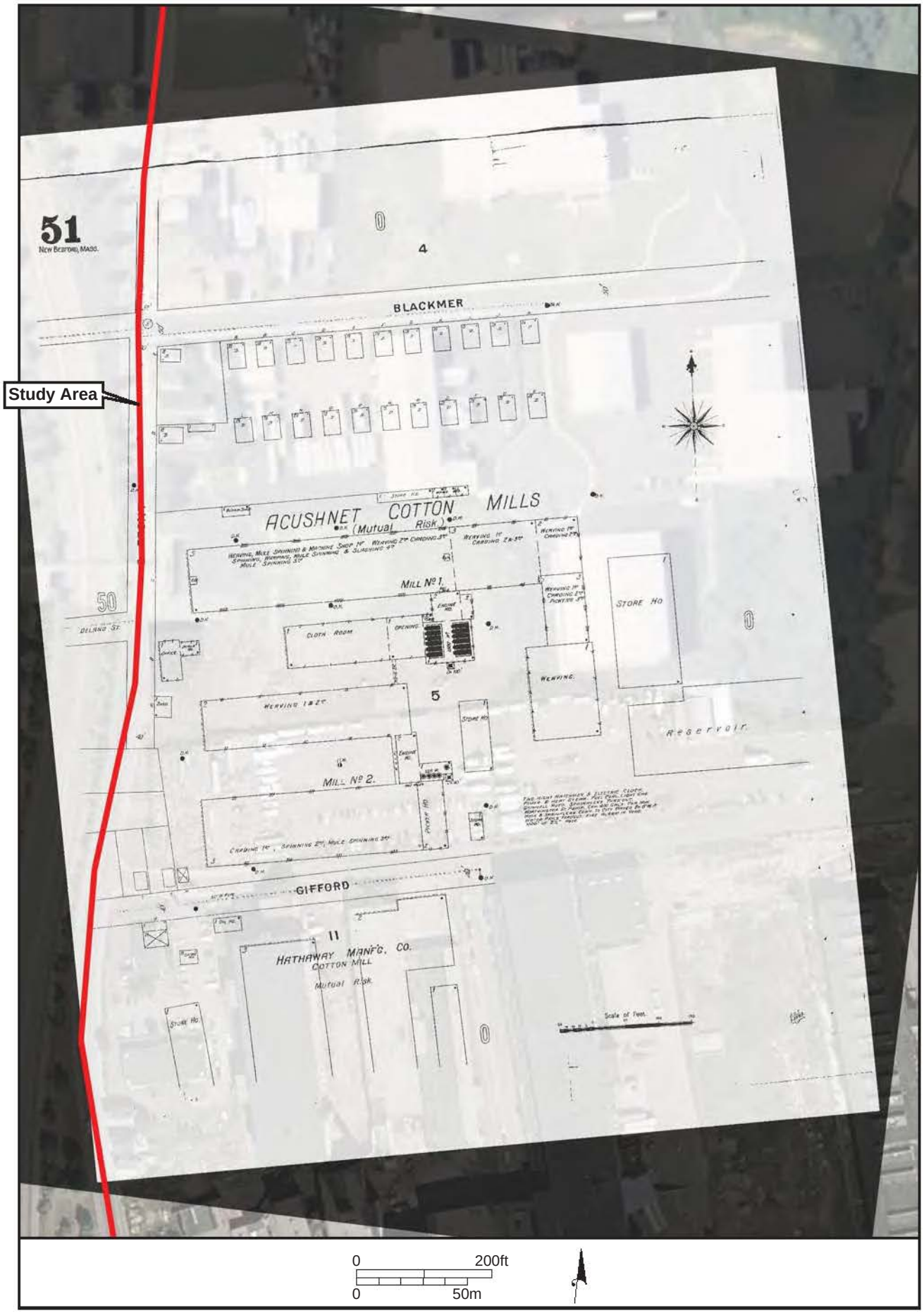


Figure 6C. Detail of the 1893 Sanborn *Insurance Maps of New Bedford and Fairhaven, Massachusetts* (Sheet 51), showing structures in the southern portion of the Study Area.

Figure 7. Detail of the 1895 *New Topographical Atlas of Surveys, Bristol County, Massachusetts*, showing the Study Area.

Figure 8A. Detail of the 1906 Sanborn *Insurance Maps of New Bedford and Fairhaven, Massachusetts* (Sheet 72), showing structures in the northern portion of the Study Area.

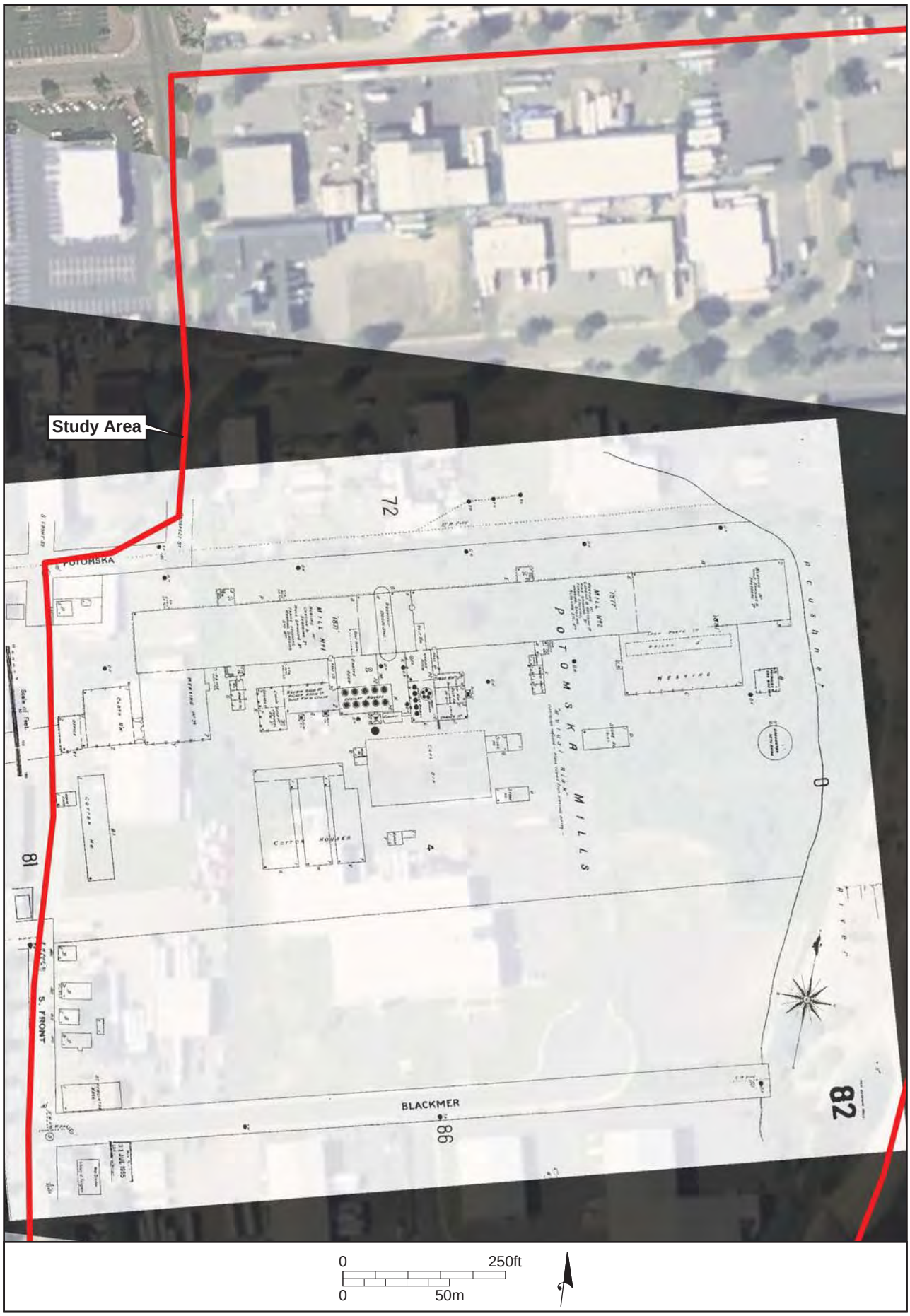


Figure 8B. Detail of the 1906 Sanborn *Insurance Maps of New Bedford and Fairhaven, Massachusetts* (Sheet 82), showing structures in the northern portion of the Study Area.

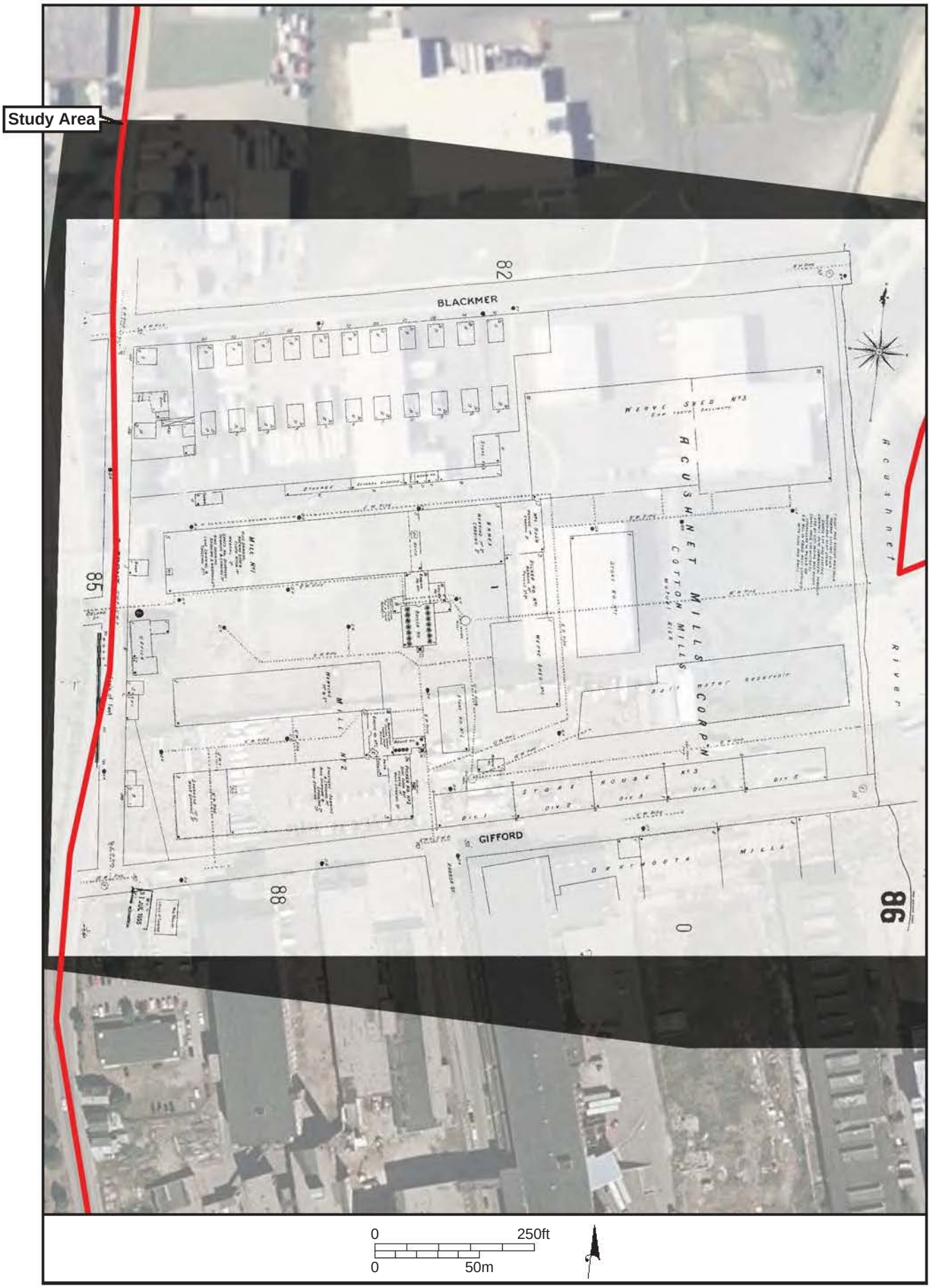


Figure 8C. Detail of the 1906 Sanborn *Insurance Maps of New Bedford and Fairhaven, Massachusetts* (Sheet 86), showing structures in the southern portion of the Study Area.

Figure 8D. Detail of the 1906 Sanborn *Insurance Maps of New Bedford and Fairhaven, Massachusetts* (Sheet 88), showing structures in the southern portion of the Study Area.

Figure 9A. Detail of the 1911 *Atlas of the City of New Bedford Massachusetts*, showing the northern portion of the Study Area.

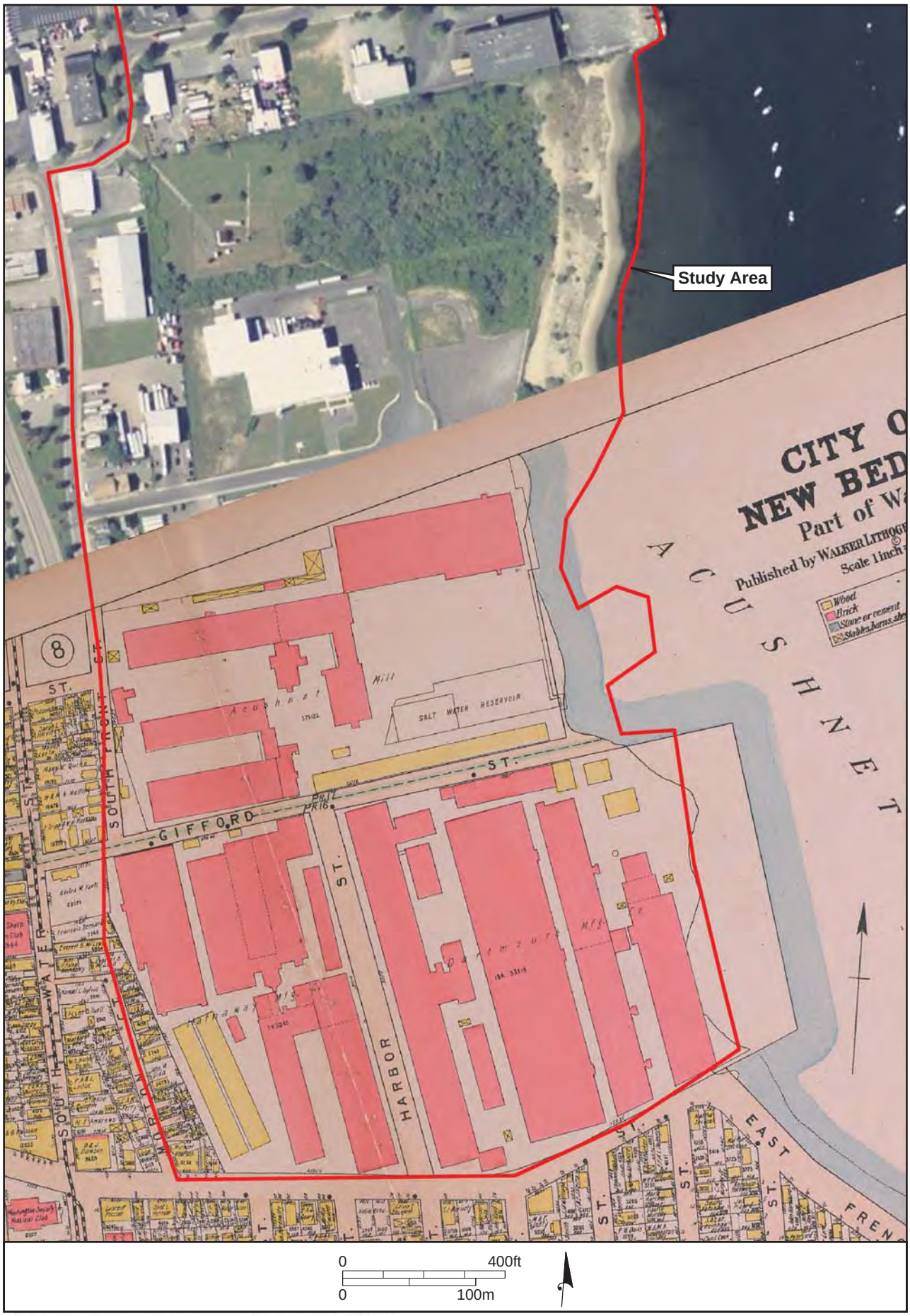


Figure 9B. Detail of the 1911 *Atlas of the City of New Bedford Massachusetts*, showing the southern portion of the Study Area.

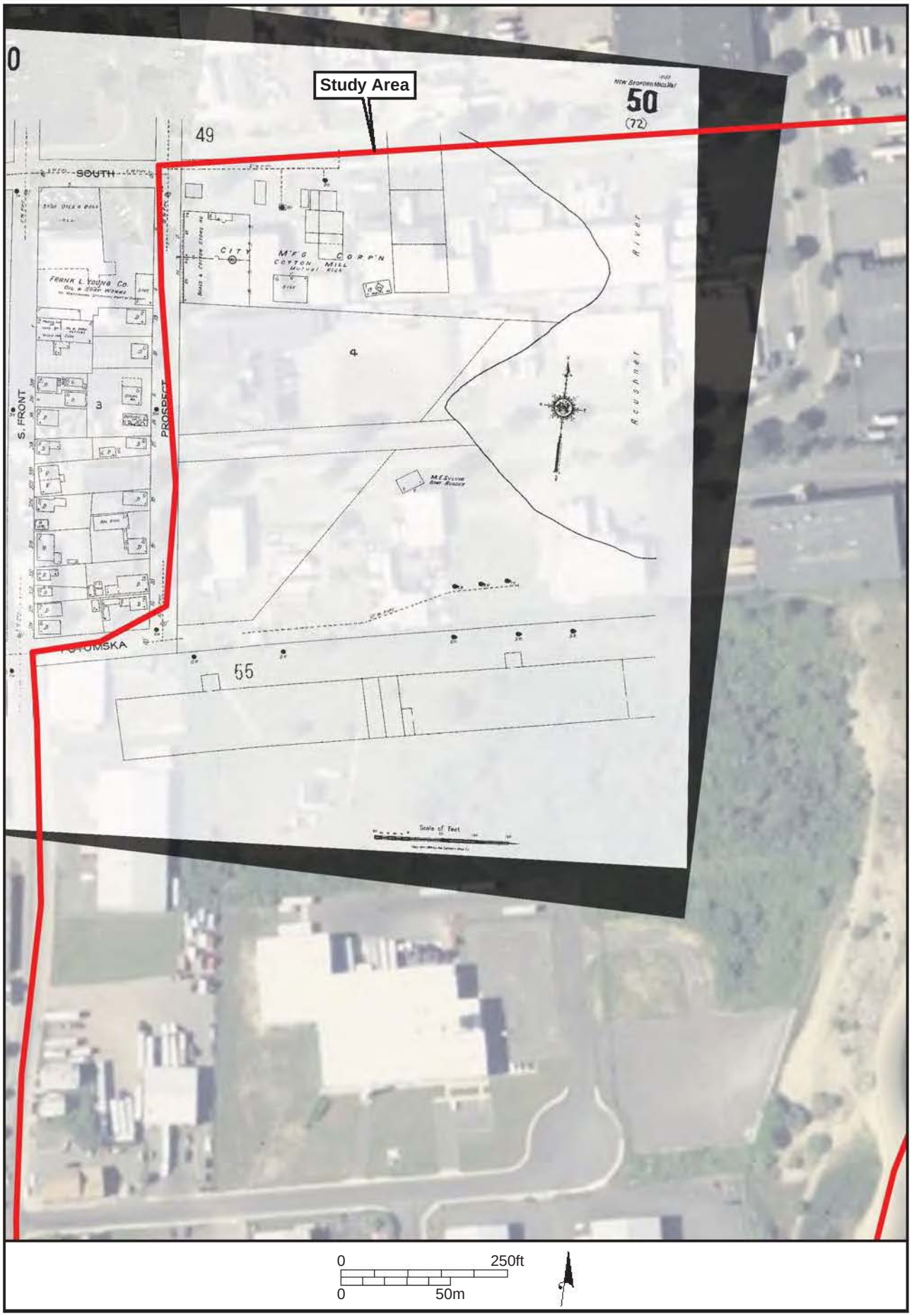


Figure 10A. Detail of the 1924 Sanborn *Insurance Maps of New Bedford and Fairhaven, Massachusetts* (Sheet 50), showing structures in the northern portion of the Study Area.

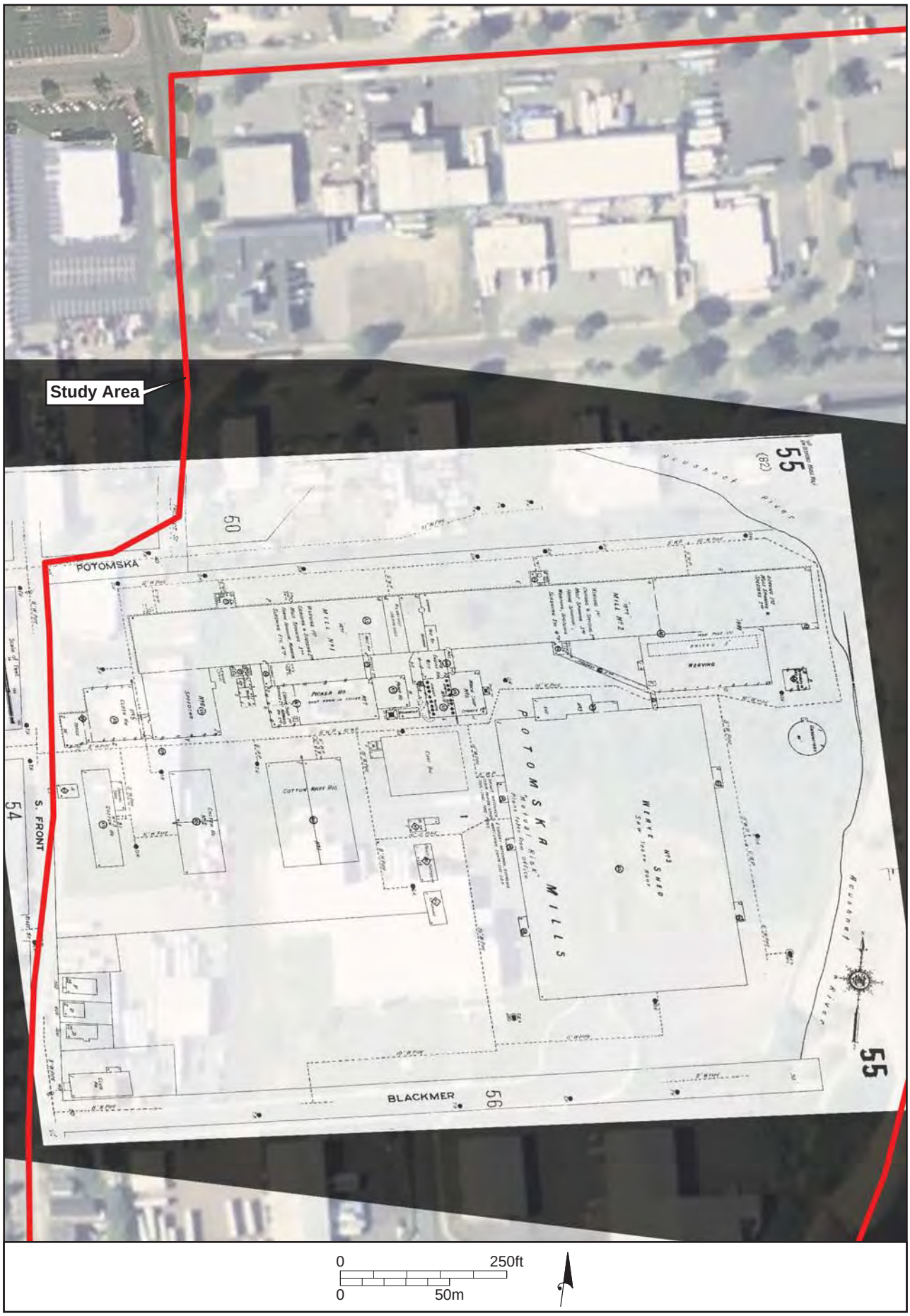


Figure 10B. Detail of the 1924 Sanborn *Insurance Maps of New Bedford and Fairhaven, Massachusetts* (Sheet 55), showing structures in the southern portion of the Study Area.

Figure 10C. Detail of the 1924 Sanborn *Insurance Maps of New Bedford and Fairhaven, Massachusetts* (Sheet 56), showing structures in the southern portion of the Study Area.

Figure 10D. Detail of the 1924 Sanborn *Insurance Maps of New Bedford and Fairhaven, Massachusetts* (Sheet 60), showing structures in the southern portion of the Study Area.

Figure 10E. Detail of the 1924 Sanborn *Insurance Maps of New Bedford and Fairhaven, Massachusetts* (Sheet 61), showing structures in the southern portion of the Study Area

Figure 11. Aerial photography view (2009) depicting the location of the current Study Area, as well as the previous Project Area (JMA June 2010), and location of archeologically sensitive area.

PHOTOGRAPHS

Photograph 1. Southern elevation of a former spinning mill building of the Dartmouth Manufacturing Company. View to the northwest.

Photograph 2. Southern elevation of a former "weaving shed" building of the Dartmouth Manufacturing Company. View to the northwest.

Photograph 3. Partial view of the southern elevation of a former spinning mill of the Dartmouth Manufacturing Company and an adjoining former office building of the company. View to the northeast.

Photograph 4. Partial view of the southern elevation of a former spinning mill building of the Dartmouth Manufacturing Company and its adjoining clock tower. View to the northwest.

Photograph 5. View along Harbor Street between separate spinning mill buildings of the Dartmouth Manufacturing Company (to the right) and the Hathaway Manufacturing Company (to the left). View to the north.

Photograph 6. Partial view of the southern elevation of a former spinning mill building of the Hathaway Manufacturing Company (currently occupied by New England Demolition & Salvage), with a former weaving mill building in the background. View to the northwest.

Photograph 7. An additional partial view of the southern elevation of a former spinning mill building of Hathaway Manufacturing Company, with a former spinning mill building of the Dartmouth Manufacturing Company and its adjoining clock tower in the background. View to the northeast.

Photograph 8. Mixed-use office building fronting on Cove Street, currently occupied by Hawthorn Medical Associates. View to the northeast.

Photograph 9. Multi-family detached dwellings fronting on Gifford Street/Morton Court. View to the northeast.

Photograph 10. Single- and multi-family detached dwellings fronting on Gifford Street/Morton Court. View to the southeast.

Photograph 11. View of open lots between residential dwellings fronting on Morton Court, with former mill buildings associated with the Hathaway Manufacturing Company in the background, view to the east.

Photograph 12. An additional view of single- and multi-family detached dwellings fronting on Gifford Street/Morton Court. View to the southeast.

Photograph 13. Single-family detached dwellings fronting on Gifford Street. View to the southeast.

Photograph 14. Mixed-use office and treatment services building fronting on Gifford Street. View to the north.

Photograph 15. View of open marginal lot at the corner of Gifford Street and Front Street. View to the north.

Photograph 16. Oblique view of former buildings of the Hathaway Manufacturing Company, bordering on Gifford Street. View to the southeast.

Photograph 17. View of salvaged-brick storage yard. View to the northeast.

Photograph 18. Northern elevations of former spinning and weaving mill buildings of the Hathaway Manufacturing Company. View to the southeast.

Photograph 19. Additional view of northern elevations of former spinning and weaving mill buildings of the Hathaway Manufacturing Company. View to the southwest.

Photograph 20. View of former spinning and weaving mill buildings of the Hathaway Manufacturing Company (to left, right), with smokestack visible in the background. Open space in between the buildings once occupied by a now-razed mill building. View to the south.

Photograph 21. View of vacant lot, once occupied by mill buildings associated with the Hathaway Manufacturing Company. View to the southwest.

Photograph 22. View along Harbor Street between separate spinning mill buildings of the Dartmouth Manufacturing Company (to the left) and the Hathaway Manufacturing Company (to the right). View to the south.

Photograph 23. Northern elevations of former spinning mill buildings of the Dartmouth Manufacturing Company. View to the southeast.

Photograph 24. View of Bayline, Inc. boatyard lot, fronting on Gifford Street. View to the northwest.

Photograph 25. Western elevation of a former weaving shed building of the Dartmouth Manufacturing Company. View to the southeast.

Photograph 26. Paved extension of the Bayline, Inc. boatyard. View to the northwest.

Photograph 27. Eastern elevation of a former weaving shed building of the Dartmouth Manufacturing Company. View to the southwest.

Photograph 28. Shoreline of the Acushnet River, looking towards the eastern margin of the site of the former Potomska Mills site. View to the north.

Photograph 29. Overview of storm barrier channel, access bridge, and paved extension of boatyard in background. View to the northwest.

Photograph 30. Overview of eastern end of Gifford Street, with the northern ends of former mill buildings of the Dartmouth Manufacturing Company visible to the left. View to the west.

Photograph 31. Overview of eastern elevation of former weaving shed building of the Dartmouth Manufacturing Company, with storm barrier drainage channel visible in the foreground. View to the west.

Photograph 32. Oblique overview of eastern elevation of former spinning mill building of the Dartmouth Manufacturing Company, with storm barrier and drainage channel visible in the foreground. View to the south.

Photograph 33. Overview of North Coast Seafoods plant and surrounding open space, with truck turning circle in foreground. View to the northwest.

Photograph 34. Overview of Sea Gold Seafood Products plant and surrounding open space. View to the west.

Photograph 35. Overview of truck turning circle and surrounding open space. View to the north.

Photograph 36. Overview of parking area between Sea Gold Seafood Products plant and Fleet Fisheries plant. View to the south.

Photograph 37. North Coast Seafoods plant, fronting on Blackmer Street. View to the northeast.

Photograph 38. Overview of open space adjacent to the southwest corner of the North Coast Seafoods place, fronting on Blackmer Street. View to the northwest.

Photograph 39. Overview of truck loading and parking area adjacent to NWD, Inc. warehouse. View to the north.

Photograph 40. Tractor-trailer parking area fronting on Blackmer Street. View to the southwest.

Photograph 41. Additional view of tractor trailer parking fronting on Blackmer Street. View to the southeast.

Photograph 42. Single-family detached dwelling fronting on Blackmer Street. View to the southwest.

Photograph 43. Single-family detached dwellings fronting on South Front Street. View to the east.

Photograph 44. Overview of baseball field, accessed off of South Front Street. View to the southeast.

Photograph 45. Overview of single-family detached dwellings and a garage fronting on South Front Street. View to the northwest.

Photograph 46. Overview of park area fronting on South Front Street, adjacent to baseball field. View to the north.

Photograph 47. Former "United Social Club" building, fronting on South Front Street. View to the northwest.

Photograph 48. Open lot adjacent to United Social Club building, with baseball field in background. View to the east.

Photograph 49. Young Cape Verdean Athletic Association, Inc. building, fronting on South Front Street. View to the southeast.

Photograph 50. Single- and multi-family detached dwellings fronting on South Front Street. View to the northeast.

Photograph 51. Overview of open lot fronting on South Front Street. View to the northeast.

Photograph 52. Additional overview of open lot fronting on South Front Street. View to the southeast.

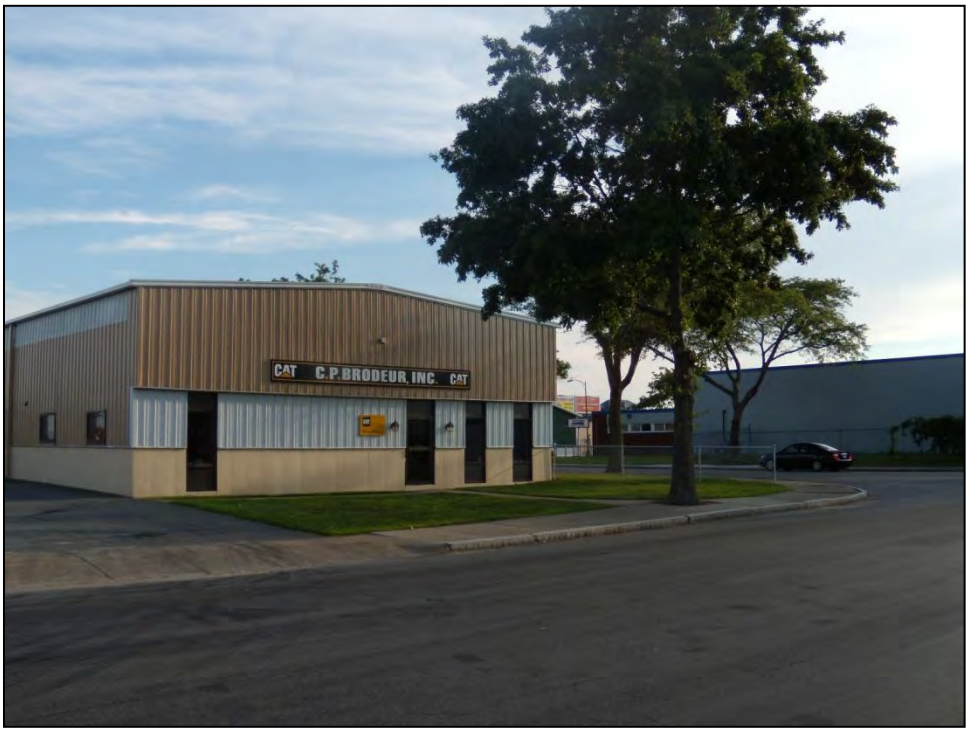
Photograph 53. Seatrade International building and surrounding fronting on South Front Street. View to the northeast.

Photograph 54. Cablos Seafood building, at the corner of South Front Street and Potomska Street. View to the southwest.

Photograph 55. Overview of open space and fenced storage area along Potomska Street. View to the east.

Photograph 56. Overview of intersection between Potomska and Wright Streets, with M. F. Foley building in background. View to the northeast.

Photograph 57. Overview of fenced parking area fronting on Wright Street. View to the northeast.



Photograph 58. C. P. Brodeur, Inc./CAT building at the intersection of Potomska and Wright Streets. View to the southwest.

Photograph 59. Overview of parking area fronting on Wright Street. View to the southeast.

Photograph 60. Overview of fenced parking area adjacent to Fairside Shellfish buildings, fronting on Wright Street. View to the north.

Photograph 61. Warehouse located along Wright Street. View to the southeast.

Photograph 62. Overview of additional fenced parking area adjacent to Oceans Alive Scallops Corporation building, fronting on Wright and Hassey Streets. View to the north.

Photograph 63. Overview of fenced parking area adjacent to M. F. Foley building, fronting on Wright Street. View to the northwest.

Photograph 64. Overview of fenced area fronting on Wright Street. View to the south.

Photograph 65. Overview of additional fenced parking area adjacent to Oceans Alive Scallops Corporation building, fronting on Wright Street. View to the northeast.

Photograph 66. Overview of Shuster Corporation building at the corner of Wright and Hassey Streets. View to the southeast.

Photograph 67. Overview of parking area adjacent to the Shuster Corporation building at the corner of Wright and Hassey Streets. View to the southeast.

Photograph 68. Eastman Fisheries building and parking area fronting on Hassey Street. View to the east.

Photograph 69. Overview of parking area adjacent to the Eastman Fisheries and Northern Wind plant. View to the northeast.

Photograph 70. Overview of Hassey Street, with Northern Wind plant to the left. View to the south.

Photograph 71. Overview of intersection of Hassey Street and South Street. View to southwest.

Photograph 72. Overview of fenced area at intersection of Hassey Street and South Street. View to the southeast.

Photograph 73. Seatrade International building, fronting on South Street. View to the south.

Photograph 74. Parking area adjacent to Seatrade International building and Mariner Seafood Marketing building, fronting on South Street. View to the south.

Photograph 75. Mariner Seafood Marketing building and fenced parking area fronting on South Street. View to the south.

Photograph 76. Mariner Seafood Marketing building and fenced parking area fronting on South Street. View to the southwest.

Photograph 77. Fenced storage area adjacent to Mariner Seafood Marketing building fronting on South Street. View to the southeast.

Photograph 78. Hercules/LCR marine supply building at the corner of South Street and MacArthur Drive. View to the southeast.

Photograph 79. M. F. Foley building along MacArthur Drive. View to the southeast.

APPENDIX I:

NRCS Soil Report for the Project Area

United States Department of Agriculture

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Bristol County, Massachusetts, Southern Part

South Terminal Marine Infrastructure Park - September 2012

September 13, 2012

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://soils.usda.gov/sqi/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means

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Contents

Preface.....2
How Soil Surveys Are Made.....5
Soil Map.....7
Soil Map.....8
Legend.....9
Map Unit Legend.....10
Map Unit Descriptions.....10
Bristol County, Massachusetts, Southern Part.....12
602—Urban land.....12
607—Water, saline.....12
651—Udorthents, smoothed.....12
References.....14

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Units

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features

- Gully
- Short Steep Slope
- Other

Political Features

- Cities

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:5,690 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 19N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Bristol County, Massachusetts, Southern Part
Survey Area Data: Version 6, Jul 23, 2010

Date(s) aerial images were photographed: 7/25/2003

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Bristol County, Massachusetts, Southern Part (MA603)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
602	Urban land	67.7	65.9%
607	Water, saline	1.9	1.8%
651	Udorthents, smoothed	33.1	32.2%
Totals for Area of Interest		**102.6**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If

intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Bristol County, Massachusetts, Southern Part

602—Urban land

Map Unit Setting
Frost-free period: 120 to 200 days

Map Unit Composition
Urban land: 85 percent
Minor components: 15 percent

Description of Urban Land

Setting
Parent material: Excavated and filled land

Minor Components

Udorthents
Percent of map unit: 15 percent

607—Water, saline

Map Unit Setting
Frost-free period: 120 to 200 days

Map Unit Composition
Water, saline: 95 percent
Minor components: 5 percent

Minor Components

Westbrook
Percent of map unit: 5 percent
Landform: Marshes

651—Udorthents, smoothed

Map Unit Setting
Elevation: 0 to 3,000 feet
Mean annual precipitation: 45 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 145 to 240 days

Map Unit Composition
Udorthents, smoothed, and similar soils: 100 percent

Description of Udorthents, Smoothed

Setting

Parent material: Made land over loose sandy and gravelly glaciofluvial deposits and/or firm coarse-loamy basal till derived from granite and gneiss

Properties and qualities

Slope: 0 to 15 percent
Depth to restrictive feature: More than 80 inches
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to very high (0.06 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Interpretive groups

Land capability (nonirrigated): 6s

Typical profile

0 to 6 inches: Variable
6 to 60 inches: Variable

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APPENDIX II:

MHC Correspondence

The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

July 6, 2010

Lois K. Adams
Chief, Grants, Tribal and Municipal Assistance Branch
Office of Ecosystem Protection
US Environmental Protection Agency
5 Post Office Square, Suite 100
Boston, MA 02109-3912

RE: New Bedford Harbor State Enhanced Remedy in New Bedford South Terminal, a/k/a Confined Disposal Facility a/k/a South Terminal Marine Industrial Park Development, New Bedford, MA. **MHC #RC.48892.**

Dear Ms. Adams:

Staff of the Massachusetts Historical Commission, office of the State Historic Preservation Officer, have reviewed the information submitted by APEX Companies LLC for the project referenced above, received by MHC on June 23, 2010.

The information includes the report prepared by John Milner Associates, Inc. (JMA), *Cultural Resources Background Study and Archaeological Sensitivity Assessment, South Terminal Marine Infrastructure Park (Upland Portion), City of New Bedford, Bristol County, Massachusetts.* MHC concurs with the findings and recommendations of JMA Inc.'s report that no further identification effort for historic properties is recommended for the upland portion of the project.

The summary memorandum prepared by Dolan Research Inc. (DRI) does not contain sufficient information to evaluate the identification effort for significant historic properties in the underwater portion of the area of potential effect.

MHC did not have the opportunity to review the research design and methodology for the underwater archaeological survey conducted by DRI, that the MHC requested on June 4, 2010. Prior consultation was also one condition of the provisional special use permit issued by the Massachusetts Board of Underwater Archaeological Resources (BUAR) to DRI.

MHC again requests the opportunity to review and comment on an archaeological research design and methodology (RDM) prior to undertaking any further underwater cultural resource survey (36 CFR 800.4). The RDM should be provided to EPA, MHC, BUAR, and other consulting parties such as the THPOs, for concurrent review and comment prior to undertaking further identification or evaluation effort.

The summary memorandum prepared does not assess the area of potential effect to contain ancient and historical period Native American sites. A qualified researcher, with previous relevant experience in Southern New England ancient and historical period Native American archaeology and history, should prepare an archaeological RDM that includes: review and evaluation of previous relevant research of the geology, environment, archaeology, and history; research and evaluation of any documented impacts that may have occurred to assess the likelihood of preserved ancient or historical period Native American sites

220 Morrissey Boulevard, Boston, Massachusetts 02125
(617) 727-8470 • Fax: (617) 727-5128
www.sec.state.ma.us/mhc

to be present in the area of potential effect; and, review and application of any relevant and reliable geotechnical survey data already collected. If the area of potential effect is archaeologically sensitive, the researcher should propose a suitable methodology to locate and identify ancient and historical period deposits and features, such as by systematic marine core sampling and evaluation of the results. The researcher should propose to report the results in a technical report that meets the Secretary of the Interior's Standards for Archeology and Historic Preservation (48 Fed. Reg. 190) and 312 CMR 2.

One likely abandoned or wrecked vessel was found, and DRI recommends further cultural resource assessment of that potentially significant feature. The location of this feature is not indicated on a plan in relation to the area of potential effect. If the vessel is located in the area of potential effect, and cannot be avoided and protected adequately with an avoidance and protection plan, then a more detailed archaeological RDM to provide sufficient information to apply the National Register Criteria for Evaluation (36 CFR Part 60) should be prepared for review by the EPA and the consulting parties, prior to implementing the proposed archaeological evaluation effort.

Twenty-nine other magnetic and sonar contacts were made during the survey, and the memorandum indicates that analysis of the results is not yet completed. DRI offered the opinion that the 29 other objects could be "shoreline-related and other debris, natural rock outcroppings, or utility crossings." The details of these 29 other discoveries should be reported with sufficient information to understand their identification and any recommendations for further evaluation.

These comments are offered to assist in compliance with Section 106 of the National Historic Preservation Act of 1966 as amended (36 CFR 800) and the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (48 Fed. Reg. 190(1983)). Please contact Edward L. Bell of my staff if you have any questions.

Sincerely,

Brona Simon

Brona Simon
State Historic Preservation Officer
Executive Director
State Archaeologist
Massachusetts Historical Commission

xc:
New Bedford Harbor Development Commission
Victor T. Mastone, Massachusetts Board of Underwater Archaeological Resources
George Green, Jr., Mashpee Wampanoag Tribe
Bettina Washington, Wampanoag Tribe of Gay Head (Aquinnah)
Jennifer T. Nersesian, NPS New Bedford Whaling NHP
Derek J. Santos, New Bedford Historical Commission
Chet Meyers, APEX Companies, LLC
J. Lee Cox, Jr., Dolan Research Inc.
Joel I. Klein, JMA Inc.
Martin G. Dudek, JMA, Inc.