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Final Determination for the South Terminal Project

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

FINAL DETERMINATION SUMMARY:

After completing consultation with other federal and state agencies, as required by federal and state law, reviewing additional submissions by the Commonwealth, and after careful consideration of the public comments received during the public comment period, EPA has determined that the Commonwealth's proposal to construct a 28.45 acre marine terminal, consisting of a confined disposal facility ("CDF") and 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 ("CAD cells") (collectively, referred to herein as the "South Terminal Project" or the "Project"), is both protective of human health and the environment and meets the substantive requirements of applicable or relevant and appropriate federal environmental standards and, through the Commonwealth's determination, meets applicable or relevant and appropriate state environmental standards, as long as all the conditions set forth in this Final Determination are met. As a result, by this Final Determination, EPA is modifying the State Enhanced Remedy ("State Enhanced Remedy" or "SER"), which is incorporated into the 1998 Record of Decision for the Upper and Lower Harbor at the New Bedford Harbor Superfund Site ("1998 Record of Decision" or "1998 ROD") so that it includes the South Terminal Project.

The Commonwealth of Massachusetts, through the Department of Environmental Protection ("MassDEP"), will continue to be the lead agency for conducting the State Enhanced Remedy work, as modified, and is responsible for securing all funding of the State Enhanced Remedy work, as modified. EPA and other federal, state and local entities will continue to act as supporting regulatory agencies for the State Enhanced Remedy work, as modified.

Portuguese and Spanish translations of this document are available at the New Bedford Public Library, at EPA New England's Record Center and online at www.epa.gov/nbh or http://www.mass.gov/eea/ocean-coastal-management/serth/

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Public Comments and EPA Response to Public Comments

EPA issued a Draft Determination and administrative record for the South Terminal Project on July 16, 2012 and held a 30-day formal comment period from July 16 to August 21, 2012. During that time EPA accepted written comments via mail and email. Additionally, verbal comments were recorded at a formal Public Hearing that followed an informational meeting, both of which were held on July 24, 2012. A transcript of that Public Hearing is included in the Administrative Record along with all the written comments EPA received during the public comment period. EPA specifically sought public comment on EPA's finding under the federal Clean Water Act ("CWA") that the South Terminal Project is the least environmentally damaging practicable alternative; on the actions relating to floodplains; and on two Toxic Substance Control Act (TSCA) risk-based findings concerning the disposal of polychlorinated biphenyls ("PCBs") in CAD cells. For a detailed discussion of these findings and the conditions upon which these findings are based, see Appendix E (Clean Water Act); Appendix L (Floodplains) and Appendices J(1) and J(2) for the TSCA Determinations.

Public Record

EPA considered and responded to all formal comments received during the comment period before issuing this Final Determination. Those responses to comments are contained in a Responsiveness Summary, attached as Appendix Q. The public comments and the Responsiveness Summary have been added to the public administrative record for the South Terminal Project.

Since the issuance of the Draft Determination, the Commonwealth has provided more details about this Project consistent with the requirements of the Draft Determination. In addition some changes to the Project have been made as a result of EPA's review of the Commonwealth's more recent information. Significant documents submitted by the Commonwealth since July 16, 2012, are listed in Table 3.

These documents offer additional details about and some changes to the Project that were not included in the Draft Determination. Information was also submitted to meet conditions set out in the Draft Determination including, among other things, the final site configuration, information about contamination and historic resources on additional properties added to the final site configuration, mitigation measures to protect the Atlantic sturgeon and other fish, changes to areas of wetland mitigation, and alternative sub-tidal rock removal techniques. EPA shared relevant new information with other federal and state agencies while completing its consultation requirements. EPA then reviewed these documents and considered whether the changes are significant enough to require additional public comment. As a result of that review EPA believes that (1) public comments received, other than those from consulting agencies, did not raise issues that would cause EPA to reconsider its findings in the Draft Determination; (2) EPA incorporated relevant new information during discussions with federal and state agencies as it completed its consultation requirements; and (3) the Draft Determination contained adequate information about the fundamental components of these tasks and this information does not significantly change the Project. Therefore, EPA has determined that an additional public comment is not necessary. See page 6 of this Final Determination for a more detailed

discussion of the new information provided and changes made to the Project that was presented in the Draft Determination.

EPA has also received from the Commonwealth the following plans which will not be reviewed as part of this Final Determination: Air Monitoring Plan, Emergency Spill Response Plan, Draft Stormwater Pollution Prevention Plan, Construction Management Plan, Phase IV work plans, Final Underwater Acoustic Modeling Plan, and a Long-Term Monitoring Plan. EPA will review these work plans after the issuance of this Final Determination to ensure the plans are consistent with the Project as described in this Final Determination. These plans will also be reviewed by the Regulatory Agencies (see footnote 7) consistent with their roles as supporting agencies for the State Enhanced Remedy work.

EPA has added the new information provided by the Commonwealth to the administrative record.

The Administrative Record in support of this Final Determination for the South Terminal Project will be available 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 Final Determination At A Glance...

This Final Determination includes the South Terminal Project as part of the State Enhanced Remedy that was approved and integrated into the 1998 Record of Decision for New Bedford Harbor. This document, and its supporting Appendices and Administrative Record, provides the rationale for EPA's determination that, although the South Terminal Project increases the scope and detail of the SER as set forth in the 1998 ROD, it does not fundamentally change the approved SER and 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]

With this document, EPA determines that the South Terminal Project, which consists of constructing a 28.45 acre marine terminal (consisting of 6.91 acres of filled waters (referred to as "the confined disposal facility" or the "CDF") and approximately 21.54 acres of upland area, (including a filled 0.11 acre freshwater wetland and 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, is both protective of human health and the environment and meets the

[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.

substantive requirements of applicable or relevant and appropriate federal environmental standards.[2] EPA also accepts the Commonwealth's determination that the Project meets the applicable or relevant and appropriate state environmental standards. The 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, the comments received during the public comment period, and after completing its consultation requirements with other federal and state agencies. This Final Determination is subject to the conditions set out below beginning on page 20 of this document. Accordingly, the South Terminal Project will benefit from the Section 121(e) permit exclusion.

Why Is EPA Issuing This Final 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. 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[3], 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.[4] As contemplated under the 1996 Proposed Plan and the 1998 Record of Decision ("1998 ROD"), it was left to the Commonwealth to formulate the specific details of the dredging projects and disposal options. With respect to the South Terminal Project, the Commonwealth provided specific details related to the Project through the Commonwealth's submittals which have been incorporated into the Administrative Record. These submittals provide details, including alternatives to, and impacts of the 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

[2] These figures have been slightly revised from those presented in the Draft Determination as a result of a site visit conducted by EPA and the Commonwealth on September 13, 2012 and the revised site configuration as shown in Figure 4 of this Determination.

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

[4] 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").

projects meet CERCLA requirements in order for the proposed Project to benefit from CERCLA's permit exclusion.

After reviewing the Commonwealth's submittals and the public comments received, and after completing its consultation requirements, EPA determined that the 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 Project remains consistent with and does not conflict with the remedy.

The scope and a summary of the Project are presented below.

Scope and Summary of the South Terminal Project

This Final Determination incorporates into the State Enhanced Remedy the location and construction of a shoreline marine terminal, including a 6.91 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.

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[5] and was not within the scope of this Project. The Project's CAD cell 3 will be located within this state-approved 2003 DMMP area. This Final Determination includes 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.[6]

[5] 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. www.mass.gov/czm/dredgereports/2003/feirnb-f.htm

[6] 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 Final Determination.

Remediation of the upland portion of the main terminal adjacent to the Project's 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, most of the main marine terminal, including the remediated portions, will be subject to the conditions set out in a risk-based TSCA Determination which is attached to this Final Determination as Appendix J(1). Ancillary properties and River's End Park shall also be subject to 21E requirements and, if necessary, remediated pursuant to 21E and TSCA; additional TSCA Determinations also may be necessary. Easements/transportation corridors will be paved, maintained and monitored as long as these parcels are used as part of the marine terminal. In addition, currently paved parcels will also be maintained and monitored as long as these parcels are used as part of the marine terminal.

Lead Agency

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

Construction of the Project will be overseen by the Commonwealth, through Massachusetts Department of Environmental Protection, as lead agency for the State Enhanced Remedy with ongoing consultation of the Regulatory Agencies[7] (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 accordance with the State Enhanced Remedy process. EPA will also remain involved in overseeing the Project to ensure it is implemented consistent with this Final Determination. Construction of the 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[8].

Changes to the Project between the Draft and Final Determination

1. Final Site Configuration

The final configuration of the main terminal facility, CDF and ancillary properties is depicted in Figure 4, along with the amount of impacted acreage.[9] EPA required that the final configuration of the New Bedford Marine Commerce Terminal, including all ancillary properties, be finalized as a condition of the

[7] The agencies that comprise the "Regulatory Agencies" and the roles and responsibilities of the Commonwealth and these Regulatory 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.

[8] 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. As of the issuance of this Final Determination, the Commonwealth has not provided a further revised schedule.

[9] This configuration differs slightly from configuration A (Appendix 4a) of the Draft Determination.

Draft Determination before EPA would issue this Final Determination. As of the date of this Final Determination, the Commonwealth owns some but not all of the parcels included in the final configuration; however, the Commonwealth is engaged in negotiations to obtain the necessary property rights to finalize the terminal configuration in Figure 4. (See MassDEP 2012a at 8-9.) Although the Commonwealth does not yet have complete site control, EPA believes it is reasonable to issue this Final Determination based on the Commonwealth's assurance that it is committed to developing the terminal facility on these parcels and has the necessary taking authority to obtain site control.[10] However, to ensure that no harm to the aquatic environment occurs as long as the actual site control is uncertain, EPA is conditioning its final approval by requiring that the Commonwealth demonstrate full site control before it commences any work in water of the U.S. (See also Section 4.4.7 of Appendix E.)

a. Change to Community and Resource Impacts

While the CDF location remains unchanged in the final configuration, the changes made by the Commonwealth with respect to certain parcels included within the Project slightly modifies community impacts. Excluding the Gifford Street boat ramp parcel alleviates access concerns to the ramp; however, the Gifford Street Channel will still be realigned and two new mooring areas created. Reducing the size of the Shuster parcel (Map 31, Parcel 263) alleviates impacts on the existing business on that parcel. Inclusion of the Radio Tower parcel (Map 31, Parcel 234) will require relocation of the radio tower and its appurtenances.

See section regarding Mitigation Measures on page 8 for information about changes to resource impacts.

b. Additional Upland Work

The final site configuration includes several properties that require additional work to prepare them for use. In the absence of 21 E assessments, in consultation with EPA's TSCA program, unpaved portions of parcels identified as easement/transportation corridors will be paved, maintained and monitored until these parcels are no longer used as part of the marine terminal. All other currently paved parcels will be similarly maintained and monitored until these parcels are no longer used as part of the Project.[11]

Based on the 21E, Phase 1 assessments provided to EPA on October 1, 2012, there are indications of the presence of contamination on certain parcels, including the Radio Tower parcel, and the debris on the Hathaway parcel (Map 21, Parcel 30) and the former Dartmouth Finishing site (Map 21, Parcel 45). Although these parcels are not subject to Superfund remediation, because this Project is authorized as part of the State Enhanced Remedy, EPA is conditioning its final approval on the Commonwealth's

[10] See MassDEP2012i email from Gary Davis, General Counsel, Massachusetts Executive Office of Energy and Environmental Affairs, to Carl Dierker, Regional Counsel, EPA.

[11] In its MassDEP2012h submittal, the Commonwealth stated it would "monitor and maintain, pursuant to an agreed upon schedule, all asphalt on these areas so long as the Commonwealth has control of these areas." See also MassDEP2012l submittal as to all other currently paved areas. As a condition of its final approval, EPA is requiring that these areas remain paved, maintained and monitored as long as they are used as part of the marine terminal.

pursuit of due diligence by conducting further investigations on any parcel where contamination was indicated as noted in the 21E assessments, and that remediation, if contamination is found, occur in accordance with 21E, and with EPA's TSCA program if PCBs are found. Remediation of main terminal parcels as described in the Draft Determination remains unchanged.

As a condition of it final approval, to meet TSCA requirements EPA is requiring certain sampling and disposal activities for work to be performed on the excluded portion of Map 31 Parcel 288 (the vacant Shuster parcel). Although this excluded portion of this parcel is not included in the Project, work that will be conducted on this area is necessary to support the structural integrity of the surrounding land for the anticipated heavy loads. Similar to the work being performed on the remainder of Map 31, Parcel 288, soil in the excluded area will be excavated down to the high water mark, compacted as necessary for geotechnical purposes and backfilled with excavated materials and/or clean imported soil to final grade. Any soil deemed "geotechnically unsuitable" may be removed and disposed of off-site. See page 33 for more information and Attachment 5 to Appendix J(1) for a map of the excluded area of Parcel 288.

2. *Mitigation Measures*

a. Salt Marsh and Wetland Mitigation

EPA's Draft Determination included a proposal for restoration and enhancement of 1.9 acres of successional marsh (also referred to as the drainage swale) along the western end of the New Bedford/Fairhaven Hurricane Barrier, conditioned upon the U.S. Army Corps of Engineers' concurrence that the channel design in the proposed mitigation measure would have no adverse effect on the operation of the Hurricane Barrier in accordance with § 408 of the Clean Water Act.[12] However, subsequent to the issuance of the Draft Determination, the Commonwealth abandoned that plan and proposed an alternative compensatory mitigation plan the includes creation of approximately 1.02 acres of salt marsh adjacent to River's End Park in New Bedford to compensate for the loss of 0.11 acres of salt marsh and 0.106 acres of freshwater wetlands. Because areas of River's End Park have been subject to PCB remediation as part of the New Bedford Harbor Superfund site, as part of its final approval, EPA is requiring that a soil and sediments characterization, removal, and disposal work plan be submitted to EPA for review and approval at least 30 days prior to commencement of mitigation activities at River's End Park. See Section 7 of Appendix E to this Final Determination for a complete discussion of the Final Mitigation Plan.

b. Protection of Atlantic Sturgeon, Winter Flounder, and other Finfish

As part of its informal consultation with National Marine Fisheries Service (NMFS) under the Endangered Species Act, EPA transmitted its Biological Assessment and conclusions to NMFS that the proposed South Terminal Project may affect the Atlantic sturgeon, an endangered species, but, with specified

[12]The U.S. Army Corps of Engineers continues to review potential impacts on the hurricane barrier from blasting in the event the Commonwealth seeks to modify this Final Determination in the future if blasting is needed for rock removal.

mitigation measures, it is unlikely to adversely affect the species. NMFS concurred with EPA's conclusions.[13] EPA also consulted with NMFS under the Magnuson-Steven Act on potential impacts from the Project to designated essential fish habitat ("EFH") for commercial species. EPA determined that impacts to EFH species will be minimized and mitigated to the greatest extent practicable provided that the Commonwealth fully implements a variety of minimization and mitigation measures. As part of the mitigation measures to protect winter flounder, the Atlantic sturgeon, and other finfish, a Fish Deterrent Program has been added to the Project. This Program includes erecting silt curtains, bubble curtains and fish weirs around specified work areas from January 15 through June 15 to prevent fish from entering the work area. Fish startle systems will be deployed before construction begins to move fish out of harm's way. From January 15 to June 15, weekly monitoring will occur to ensure the barriers maintain their physical integrity and that no fish have made it into the Project area. EPA has also revised the water quality and turbidity performance standards to clarify use and timing of silt curtains and other mitigation measures. See Appendix C for the revised performance standards and Fish Deterrent Plan. See Appendix E for more detailed discussion of mitigation measures.

c. Blasting Impacts

Although the Draft Determination identified blasting as a potential method for removal of shallow rock 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, EPA is not approving the use of blasting to remove rock in this Final Determination for this Project. EPA does not have sufficient information on the potential environmental impacts associated with blasting, particularly with respect to impacts on Atlantic sturgeon and other aquatic species, and on the Hurricane Barrier, to make an informed judgment at this time. If blasting is ultimately deemed necessary, the Commonwealth will need to seek a modification of the Final Determination, and will need to provide additional information on potential impacts from blasting and mitigation steps needed to minimize or eliminate those impacts.

While blasting is not within the scope of this Final Determination, pile driving and rock removal activities, using standard construction equipment, will occur during construction of the marine terminal. To minimize noise and wave pressure impacts from these activities on the Atlantic sturgeon and other finfish, sheet piling will be installed through the use of vibratory hammers, and drilling and grouting measures, which do not cause noise impacts, will be used for pile installation outside the sheet pile walls. Pilings constructed inside the sheet pile wall are considered an upland activity that will not impact fishery resources and will be vibrated or driven in. (For a more detailed description of these activities, see the Commonwealth's letter to EPA dated October 4, 2012, MassDEP2012j, Appendix 1). Rock removal will be accomplished through conventional non-blasting techniques, of which there are four primary methodologies. They are commonly referred to as Hoe Ram, Bucket Removal, Drill and Fracture and Cutter Head Dredging. The details of each methodology, its benefits and drawbacks are discussed in Appendix H. In EPA's view, any of the four techniques provide a reduced level of impact

[13] See Appendix K(2) for EPA's Biological Assessment for the Atlantic sturgeon. See also letter dated November 14, 2012 from NMFS to EPA.

compared to blasting. Rock removal, independent of the technique used must meet the Water Quality Performance Standards outlined in Appendix C.

See also Appendices E and I of this Final Determination for additional discussion regarding mitigation measures for impacts associated with pile driving and rock removal activities.

3. Additional In-Water Work

The Commonwealth requested that potential additional work be evaluated as part of EPA's Draft Determination, although funding for that proposed work had not yet been secured. The proposed additional work consists of (1) expansion of up to 300 feet increase in length of the deep draft berthing area; (2) a width increase of 50 feet in the approach channel; and (3) expansion of CAD cell 3 to accommodate the additional volume of dredged contaminated sediment (below 50 ppm PCBs). EPA included the impacts this additional work as part of its evaluation. During the public comment period, the National Marine Fisheries Service commented that the record did not support the need for this work to meet the purpose and need of the proposed project, and the impacts of the project have not been minimized to the maximum extent practicable.

EPA reviewed the record and did not find adequate justification for the additional work, and therefore, does not approve the additional work as part of this Final Determination. If, in the future, facts change that could justify additional dredging, the Commonwealth, up to the date the State Enhanced Remedy work ends,[14] may seek a modification of this Final Determination if additional information becomes available that would justify the need for dredging or deep draft berthing area or justify the additional dredging to widen the navigational channel beyond 175 feet. To avoid segmentation concerns, EPA evaluated the impacts of the Project both without and with the additional dredging. The additional impacts associated with the expansion would not alter EPA's determination that, if properly mitigated, the impacts from the overall Project will not cause or contribute to significant degradation of waters of the U.S.

With regard to the mitigation measures associated with this additional work involving creation of additional winter flounder spawning habitat and subtidal habitat, although EPA is not presently approving this additional work, it is important for all of the mitigation work to be conducted at the same time to avoid adverse impacts that could result from creating some habitat initially and then doing additional work at the same areas at a future date. If, before completion of the mitigation for this Project as approved, the Commonwealth decides that it is not going to seek a modification of the Final Determination to allow the additional dredging and so notifies EPA in writing, then it need not provide the additional mitigation for impacts to winter flounder and subtidal habitat associated with the expanded dredging.

[14] Pursuant to the Memorandum of Agreement entered into in 2005 between EPA and the Commonwealth of Massachusetts, the State Enhanced Remedy work ends on or before the date EPA completes all Remedial Action dredging at the New Bedford Harbor Superfund Site. See Administrative Record AR #509397.

Similarly, with respect to shellfish mitigation, it is acceptable for the Commonwealth to reduce the amount of shellfish seed by the amount proportional to the area of expanded dredging that is not being approved at this time. Of course, if such additional dredging is approved in the future, the shellfish seeding would be required to increase accordingly.

Finally, given that EPA is not approving the additional dredging, it is also not approving the additional CAD cell excavation. Therefore, the size of the CAD cell authorized under EPA's Final Determination is 8.54 acres. As discussed above, the Commonwealth may seek a modification of this Final Determination if additional information becomes available that would justify the need for additional channel and quayside dredging, and it may also seek approval for disposal of the additional channel and quayside dredging. We have evaluated the impacts of the Project both with and without the larger CAD cell construction, and the additional temporary impacts from the larger CAD cell would not alter EPA's determination that, if properly mitigated, the impacts from the overall project will not cause or contribute to significant degradation of waters of the U.S.

See response to G.1.a.1 of the Responsiveness Summary (Appendix Q) of this Final Determination for further explanation of EPA's decision not to include the additional work at this time.

4. Other Changes

Air monitoring performance standards for total particulates, tiered action levels for total particulates, and air monitoring station locations for upland work have been clarified in Appendix A.

Finally, in addition to consultation with Indian tribes conducted pursuant to the National Historic Preservation Act, EPA has identified Executive Order 13175 "Consultation and Coordination with Indian Tribal Governments" which identifies general consultation requirements with tribal governments. See Appendix P for a detailed discussion of these requirements and EPA's consultations with the affected Indian tribes.

Overview of the Project and Major Components

The Project consists of construction of a 28.45 acre site, comprised of a 6.91 acre shoreline CDF adjacent to 21.54 acres of existing upland property (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[15], 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

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

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 all of this clean material.

The major components of the Project are set out below:

- Construction of an 8.54 acre CAD cell between the Route 195 and Route 6 bridges to hold navigational dredged contaminated sediment;
- Navigational dredging of up to approximately 801,400 cubic yards* of material in the waters of New Bedford including:[16]
    - Up to approximately 225,600 cubic yards of sediment contaminated with average PCB-concentrations of less than 50 parts per million (ppm) and disposal of these sediment in existing CAD cell 2 and the newly constructed CAD cell 3; and
    - Approximately 575,800 cubic yards of clean, glacial material below the removed contaminated sediment and use of this material as clean fill for the CDF and upland ancillary properties, capping of existing borrow pit and CAD cell 1, for use in associated mitigation projects, and offshore disposal;
- Construction of a 28.45 acre multi-purpose marine terminal (including ancillary properties) including:
    - Construction of a 6.91 acre CDF with a 1200 foot linear coffer dam bulkhead and a pier supported apron;
    - Placement of approximately 134,000 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, and investigation and remediation of ancillary properties if necessary;
    - 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 creation of two new mooring areas;
- Capping of the CDF and adjacent 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 of 1.02 acres of salt marsh at River's End Park in New Bedford;
    - Creation/enhancement of 4.47 acres of intertidal habitat;
    - Creation/enhancement of 14.91 acres of shallow subtidal habitat; and

[16] The 934,600 cubic yards presented in the Draft Determination included 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 increase In the size of CAD 3 to accommodate additional impacted dredged material for disposal. However, as explained on page 10, EPA is not approving that additional work as part of this Final Determination.

- Seeding of 24,542,803 shellfish over 10 to 15 years.
- Implementation of an Activity and Use Limitation on the CDF and certain upland areas to protect the remediated areas and to limit 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 Figure2 of the Commonwealth's Final Mitigation Plan dated November 14, 2012 and is attached as Figure 1 to this Final Determination.

*The total 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 all 59,000 cubic yards of the federal channel maintenance dredging be required to accommodate vessels that support the offshore wind industry). For a breakdown of these volumes, see Attachment S of the Commonwealth's June 18, 2012 submission, revised on October 30, 2012 (MassDEP2012m), a copy of which is attached to this document as Table 1.

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 primarily 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 realignment of the existing Gifford Street boat ramp channel and the creation/enhancement of two adjacent recreational mooring areas. Potential impacts from dredging on fishing vessels, cargo –type ships, and barges and small recreation and commercial craft use of the Harbor and docking areas will be coordinated through local harbor officials and with the Coast Guard. The Commonwealth anticipates a robust public outreach program including regular public information meetings, mailings to announce upcoming events and availability of documents and establishing a local repository for such documents.

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

RESOURCE IMPACTS

The proposed Project will impact wetlands and other waters of the U.S., floodplains, and aquatic life (including substantial impacts on shellfish and winter flounder). Two paleosol[17] 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, also an endangered species, has been identified as potentially present in the area; however, with appropriate mitigation measures, the Project is not likely to cause adverse effects to the Atlantic sturgeon. Subtidal rock removal, if necessary, could be accomplished through a variety of non-blasting techniques which will generate a small amount of noise that would impact finfish.

Impacts to Wetland and Other Waters: The Project includes activities that would impact wetlands and other waters of the U.S.; specifically, filling of 7.02 acres of intertidal and shallow, near-shore subtidal habitat, salt marsh, and freshwater wetland areas and dredging of up to 47.16 acres of near-shore subtidal and subtidal areas.[18] In its Draft Determination, EPA specifically requested comments on these impacts. Following a review of the public comments, EPA makes the following final determination with respect to wetlands and other waters.

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 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.[19] See Appendix E for full discussion of impacts to wetlands and other waters.

Therefore, EPA has also determined that the proposed South Terminal Project is the least environmentally damaging practicable alternative ("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 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

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

[18] These amounts have changed slightly since the Draft Determination was issued.

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

compensatory mitigation. See Appendix E of this Final Determination for full discussion. EPA has also 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 determined that the Commonwealth's mitigation plan will satisfy the federal requirements. See Appendix E of this Final Determination for full discussion.

Floodplain Impacts: The Project involves filling 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 environment. In its Draft Determination, EPA specifically requested comments on the Project's impacts on floodplains. Following a review of the public comments, EPA makes the following determination with respect to floodplains.

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.

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. EPA has determined that, given other alternative locations and 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, and, as a condition of this Final Determination, must be completed within one year of completion of the CDF. 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: In its Draft Determination, EPA specifically requested comments on its proposed TSCA Determinations. After considering all public comments, EPA makes the following final determination with respect to TSCA requirements:

Consistent with Section 761.61(c) of the Toxic Substances Control Act (TSCA), based on information provided by the Commonwealth, EPA has determined 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 Final 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, with this Final Determination, EPA is issuing a second modification to an existing TSCA Determination that was previously issued on November 12, 2008, and modified on June 18, 2012, to include dredging and disposal of PCB-contaminated sediment dredged from within the footprint of CAD cell 3 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 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 Second Modification to the November 12, 2008 TSCA Determination are more fully described within Appendix J(2).

State Enhanced Remedy Timeline[20]

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

[20] 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.

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 Regulatory 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

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

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

August 2010 – June 2012: EPA received significant Commonwealth submittals with information about the proposed Project

July 16, 2012: EPA issued a Draft Determination for the proposed South Terminal Project

July 16 to August 21: Public comment period and public hearing held for Proposed Project

August 2012 – November 2012: EPA received additional details from the Commonwealth about the proposed Project

November 19, 2012: EPA issues this Final Determination that South Terminal Project is included in the State Enhanced Remedy for the New Bedford Harbor Superfund Site

Alternative Sites Evaluated

Included in EPA's Final 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 Final 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...".[21] [22]

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 22), 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 Proposed Plan noted that the benefits of such a linkage would primarily stem from a streamlined permitting process for navigational sediment disposal facilities[23], 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 in the lower Harbor. Finally, the Plan noted

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

[22] 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.

[23] 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).

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 CFR 300.515(f)(l)(ii) and complied with CERCLA and other dredging-related regulations.[24] Since then, two phases of SER work have been completed, Phase II and Phase III.[25] 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. The Commonwealth proposed to build 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

[24] 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."

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

requirements of the applicable or relevant and appropriate state and federal environmental laws that would normally apply as part of a permitting process.[26]

EPA has compiled all of the documents it relied on to reach this Final Determination in the Administration Record in support of this Project, which will be available at the New Bedford Public Library, EPA New England Records Center and on line at www.epa.gov/nbh.

EPA's Final 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, and all public comments received, and after completing consultations with all federal and state agencies, EPA has determined that the Commonwealth's Project, which consists of constructing a 28.45 acre marine terminal (consisting of 7.02 acres of filled waters (the CDF and the freshwater wetland on the upland area) and approximately 21.54 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, 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 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 approving inclusion of the 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 the following conditions are met by the Commonwealth:

1. To ensure that no harm to the aquatic environment occurs as long as the actual site control is uncertain, the Commonwealth must demonstrate full site control before it commences any work in waters of the U.S.

2. Although upland parcels are not subject to Superfund remediation, because this Project is authorized as part of the State Enhanced Remedy, the Commonwealth must pursue due diligence by conducting further investigations on any parcel where a Finding or Recognized

[26] As indicated above, this Final 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 5. However, in analyzing the Commonwealth's Project as a whole, including CAD cell 3, EPA did consider the additional dredging and filling to be performed in order to construct the proposed CAD.

Environmental Condition (REC)[27] was noted in the 21E assessments, and that remediation, if contamination is found, occur in accordance with 21E and with EPA's TSCA program if PCBs are found.

3. All currently paved parcels and all parcels used as transportation corridors, as depicted in Figure 4 to this Final Determination, must remain paved, maintained and monitored as long as these parcels are used as part of the New Bedford Marine Commerce Terminal.

4. For work conducted on the excluded area of Map 31, Parcel 288, the vacant Shuster parcel, as identified on Attachment 5 to Appendix J(1), the following shall apply:

   a. *If the Commonwealth is capable of obtaining temporary ownership of this excluded area:* The Commonwealth will retain ownership and/or site control until such time as the Commonwealth has completed work within the excluded area. Material excavated from within this excluded area will be moved to the area of the TSCA Determination and will be used as backfill within the TSCA Determination area. (See Attachment 5 of Appendix J(1) for the location of the TSCA Determination area.) Clean fill will be imported from offsite and utilized to backfill the excluded area. Prior to excavation of this area, sampling will be conducted to determine the presence of contamination, including PCBs in this area. PCB-contaminated soils with > 25 ppm will be removed and disposed of at a TSCA-approved disposal facility or a RCRA hazardous waste landfill in accordance with § 761.61(a)(5)(i)(B)(*2*)(*iii*). Hazardous waste and PCB-contaminated soils with > 1 ppm but ≤ 25 ppm shall be relocated to the main facility parcel for consolidation beneath the final clean cap; or

   b. *If the excluded area remains privately owned*: The Commonwealth shall sample the soil in this area prior to excavation or alternatively, this soil shall be excavated and disposed of off-site as a ≥ 50 ppm PCB waste at a TSCA-approved disposal facility or a RCRA hazardous waste landfill in accordance with § 761.61(a)(5)(i)(B)(*2*)(*iii*). If sampling is conducted, in the event that PCB concentrations are > 1 ppm and/or hazardous waste is identified, the soil shall be disposed of off-site at an appropriate disposal facility. Soil with PCB concentrations < 1 ppm and that do not contain hazardous waste may be backfilled into the excluded area along with any imported clean fill as necessary to restore to the final grade.

5. In the event any work is planned in the area of the former dwellings in the former Acushnet Mills company housing area depicted on Attachment 1 of Appendix G, prior to any ground

[27] In its Phase 1 Environmental Site Assessment (ESA), dated January 3, 2012, the Commonwealth states, "As defined by ASTM standards, the terms "RECs" or "Recognized Environmental Conditions" mean the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products even under conditions in compliance with the laws." It also states, "Issues of concern may also be identified in this report as a "Finding". Findings are issues identified during the performance of the Phase I ESA that may be a REC under certain circumstances or that may require some level of follow-up actions which are beyond the scope of this Phase 1 ESA." Commonwealth submission MassDEP2012f.

disturbance of more than 12 inches, a Phase 1B archeological survey of the area is submitted to EPA for review and approval.

6. In the event that new environmental conditions are identified during remedial or other land excavation activities, the Commonwealth shall report the new conditions to EPA and identify what, if any, modifications are necessary to the air monitoring plan and/or remedial plan. Modification to or a new TSCA Determination may also be necessary.

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

8. Compliance with all applicable and relevant and appropriate requirements is maintained including the following:

   a. Completion of the Marsh Island mitigation project to compensate for flood storage loss within one year of completion of the CDF;

   b. 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 Construction General Permit (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.

9. The following workplans are provided to EPA for review and approval at least thirty (30) days before land or water activities take place:[28]

   a. A characterization, removal, and disposal work plan (Soil and Sediment Work Plan) for both soil and sediment that will remain in-place or that will be excavated during mitigation activities at River's End Park. The Plan shall detail the procedures that will be employed for characterization of soil and sediment within the mitigation area. This Plan shall also include information on the required criteria for either leaving soil/sediment in-place, and/or for removal, storage, handling, and disposal to meet all applicable or relevant and appropriate state and federal standards;
   b. A Phase IV work plan for dredging and disposal of sediment;
   c. 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;
   d. A Contingency Plan as required by the Water Quality Performance Standards in Appendix C;
   e. An air monitoring plan that meets minimum requirements in Appendix A;

[28] EPA acknowledges it has received, among others, Phase IV work plans, a Construction Management Plan, and an Air Monitoring Plan. As stated on page 3, EPA is not reviewing these plans as part of this Final Determination.

f. A Contractor work plan for the PCB remediation work of the upland area within the TSCA Determination area shown on Attachment 5 to Appendix J (1). Any additional PCB remediation work in areas beyond those shown on Attachment 8 to Appendix J(1) will require review by EPA and may result in an issuance of a new or revised TSCA Determination; and
g. If it occurs, a work plan for Federal channel dredging.

This Final 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 Final Determination and potentially reissue it for public comment.

Description of Proposed Location

A description of the 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 will construct 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[29]

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. 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 Final 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.

[29] 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 Final Determination.

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 250,000 cubic yards of contaminated sediment have been dredged.

Project Location - South Terminal Area

General Area Description: The 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 28.45 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 where heavy and light loading will occur would be comprised of approximately 11.1 contiguous acres of existing upland and 6.91 acres of additional land created by construction of a CDF in adjacent waters. An additional 10.4 acres of ancillary upland west and south of the main portion would be used for wind blade lay-down and as transportation corridors. See Figure 4.[30] The parcels of existing upland that would comprise the terminal facility and ancillary properties are owned by the New Bedford Redevelopment Authority, the City of New Bedford, 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.[31] A TV/radio tower on one ancillary property west of the main terminal facility property will be relocated; there is no need to relocate any water dependent users. Several properties will serve as a transportation corridor to provide access to ancillary properties for storage. With the exception of the Radio Tower property, the upland parcels are currently 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 terminal (identified as "Main Facility" on Figure 4) consists of approximately 18 acres, with approximately seven acres of the 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

[30] When the Draft Determination issued, the Commonwealth was considering two different configurations. Figure 4 is slightly different from configuration A in the Draft Determination.

[31] As previously stated in condition No. 1 of this Final Determination, the Commonwealth must demonstrate full site control before it commences any work in waters of the U.S.

is within the footprint of the proposed marine terminal. Parcels included in the main terminal facility that were also part of the Potomska Mills complex are identified as map 31, parcel 263 (Shuster parcel), map 31, parcel 288 (vacant Shuster parcel), map 25A, parcel 53 (north DMF parcel), parcel 49 (south DMF parcel) and parcel 48 (coastal area parcel). (See Figure 4 of the 21E Phase 1 Environmental Site Assessment (Phase I ESA), submitted by the Commonwealth on October 1, 2012). 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 (0.11 acre) which is degraded. There are no local water supply wells or reservoirs located within the Project area.

Soil and groundwater sampling was conducted as part of a 21E Phase 1 ESA for the main facility upland area. [32] 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.[33]

In addition, within a portion of this upland area (south DMF parcel) 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.

Ancillary Properties: The ancillary properties consist of approximately 10.4 acres located west and south of the main facility properties. Three of the properties will be used for equipment storage and wind blade laydown areas; the remainder will be used as transportation corridors to access the larger storage and laydown areas. The Commonwealth has indicated it will either acquire full ownership or an easement for these corridors; it is currently engaged in negotiations to acquire the necessary property interests for these and the remaining ancillary properties. Most of the areas to be used for transportation corridors are already paved as are parcel 7 on Map 25A (an ancillary blade laydown area)

[32] See the Commonwealth's January 18, 2012 submission. 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 Final Determination.

[33] The Commonwealth confirmed that the Phase 1 ESA dated January 3, 2012 (MassDEP2012f) included the same information as was provided in the Commonwealth's January 18, 2012 submission for the Shuster parcel, the vacant Shuster parcel, both north and south DMF parcels and the coastal area parcel. See MassDEP2012l.

and parcel 263 on map 31 (part of the main facility but subject to lighter loading). Currently, lot 7 is used by Bayline Boat Yard (under lease with the City of New Bedford) for boat storage and access to the Gifford Street Boat Ramp.

The Commonwealth provided EPA with Phase I ESAs on a subset of these ancillary properties; specifically, map 25A, parcel 7 (NS Gifford Street), parcel 30 (Hathaway Mills) and parcel 45 (the former Dartmouth Finishing site), and Map 31, parcel 234 (Radio Tower).[34] Except for the area on the Hathaway Mills parcel, assessments were not performed on the transportation corridor properties. Further, no sampling was performed on the parcels identified below as part of the Phase 1 ESA; however, the following information was provided:

With regard to the Hathaway Mills parcel: Privately owned, this parcel contains the former Hathaway Mills building and is occupied by multiple small companies. The northeastern portion of the property (north of the Former Dartmouth Finishing Site) contained storage buildings connected with the original mill which were demolished between 1995 and 2009. This area is now vacant, with a large pile of building rubble, including boulders, concrete and ash-like material. This part of the parcel is targeted for use as a transportation corridor for this Project. A state 21E cleanup was conducted in 2001 on this parcel to address petroleum hydrocarbons and PAHs in soil. Although the cleanup was completed, impacts from contamination may still remain and could impact offsite disposal when work is conducted on this property.

With regard to the former Dartmouth Mills parcel: Owned by the City of New Bedford, the parcel is vacant, overgrown with vegetation, and contains piles of rubble. The former mill buildings were demolished between 1995 and 2007; however, the basement floor slab and foundation walls of a former boiler room remain on the western portion of the property. This parcel was also subject to past federal and state remediation in 2004 to empty and remove drums and two underground storage tanks, one aboveground storage tank (AST) and four vats. A subsequent Phase 1 ESA was completed in 2010 which identified conditions that led to a Phase II Comprehensive Site Assessment in June 2011. Contamination found beneath the concrete slab in soil (petroleum, lead and semi-volatile organic compounds (SVOCs) and metals) and groundwater (silver) was detected above applicable state reporting limits as was contamination found in the stockpiled soil staged above the slab. The Commonwealth represented that it is aware that some contaminants (particularly lead) have been detected in soil in concentrations exceeding the RCRA 20 times rule (i.e. concentrations of 100 mg/kg or greater, which is 5 times the TCLP limit of 5 mg/L) and that it is unaware of any TCLP tests that have been completed on this material to date and that lead was not found in groundwater.[35]

With regard to the Radio Tower parcel: Privately owned, the parcel contains a 580 foot vertical radio/television transmitter, a storage or utility building and an electric transformer mounted on a concrete pad surrounded by security fencing. The tower transmits for three radio stations. The Commonwealth has indicated it will relocate these structures so that this area can be used for equipment storage and blade laydown area. The surrounding area outside of the security fence is a

[34] This Phase 1 ESA also included other properties. See footnote 33.
[35] See MassDEP2012l.

maintained grass area; areas to the east are heavily wooded with small trees and shrubs. The parcel appears to have been part of the the Potomska Mills complex along with most of the parcels that comprise the main terminal facility. According to the Phase I ESA, the mills used coal to fire a series of on-site steam boilers as well as oil fired engines. Coal appears to have been stored in a large bin located on this parcel. While RECs were not identified on the parcel, there were issues identified as Findings as a result of the former textile mill activities. These include the potential for contamination from metals, volatile organic compounds and petroleum hydrocarbons and bulk asbestos in soil from demolition activities (although bulk asbestos was not detected in subsurface investigations at the adjacent property). In addition, according to the Phase 1 ESA, based on the high concentrations (over 900 mg/kg) of PCBs detected in soil at the adjacent parcel (which may or may not be associated with industrial activity at the former Potomska Mills complex) and that the property boundary between the two parcels is not clearly marked and relatively undeveloped, PCBs may also be present on this parcel.

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.[36] No federal resource areas or state protected wetland resources are present within the ancillary properties. A final resource area location map is included as Figure 5 in MassDEP2012 r and is included in this document as Figure 5.

The Project is located within the 100-year floodplain and in a non-attainment area for ground level ozone. In addition, the 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 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 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 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 the upland portions of the CDF; however, although work is not currently anticipated in the Acushnet Mills company housing area, if it does occur, prior to any ground disturbance of more than 12 inches, a Phase 1B archeological survey must be conducted to test for the presence of intact archeological feature and deposits associated with the former dwellings in this area. See Appendix 42 of the 1/18/2012 for a summary of the archeological investigations and map in Appendix 43; see also MassDEP20123 and Attachment 1 of Appendix G for the location of the Acushnet Mills company housing area.

[36] Additionally there is a 0.106 acre wetland on the upland portion of the site that will be filled.

Description of Proposed Work

Construction of CAD Cell 3

An 8.54 acre CAD cell 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").[37] 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.[38]) 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, (as well as portions of the 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 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 cover on the Main Facility and on one of the ancillary properties, the former Dartmouth Mill parcel, and 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 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.

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 in the CAD cells, although some passive dewatering will occur during material handling and transport. The scows will be properly located over

[37] 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.
[38] 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.

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 Water Quality Performance Standards in Appendix C and Significant Substantive Requirements discussion below.

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 Final Determination). The CAD cells will be capped in the same manner as described above using clean, suitable material of sufficient thickness to 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 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. 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 (generally 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 bulkhead of the CDF to allow deep water vessels, approximately up to 90 feet wide and 500 feet long, 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 dredge footprint, primarily along the northern portion of the eastern face of the CDF bulkhead wall. This shallow rock must be removed. The

Commonwealth anticipates conventional removal of this rock with standard excavating equipment; however, although EPA is not approving blasting as part of this Final Determination, the Commonwealth may seek, in the future, to modify this Determination to allow blasting. (See discussion at page 9.) As a result, impacts associated with standard rock removal techniques have been included in EPA's evaluation of this Project.

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 3. 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. All depths below are expressed in feet.

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 seafloor under the piling area with a rip-rap type material for structural integrity and to prevent erosion of the area under the pile-supported apron.

Quayside area 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, and remainder of 600 feet dredged to -20 down to -14 MLLW, moving south.[39]

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.[40]

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

[39] The Commonwealth requested that additional deep draft dredging occur along either the northern or southern portion of the northern end of the sheet pile wall to accommodate the potential for use of the facility by larger vessels; however, EPA is not approving this additional work in this Final Determination. See discussion at page 10.
[40] The Commonwealth also requested widening of this channel to accommodate the potential for larger vessels to use the terminal. As discussed on page 10, EPA is not approving this additional work in this Final Determination.

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 -30 to -32 MLLW, depending on the location (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 cell 3. Clean navigational dredged sand will be used as fill within proposed CDF, on the main facility area and on one ancillary property, the former Dartmouth Finishing site, for CAD capping, mitigation habitat creation and capping, and 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 Water Quality Performance Standards in Appendix C and Significant Substantive Requirements discussion below.

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.[41]

The 28.45 acre marine terminal site consists of a 6.91 acre CDF, approximately 11.1 acres of adjacent upland, and approximately 10.4 acres of ancillary properties (see Figure 4 for full description of

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

acreage). The Commonwealth anticipates that ancillary properties will primarily be used as transportation corridors and for wind blade storage when the CDF is used to support renewable energy.

To create the marine terminal facility, an existing sheet pile wall in the northern portion of the south terminal area (the Shuster property) will be extended approximately 1000 linear feet 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 an 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 erosion and to provide structural integrity. 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.

Construction of the CDF includes filling of a portion of the existing navigation channel to the adjacent Gifford Street Boat Ramp. The Gifford Street channel will be realigned and two new mooring areas will be created.

Upland 21E remediation: As stated above, sampling conducted as part of the 21E process on the approximately 11.1 acres of the upland area that will be incorporated into the main facility portion of 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, except for the already paved portion of the Shuster property, 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 Final 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.[42] The Commonwealth

[42] 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 ("AOC") (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,

anticipates excavating down to the high water mark 10.1 acres of this main facility upland area, including the existing asphalt cap area on the DMF south parcel that was the subject of a past 21E remediation, and stockpiling the material onsite.[43] Soils with PCB concentrations exceeding 25 ppm will be trucked offsite to a licensed TSCA disposal facility or RCRA hazardous waste 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 main facility portion of the terminal, including the CDF, along with an Activity and Use Limitation (AUL) on the covered area.[44] 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. (See the Commonwealth's response to USEPA June 23, 2012 TSCA-Related Questions for additional details.)

In addition, although not included in the upland property for the marine terminal facility, a small portion of the vacant Shuster property (the excluded portion) must be excavated and evaluated for its structural integrity to support the surrounding soil that is included in the main facility area and which will incur heavy loads. (See Attachment 5 of Appendix J(1) for location of this excluded portion of the vacant Shuster parcel.) Because this area was not sampled as part of the Commonwealth's Phase 1 ESA and because contamination was found on other parts of the vacant Shuster property, EPA has conditioned its approval, depending on ownership of the excluded area and the levels of contamination found if sampling is performed, on either offsite disposal of the material at an appropriate disposal facility, consolidation as part of the remediation on the main terminal facility, or backfilled back into the excavated area if sampling shows the material is not contaminated. See EPA condition No. 4 in this document on page 21.

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

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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).

[43] See Figure 4 for location of existing asphalt cap on the DMF south parcel.

[44] The Commonwealth will conduct these activities in accordance with the guidance document issued by MassDEP which indicates that, so long as the soils are being re-graded onsite, will not be treated ex-situ or otherwise placed into containers, tanks or a treatment or RCRA regulated unit, and will remain within the defined Area of Contamination (AOC) onsite, these soils will not be "generated", exempting them from the Land Disposal Regulations, which will allow them to be managed under the MCP and TSCA alone. For more details on the interface between RCRA and the MCP in the Commonwealth, please refer to "MassDEP Technical Update August 2010: *Considerations for Managing Contaminated Soil: RCRA Land Disposal Restrictions and Contained-In Determinations*", attached as Attachment C to the Commonwealth's June 25, 2012 submission to EPA.

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 Final Determination). Small portions of the 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 Figure 4 will require some work in order to make them viable for use of the marine terminal to support the wind industry. These properties will be used as transportation corridors and as laydown areas mainly for component storage for wind industry equipment, not for heavy loading activities. For future use to support cargo shipping, the Commonwealth represents that these ancillary parcels will still be considered part of the overall marine terminal but will have different uses than the main facility given the various load bearing capacities of the various parcels.[45] Although upland parcels are not subject to Superfund remediation, because this Project is authorized as part of the State Enhanced Remedy, EPA is conditioning its approval on the Commonwealth's pursuit of due diligence by conducting further investigations on any parcel where a Finding or REC was noted in the Phase 1 ESA, and that remediation, if contamination is found, occur in accordance with 21E and with EPA's TSCA program if PCBs are found. This includes the Radio Tower parcel, the Hathaway parcel and the former Dartmouth Finishing site parcel.

The transportation corridor includes 5 parcels. On four of the five parcels the Commonwealth will obtain easements only, not full fee ownership. These parcels are identified as map 21, parcel 30 and map 25A, parcels 5, 45, and 47. The Commonwealth will be obtaining ownership of the Blackmer Street extension from the City of New Bedford but will be making no changes to that parcel and expects it will continue to serve as a public way (this area is currently paved and contains city-operated utilities). The Commonwealth will pave these areas (if not already paved) and will maintain and monitor these paved areas (MassDEP2012h). The fifth parcel, the Hathaway parcel, contains an existing debris pile which must be moved. Should the owner wish the Commonwealth to remove the material itself, the Commonwealth will collect samples of the debris piles to characterize the material for disposal prior to disposal of the material offsite.

One property contains an existing overhead restriction in the form of a radio tower (Map 31, Parcel 234, the Radio Tower parcel). The Commonwealth anticipates relocating the radio tower and purchasing offsite fill to grade the parcel.

With regard to the former Dartmouth Finishing site, the Commonwealth plans to re-grade the existing material on the parcel, cap the area with clean dredge material from the boat basin or channel dredging

[45] See footnote 1 of MassDEP2012l.

then cover the area with a one foot layer of Dense Graded Aggregate. A total of three feet of clean material will be placed over any existing material that is being re-graded at this site.

The existing soil piles on the Dartmouth Finishing site are currently anticipated to be incorporated into the re-grading efforts. Similar to the main facility upland remediation, the Commonwealth will conduct activities on this parcel in accordance with the guidance document issued by MassDEP. (See footnotes 42 and 44.) Consistent with MCP standard practices, the Commonwealth plans to manage lead-impacted soils onsite through the re-grading of onsite soils; implementation of a 3-foot thick cap of granular material; and a deed restriction that will minimize direct contact with that material via an Activity and Use Limitation. This remedy will be assessed for its potential and future risk to current and future receptors via a Method 3 Risk Assessment, which will be completed prior to closure of the site. If any significant unanticipated risk to future receptors is identified during the Method 3 Risk Assessment, consistent with MCP standard practices, the proposed remedy will be re-evaluated. The Commonwealth understands that if PCBs are identified on this property in the future, that another TSCA determination may be required.

Performance Standards

Below is a summary of the significant performance standards for the Project. Details and additional standards can be found in the Appendices of the Final Determination.

Water Quality

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, filling, capping, and rock removal activities. Silt curtains and absorbent booms will be required at all times around any mitigation filling and capping activities and any filling associated with CDF construction unless that area is completely enclosed by the bulkhead walls, silt curtains, or a combination of the two. Silt curtains and absorbent booms will also be required for dredging, any other filling and capping activities, and rock removal activities from January 15 through June 15 unless otherwise directed in the water quality performance standards. Final water quality turbidity levels and performance standards, which represent the minimum actions that must be taken, are attached as Appendix C. Should these turbidity levels be exceeded, engineering controls that, at a minimum, will include the use of additional silt curtains and absorbent booms will be implemented. During the period of January 15 to June 15 of any year, if turbidity levels are still exceeded, the work will stop until June 16, unless the Commonwealth can demonstrate to the satisfaction of EPA that it has instituted measures sufficient to reestablish compliance.

Mitigation measures

Certain performance standards are incorporated into the Project to protect the Atlantic sturgeon and other aquatic life. A fish deterrent program has been created and will be implemented during dredging and other marine construction work that occur in shallow waters (<5 MLLW) during winter flounder spawning months (January 15 through June 15). This includes a series of engineered barriers that will be placed to exclude fish from entering these work areas where dredging and other marine construction activities occur. The barriers will redirect, but not otherwise limit vessel traffic in the area of work. The three types of barriers to be erected are a fish weir, silt curtains and a bubble barrier. A weekly monitoring program including the use of a sonar fish finder and a towed video system will ensure the barriers are maintained and effectively working to exclude fish from marine work areas. In the event fish are found in the marine work areas, a fish startle system consisting of the use of light, sound and tactile systems will be implemented. See Attachment 1 to Appendix C for details of this fish deterrent program. In addition, an environmental bucket will be used to dredge the fine grained sediment that lies above the coarser, clean parent material to minimize water quality impacts from dredging. Although blasting is not within the scope of this Final Determination, pile driving and rock removal activities will occur during construction of the marine terminal. To minimize noise and wave pressure impacts from these activities on Atlantic sturgeon and other finfish, sheet piling will be installed through the use of vibratory hammers, and drilling and grouting measures, which do not create noise impacts, will be used for pile installation outside the sheet pile walls. Pilings constructed inside the sheet pile wall are considered an upland activity that will not impact fishery resources and will be vibrated or driven in. (For a more detailed description of these activities, see Appendix H and the Commonwealth's letter to EPA dated October 4, 2012). Rock removal will be accomplished through conventional non-blasting techniques, described in Appendix H.

Air Monitoring

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 for review and approva. At a minimum, four air monitoring stations will be established around each contiguous land-based construction area with daily measurements of particulate matter, unless otherwise approved by EPA. 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.

Archeological Resources

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 piling to support the paleosols.)

Best Management Practices

Best management practices will be used during construction of the 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. [46] 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. Any PCB-contaminated stockpile soil shall be managed in accordance with TSCA § 761.65(c)(9), including covering, berming, and marking.

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.

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.

[46] 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.

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 concentrations greater than 1 ppm. 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 required for use of the CDF.

Mitigation Measures

To compensate for impacts caused to resource areas, the Commonwealth is required to implement mitigation measures, a summary of which is provided below. See Appendices E and H for more detailed discussion of these mitigation measures.

1. Addition of clean sand to existing Superfund pilot cap located south of hurricane barrier to create or enhance 19.38 acres of aquatic;
2. Creation of 22.73 acres of winter flounder habitat in the Outer Harbor;
3. Reseeding of 24,542,803 shellfish over 10 - 15 years; and
4. Creation of 1.02 acre salt marsh at River's End Park.

Addition of clean sand to existing Superfund pilot cap located south of hurricane barrier to create or enhance 19.38 acres of aquatic habitat: 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 clean sand from navigational dredging into an area outside the Harbor, adjacent to the hurricane barrier between the barrier and the existing Superfund pilot cap[47]. This mitigation will create intertidal and subtidal areas with clean sand generated from dredging activities while simultaneously capping and isolating sediments with less than 10 ppm 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 Appendix 1 of the Commonwealth's November 14, 2012 Final Mitigation Plan for engineering plans for this area.

Creation of 22.73 acres of winter flounder habitat in Outer Harbor:[48] This measure consists of creating 22.73 acres of winter flounder habitat in an area just south of the hurricane barrier, west of the Federal

[47] 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.

[48] 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

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. The sediments in the 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 placed in this area to raise the bottom elevation from -20 MLLW to a depth of approximately -16.4 MLLW, a depth more amendable to winter flounder spawning activities. 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.

Seeding of 24,542,803 shellfish over 10 – 15 years: A quahog seeding program will be conducted in open shellfishing areas south of the hurricane barrier. The Commonwealth will seed 24,542,803 clams to offset the expected loss of 9,817,121 shellfish, subject to two potential modifications discussed below. The quahog seeding will occur in several locations in New Bedford waters. Due primarily to the availability of seed, this replacement will take place over a 10-15 year time period. This shellfish mitigation plan may be modified in the future in two possible ways. The first potential modification of this shellfish mitigation plan relates to the NMFS's desire for the Commonwealth to include oysters as part of this mitigation effort. Accordingly, the Commonwealth has proposed to include oysters as part of this mitigation plan representing somewhere between 10-20% of the total shellfish seed to be planted. The Commonwealth has not yet developed an oyster reef mitigation plan so EPA cannot approve this mitigation component at this time. The Commonwealth can submit an oyster reef plan to EPA for approval and ask for an amendment to the Final Determination. The second potential modification relates to the Commonwealth's request to adjust the number of shellfish to be seeded if the full extent of the dredging as described in the Commonwealth's June 18, 2012 submission (MassDEP 2012a) is reduced. In that event, the Commonwealth would recalculate the expected shellfish impacts from a smaller dredge footprint and then size the mitigation effort accordingly. This approach is acceptable to EPA, provided that the Commonwealth provides EPA with information to document the reduction in impact and the planned reduction in mitigation and obtains EPA's written approval. Because EPA is not, at this time, authorizing expansion of the deep-draft quayside dredging area and additional widening of the deep-draft channel, the Commonwealth may calculate the related reduction in shellfish loss and obtain EPA's approval of an equivalent reduction.

Creation of 1.02 acre Salt Marsh at River's End Park: Approximately 1.02 acres of salt marsh will be created at the Rivers End Park Mitigation Site, located on the Acushnet River, to the north of the Wood Street Bridge in New Bedford, Massachusetts. This salt marsh creation is intended to compensate for

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and deepening of the deep draft channel. As discussed at page 10, while EPA is not approving the additional dredging at this time, if, in the future, facts change that could justify additional dredging, the Commonwealth, up to the date of the State Enhanced Remedy work ends, may seek a modification of this Final Determination if additional information becomes available that would justify the need for dredging of deep draft berthing area or justify the additional dredging to widen the navigational channel beyond 175 feet.

the functions and values associated with the 0.11 acres of salt marsh and 0.11 acres of freshwater wetlands that will be lost when they are filled during construction of the Project.

CERCLA Requirements

The Project complies with CERCLA § 121:

The Project is Protective of Human Health and the Environment

As described more completely in Sections V and VI of the 1998 ROD, EPA found 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 225,600 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[49]). The great majority of PCB concentrations in sediment in the Project area are below 50 ppm. Dredging will also remove heavy metals in sediment that are co-located with PCBs. Mitigation capping measures will address additional sediment contamination south of the New Bedford/Fairhaven Hurricane Barrier that may not otherwise be addressed through the Superfund remediation. These actions enhance the 1998 ROD by further reducing the likelihood of 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 likely would not otherwise be addressed in the forseeable future if this Project did not occur. PCBs greater than 25 ppm in soil and certain soils with extractable and total petroleum hydrocarbons will be excavated and disposed offsite; remaining contaminants will be capped with a state and TSCA-compliant engineered barrier to prevent direct contact with remaining contamination. Ancillary properties will also be subject to 21E requirements and if necessary, remediated pursuant to 21E and TSCA; additional TSCA Determinations also may be necessary.

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

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

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

The 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 after dredging the CDF footprint is contaminated) permanently isolate these contaminated sediment from human and environmental receptors by containing them in perpetuity using a safe and protective technology.[50]

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

The 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 the sediment 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 Project, treatment would likely add significant cost to this project without added protectiveness.[51]

The Project is Cost Effective

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

The Project Attains ARARS

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

[50] 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.

[51] As part of the Superfund remediation, 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.

Significant Substantive Requirements

Because EPA has integrated the State Enhanced Remedy into the 1998 ROD, this Project must comply with §121(d) of CERCLA[52] and §300.450 of the NCP which requires the work to meet the substantive requirements of all applicable or relevant and appropriate regulations (ARARs).[53] 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. [54] 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 site risk assessment and may be used in determining the necessary level of cleanup for protection of health or the environment.[55]

Tables reflecting the federal substantive requirements for this Project are presented in Table 2 of this Final 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 Final Determination as Appendix D.

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[52] 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."

[53] 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.

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

[55] Id. at p. xiv.

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)

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 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. EPA has determined that the Project as approved in this Final Determination, 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 Final Determination.

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 South Terminal Project and has determined that the Project, as approved in this Final Determination, is not contrary to the overall public interest.

For a more detailed discussion, see Appendix E to this Final 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, conducted as part of the State Enhanced Remedy, will be 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 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 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 Final 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.

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 a determination in this matter is considered a Federal undertaking, EPA is required, after consultation, to determine whether the undertaking could have an effect on historic properties in advance of the subtidal and intertidal issuing the Final Determination.

Two paleosol areas were found in 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 SHPO and consulting parties, the footprint of the proposed CDF was altered to avoid impacts to 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 Project planners will take several additional actions to protect the paleosol areas from the inadvertent impacts.

The Commonwealth and Tribes have also agreed that the Tribes will be provided with the opportunity to monitor construction activities, and that a suitably trained archeologist will be on board dredging vessels to monitor ground disturbing activities. Unanticipated historic properties discovered during

implementation of the Project must be treated in accordance with the provisions contained in 36 CFR § 800.12 and 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.

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.

A 2010 assessment of the original 12 acre upland area 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 21.54 acres to allow for additional lay down space. Because of this expansion, the Commonwealth conducted a second assessment, Cultural Resources and Background Study and Archeological Sensitivity Assessment, in September 2012. The September 2012 assessment, which included the June 2010 study area, confirms the findings of the June 2010 assessment and concluded that no additional cultural resources background research or archeological sub-surface investigation is necessary in the expanded upland study area. However, as a condition of this Final Determination, a Phase B1 survey must be performed and submitted to EPA for review and approval before any contemplated ground disturbance of more than 12 inches in the Acushnet Mills housing company portion of the upland area is undertaken. (See Attachment 1 to Appendix G for the location of this sensitive area.)

EPA has reviewed all of the archeological investigations concerning the areas projected to be impacted by the Project and considered the input of the SHPO and consulting parties including the MBUAR, Wampanoag Tribe of Gay Head (Aquinnah), and Mashpee Wampanoag Tribe. In light of the investigations, project design modification, determinations and conditions discussed above, EPA has found that the Project will not affect historic properties. EPA notified the SHPO and consulting parties of its no affect finding on September 28, 2012. The SHPO concurred with this finding on October 16, 2012. Because the consulting parties did not object within 30 days of receipt of this finding and the SHPO concurred, EPA may proceed with its Final Determination.

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

EPA consulted with NMFS on this Project. Following issuance of EPA's Draft Determination, NMFS provided conservation recommendations to EPA on August 21, 2012, which led to several meetings

among EPA, NMFS, and the Commonwealth to discuss measures that could be taken to address NMFS's concerns. EPA completed consultation on October 30, 2012, by providing responses to NFS's recommendations, including identification of additional steps that the Commonwealth would be required to take to protect EFH.

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, installation of absorbent booms and silt curtains, and other measures 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 salt marsh, intertidal habitat, winter flounder spawning (shallow subtidal) habitat, and deeper subtidal habitat. The Commonwealth will also conduct a quahog seeding program in open shellfishing areas south of the hurricane barrier to offset the expected loss of over 9 million shellfish. EPA has 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

For a more detailed discussion, see Appendix H to this Final 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 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. FWS did not provide any comments on the Project. EPA believes the Project, if conducted in accordance with the terms of this Final Determination, will ensure the conservation of fish and wildlife resources and will not cause significant adverse effects.

For a more detailed discussion, see Appendix O to this Final 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 received final written confirmation from FWS on July 17, 2012. EPA 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. FWS concurred with EPA's conclusions by letter dated August 29, 2012. See Appendix K1 for EPA's Biological Assessment for the roseate tern.

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. NMFS provided comments to EPA on June 19, 2012 stating that the species may be present in New Bedford Harbor. After obtaining technical assistance from NMFS, EPA initiated informal consultation and transmitted its Biological Assessment and conclusions to NMFS on October 31, 2012. (See Appendix K2 for EPA's Biological Assessment for the Atlantic sturgeon.) As discussed in the Biological Assessment, EPA concluded the proposed South Project may affect the Atlantic sturgeon but, with specified mitigating measures, is unlikely to adversely affect the species. NMFS concurred with EPA's conclusions by letter dated November 14, 2012.

For a more detailed discussion, see Appendix I to this Final 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 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 under § 761.61(c) requires a determination by EPA that the proposed action will not pose an unreasonable risk of injury to health or the environment. The Commonwealth has determined that the PCB-contaminated soil to be excavated, disposed and capped, and sediment to be

dredged, disposed and capped meets the definition of PCB remediation waste as defined in §761.3. As such, this soil and sediment are regulated for cleanup pursuant to § 761.61.

Based on information provided by the Commonwealth, EPA has determined that the proposed excavation, disposal and capping of the upland soils and dredging, disposal and capping of certain PCB-contaminated sediment, including dredging and disposal activities relating to CAD cell 3, all of which are included in the South Terminal Project, do not pose an unreasonable risk to human health or the environment as long as the conditions set forth 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 modifying an existing TSCA Determination issued on November 12, 2008, as first modified on June 18, 2012, to include dredging and disposal of PCB-contaminated sediment dredged from within the footprint of CAD cell 3 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, as amended on June 18, 2012, are met, EPA is determining that disposal of CAD cell 3 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).

See Appendices J(1) and J(2) for full description of the TSCA Determinations conditions.

***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.[56] 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.

[56] 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.

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 Final Determination for minimum air monitoring requirements.

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.[57] 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.[58] 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.[59]

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

Floodplain Management Executive Order, Executive Order 11988

Executive Order 11988 setting out requirements for federal agencies in the management of floodplain concerns 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 Final 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

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

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, 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,[60] it has identified the planned Marsh Island restoration project as providing mitigation for this loss of flood storage capacity.[61] 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 primary beneficial floodplain values identified for the area affected by this Project is flood prevention. The New Bedford Harbor Trustee Council is currently funding a program to restore Marsh Island. Through this project, the State assures that primary beneficial value of flood storage will be restored. A fact sheet issued by the New Bedford Harbor Trustee Council in June 2012 states that the Marsh Island restoration is anticipated to begin in late 2013. The Commonwealth has stated that as long as the Marsh Island restoration and the SER proceed on schedule, then the flood storage mitigation work will occur on a schedule that will, to the extent practicable, parallel the loss of flood storage capacity from construction of the SER project.[62]

EPA's determination that this Project meets the requirements of Executive Order 11988 is expressly conditioned on the completion of the Marsh Island mitigation project within one year from the completion of the CDF.

For a detailed discussion, see Appendix L to this Final 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.

---

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

[61] When the Draft Determination issued, EPA had not received any information from the Commonwealth to indicate that the flood storage created by the Marsh Island restoration project had been identified as a floodplain mitigation measure for any other activity in New Bedford Harbor. Since the Draft Determination issued, the Commonwealth has stated, as the permitting authority for such projects, it "...is unaware of any other project in New Bedford Harbor that is currently, or is anticipated to be identified as mitigation for any other project or activity occurring or scheduled to occur in New Bedford Harbor." (See Commonwealth submittal dated 10/12/12.) Attachment B to the Commonwealth's June 26, 2012 submittal contains plans for the Marsh Island restoration project.

[62] See MassDEP2012g.

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 evaluated 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.[63]

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

Wetland Executive Order 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 no 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. As discussed above and in Appendix E, EPA has concluded that there is no practicable alternative to filling the 0.11 acre salt marsh and 0.11freshwater wetland for this Project. EPA has also concluded that all practicable measures to minimize impacts to wetlands have been taken, and that the salt marsh mitigation at River's End Park is large enough to address both the direct impacts to the wetlands and any secondary impacts if they occur.

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 Final Determination is considered a Federal undertaking, EPA has conducted a review of the proposed Project to determine its impact on controlling and preventing the spread of invasive species.

The Commonwealth has developed and EPA approved a post-construction piling and bulkhead monitoring plan to detect the presence of new invasive species that may colonize the Harbor waters as a result of the construction of the terminal bulkhead and numerous pilings that will over time support marine growth or that may arrive via international vessels (See MassDEP2012f).

[63] As stated on page 3, EPA has received a Construction Management Plan from the Commonwealth but will not be reviewing that Plan until after the issuance of this Final Determination to ensure the Plan is consistent with the Project as described in this document.

In addition, there is a potential for invasive species to intrude into the salt marsh compensatory mitigation area at River's End Park. The Commonwealth has incorporated an Invasive Species Management Plan (ISMP) into its Compensatory Mitigation Plan described in Section 7.3 of Appendix E. As discussed in that section, EPA believes the ISMP will 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.

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

Executive Order 13175: Consultation and Coordination with Indian Tribal Governments (November 6, 2000)

EPA Policy for the Administration of Environmental Programs on Indian Reservations (1984)

EPA Policy on Consultation and Coordination with Indian Tribes (May 4, 2011)

On November 6, 2000, the President issued Executive Order 13175 in order to establish regular and meaningful consultation and collaboration with tribal officials in the development of Federal Policies that have tribal implications, to strengthen the United States Government-to-government relationships with Indian tribes, and to reduce the imposition of unfunded mandates upon Indian tribes. Prior to that, EPA had a formal policy in place specifying how it would interact with tribal governments and consider tribal interests in carrying out its programs to protect human health and the environment. Signed in 1984, this EPA Policy for the Administration of Environmental Programs on Indian Reservations (1984 Policy) remains the cornerstone for EPA's Indian programs. On November 5, 2009, the President signed a Memorandum of Tribal Consultation (Presidential Memorandum) directing each executive department to develop a detailed plan of action to implement Executive Order. As a result of the Presidential Memorandum, EPA, on May 4, 2011, issued the EPA Policy on Consultation and Coordination with Indian Tribes.

In accordance with the Executive Order and EPA policies, tribal consultation involving the New Bedford South Terminal State Enhanced Remedy project has been ongoing since the start of the project.[64] Since this State Enhanced Remedy project has the potential to affect tribal interests, EPA New England initiated consultation that established coordination and communication among EPA, the Commonwealth of Massachusetts, the Wampanoag Tribe of Gay Head (Aquinnah) and the Mashpee Wampanoag Tribe. Both tribes claim cultural affiliation with the project area.

[64] Consultations with potentially affected Indian tribes commenced prior to the effective date of the *EPA Policy on Consultation and Coordination with Indian Tribes* (May 2011). Nevertheless, EPA has conducted the consultations with these tribes in a manner generally consistent with that policy.

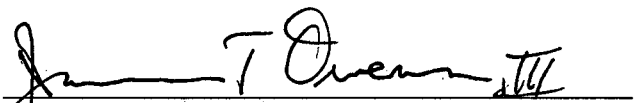
Tribal environmental and historic preservation representatives participated in the consultation and communication activities that have been ongoing since December 2010 through October 2012. These consultation and communication activities included conference calls, on-site visits and other face-to-face meetings in the vicinity of the project or at the National Oceanographic and Atmospheric Administration campus in Woods Hole, Massachusetts, which was a mutually agreeable and convenient meeting location for both consulted tribes.

EPA has fulfilled its responsibilities under the authority Executive Order 13175 for conducting government-to-government consultation with the tribes regarding this Final Determination concerning the South Terminal Project. EPA has understood and considered the tribes' request that the Commonwealth include certain freshwater species in the project wetlands mitigation plan. EPA has concluded that doing so would not be practical because the mitigation will be focused on saltwater wetlands.

For a detailed discussion, see Appendix P to this Final Determination.

Declaration

For the foregoing reasons, by my signature below, I approve the issuance of this Final Determination for inclusion of the South Terminal Project as described in this document in the State Enhanced Remedy which is incorporated into the 1998 Record of Decision for the Upper and Lower Harbor Superfund Site.



11/19/12

James T. Owens, III
Director, Office of Site Remediation and Restoration
USEPA – Region 1 New England

Date

List of Figures for EPA Final Determination for the South Terminal Project

New Bedford Harbor State Enhanced Remedy

List of Tables for EPA Final Determination for the South Terminal Project

New Bedford Harbor State Enhanced Remedy

List of Appendices for EPA Final Determination for the South Terminal Project

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Appendix A	Minimum Air Monitoring Standards and Requirements
Appendix B	EPA Guidelines for Fish Consumption in New Bedford Harbor
Appendix C	Water Quality and Turbidity Performance Standards
Appendix D	Commonwealth of Massachusetts Letters Concerning Applicable or Relevant and Appropriate Regulations
Appendix E	Section 404 of the Clean Water Act, Section 10 of the Rivers and Harbors Act, and Executive order 11990
Appendix F	Section 402 of the Clean Water Act (Stormwater)
Appendix G	National Historic Preservation Act
Appendix H	Essential Fish Habitat Assessment under the Magnuson –Steven Act
Appendix I	Endangered Species Act
Appendix J(1)	Draft TSCA Determination (CAD and dredging of CDE
Appendix J(2)	Draft Second Module to November 12, 2008 TSCA Determination
Appendix K(1)	Final biological Assessment for Roseate Tern
Appendix K(2)	Final Biological Assessment for Atlantic Sturgeon
Appendix L	Floodplain Management Executive Order 11988
Appendix M	Environmental Justice Executive Order 12898
Appendix N	Invasive Species Executive Order 13122
Appendix O	Fish and Wildlife Coordination Act
Appendix P	Consultation and Coordination with Indian Tribal governments Executive Order 13175
Appendix Q	Responsiveness Summary

EPA Final Determination for the South Terminal Project
New Bedford State Enhanced Remedy

Figure 1
Final Map of Work Components
(Second map attached to show existing upland asphalt cap)

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

- PAVED CAP
- 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	

P:\Jobs\6690 NBH_ Phase IV\PLANS\PERMITTING\SOUTHTERMINAL_RESOURCE_FINAL2.dwg

NEW BEDFORD MARINE COMMERCE TERMINAL GENERAL SITE PLAN	PROJECT	NEW BEDFORD MARINE COMMERCE TERMINAL	APEX
	OWNER	MASSACHUSETTS CLEAN ENERGY CENTER 55 SUMMER STREET, 9TH FLOOR BOSTON, MASSACHUSETTS	ROCKVILLE, MD · GLASTONBURY, CT · BOSTON, MA · NEW BEDFORD, MA · HOLYOKE, MA · 184 HIGH STREET, SUITE 502 BOSTON, MA 02210 · 581 CONNECTICUT AVENUE SOUTH WINDSOR, CT
DRAWING NO. 1 OF 1	SHEET TITLE	GRAPHIC SCALE 0 300 600 1200 · SCALE: 1"=600' · 1 INCH = 600 FEET	NO. 1 · DATE 10/30/12 · DESCRIPTION PROP. UPDATE · BY
		DRAWING SCALE 1 INCH = 600 FEET · DATE 5/30/2012 · CHECKED BY · DRAWN BY GCD · DESIGNED BY GCD · CAD FILE SITE FIGURE · PROJECT NO. 6959	

EPA Final Determination for the South Terminal Project
New Bedford State Enhanced Remedy

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

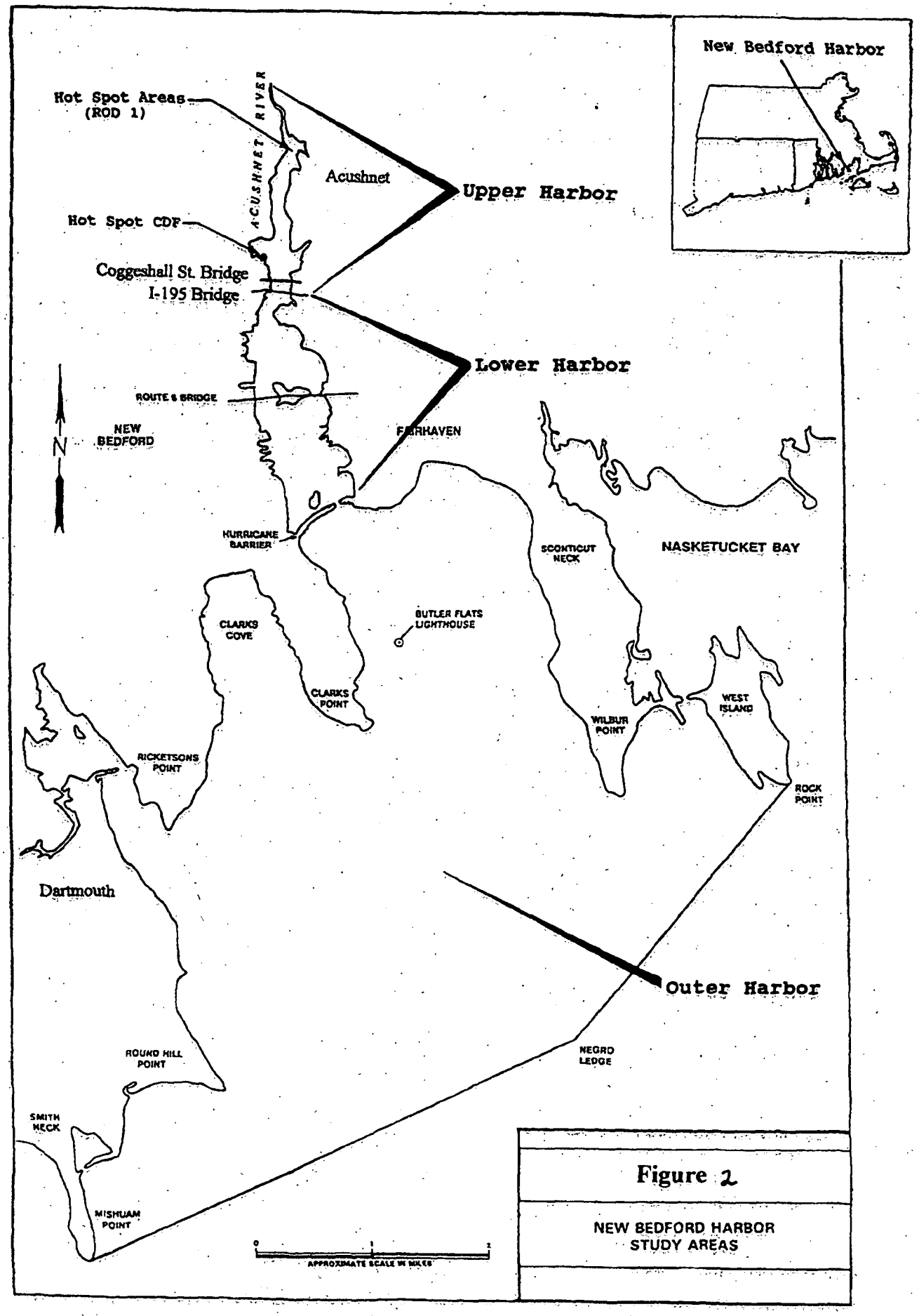


Figure 2

NEW BEDFORD HARBOR
STUDY AREAS

EPA Final Determination for the South Terminal Project
New Bedford State Enhanced Remedy

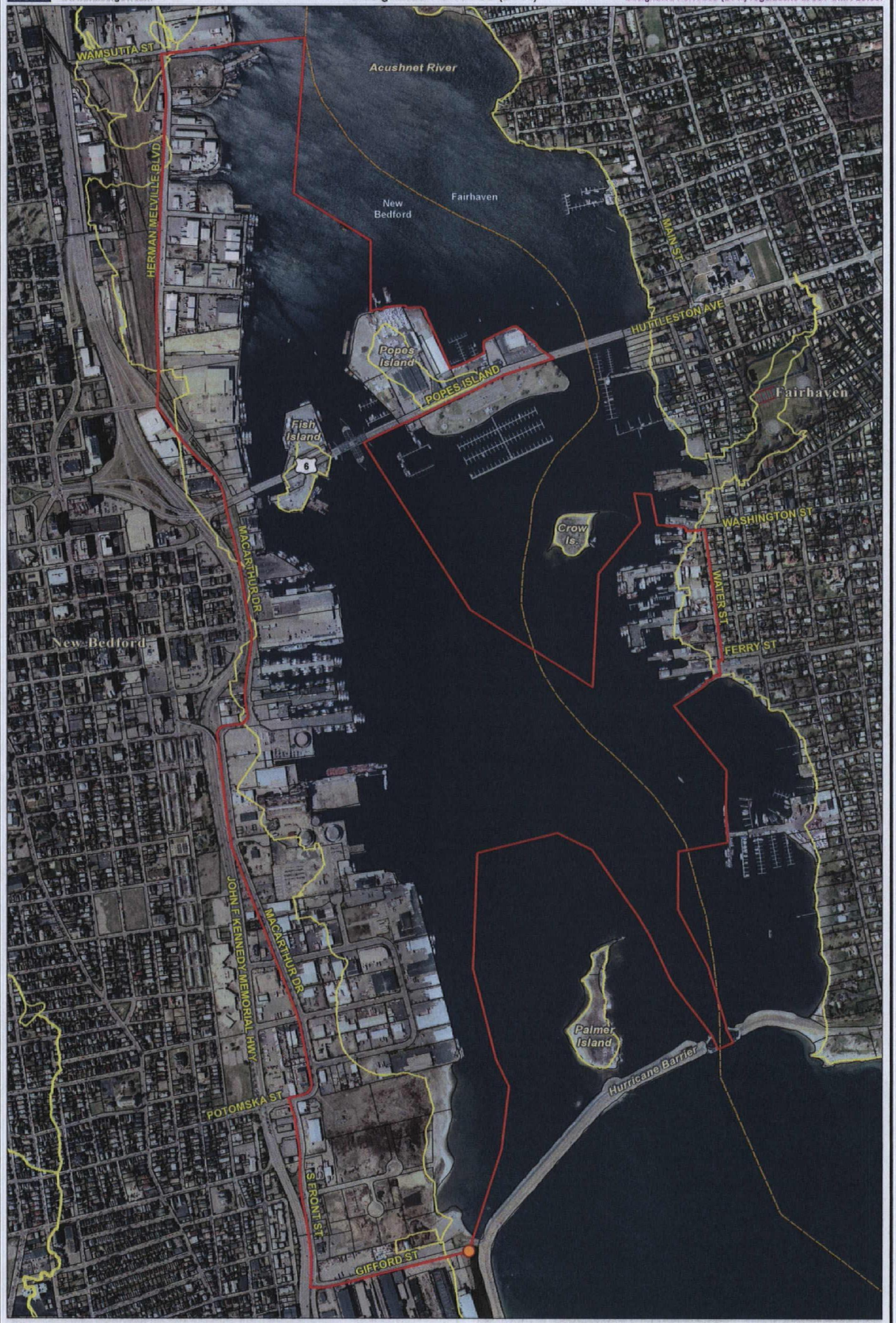
Figure 3
Map of New Bedford - Fairhaven Designated Port Area

Massachusetts Office of Coastal Zone Management
251 Causeway Street, Suite 800
Boston, MA 02114
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, CZM shall issue a written clarification pursuant to the Designated Port Area (DPA) regulations at 301 CMR 25.00.



Point of Beginning
Designated Port Area Boundary
Chapter 91 Presumptive Line

Municipal Boundary
Assessor's Parcel

N

Base map: MassGIS 1:5,000 Color Ortho Imagery, 2001.
Map coordinate system: North American Datum of 1983, Massachusetts State Plane Coordinate System, Mainland Zone (FIPS zone 2001), meters.

0 250 500 750 1,000 Feet

March 2011

EPA Final Determination for the South Terminal Project
New Bedford State Enhanced Remedy

Figure 4
Map of Final Configuration for South Terminal Project

APEX

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

REVISIONS

NO.	DATE	DESCRIPTION

MAIN FACILITY FULL LOAD RATING

MAIN FACILITY REDUCED LOADING

ANCILLARY PROPERTY

TRANSPORTATION CORRIDOR

PREPARED FOR:

COMMONWEALTH OF MASSACHUSETTS

DRAWING TITLE:

NEW BEDFORD MARINE COMMERCE TERMINAL PROPOSED CONFIGURATION A2

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	

EPA Final Determination for the South Terminal Project
New Bedford State Enhanced Remedy

Figure 5
Map of Resource Areas
(including Paleosol and Shipwreck)

Apex Companies, LLC.

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

REVISIONS

NO.	DATE	DESCRIPTION
1.	2/11/10	PRELIMINARY LAYOUT
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- 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	

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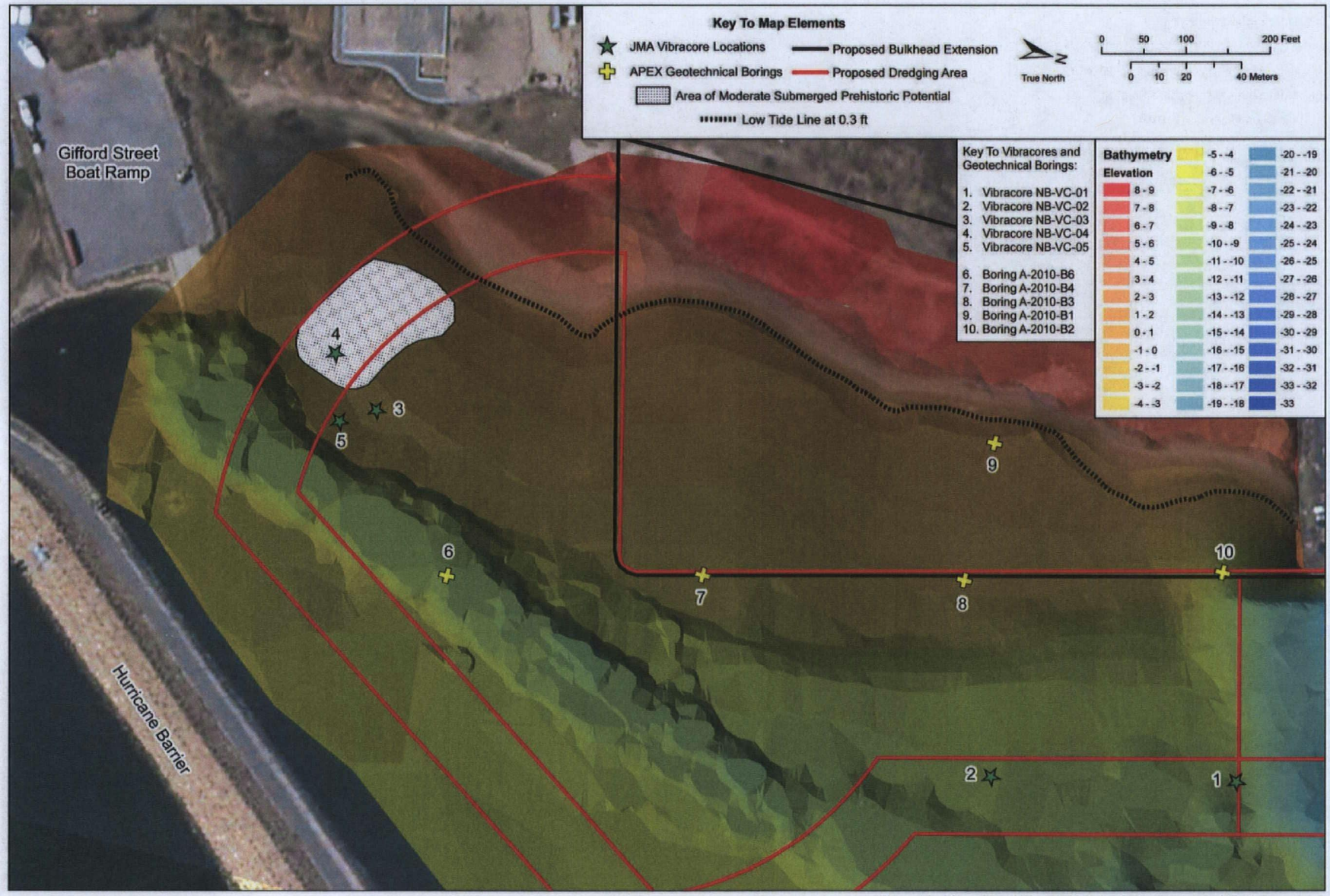
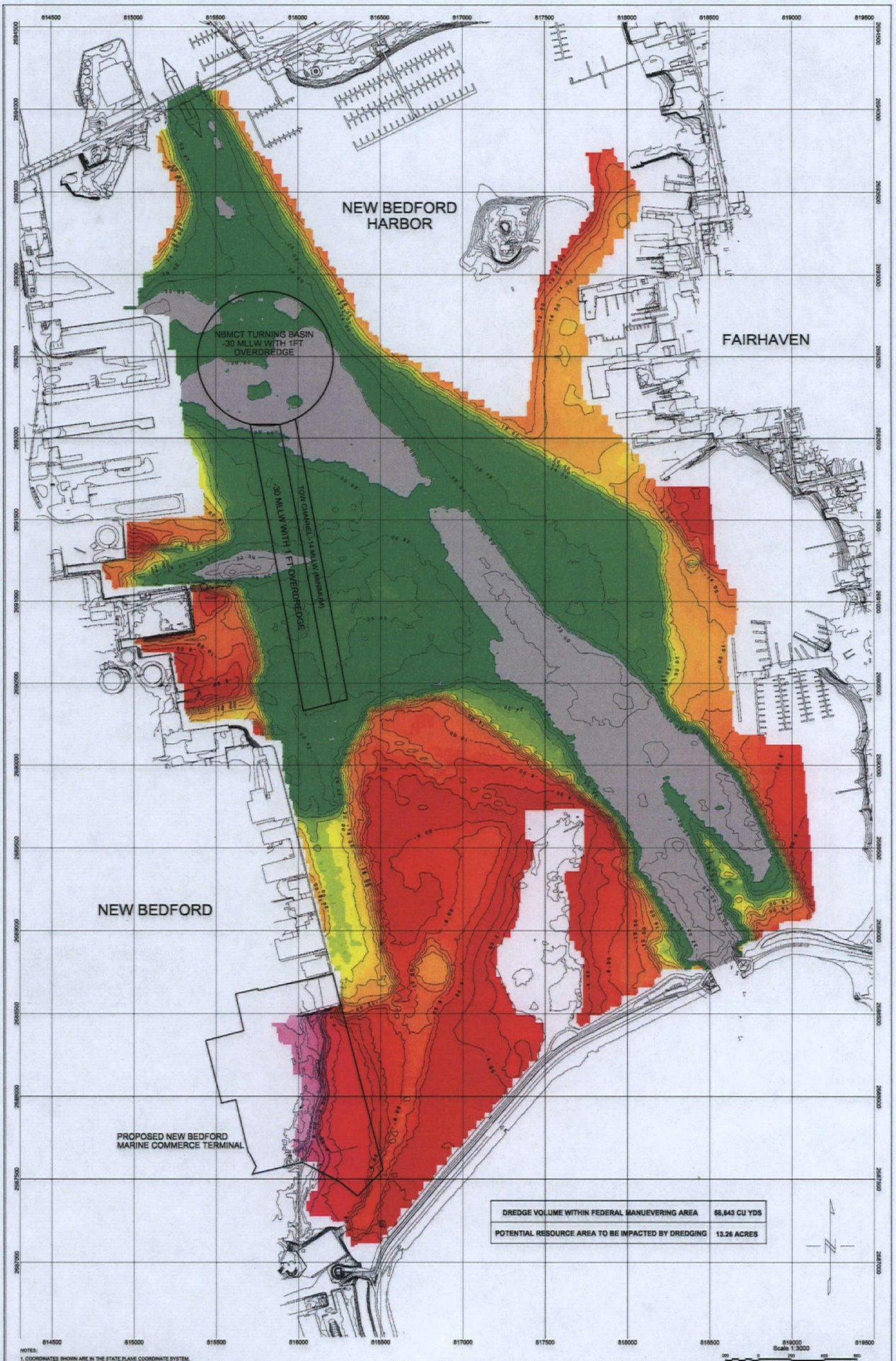


Figure 10. Map of South Terminal Marine Infrastructure Park Project Areas, Depicting Vibracore and Geotechnical Boring Locations, and the Subtidal Area Identified as Exhibiting Moderate Archeological Potential.

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

EPA Final Determination for the South Terminal Project
New Bedford 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 2001, 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 MASSACHUSETTS CLEAN ENERGY CENTER AND ON DECEMBER 9, 2008 BY THE USACE. FOR THE AREA NORTH OF THE INSTAR FACILITY.
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 Final Determination for the South Terminal Project
New Bedford State Enhanced Remedy

Table 1
Final Volume of Material to be Dredged
(engineering estimates)

Destination of Dredged Material	Material to be Dredged														Totals
	Mooring Northern Mitigation	Mooring Southern Mitigation	Gifford Street Channel Relocation	Top of Dredge	Federal Channel Dredge	Deep Draft Extension to South	Deep Draft Extension to North	Increase Channel Width	Intermediate Dredge	Bottom of Dredge	Top of CAD #3	Top of CAD #3 Expansion	Bottom of CAD #3	Bottom of CAD #3 Expansion	
OU-3 Hot-Spot Capping Mitigation Area:	-	-	-	-	-	-	-	-	-	92,500	-	-	-	-	92,500
Disposal Offshore at CCDS/RISDS:	-	-	-	-	-	-	-	-	-	-	-	-	90,000	90,000	180,000
Winter Flounder Mitigation Area:	-	-	-	-	-	-	-	-	12,000	2,000	-	-	146,500	-	160,500
New Bedford Marine Commerce Terminal:	-	-	-	-	-	16,500	8,000	13,500	-	134,000	-	-	-	-	172,000
Former Dartmouth Finishing Site:	-	-	-	-	-	-	-	-	-	45,800	-	-	-	-	45,800
Capping of CAD Cell #1:	-	-	-	-	-	-	-	-	27,500	-	-	-	-	-	27,500
Disposal at CAD Cell #2:	-	-	-	-	-	-	-	-	-	-	27,000	8,000	-	-	35,000
Disposal at CAD Cell #3:	8,600	10,500	2,000	118,500	59,000	-	2,500	8,500	-	-	-	-	-	-	209,600
Capping of Borrow Pit CAD Cell:	-	-	-	-	-	-	-	-	25,500	-	-	-	-	-	25,500
Totals:	8,600	10,500	2,000	118,500	59,000	16,500	10,500	22,000	65,000	274,300	27,000	8,000	236,500	90,000	948,400

EPA Final Determination for the South Terminal Project
New Bedford State Enhanced Remedy

Table 2
Major Federal Substantive Requirements

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New Bedford Harbor State Enhanced Remedy

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 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 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 Final 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 Final 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 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 TSCA determination is included in EPA's Final Determination for CAD cell 3; EPA is modifying the existing TSCA determination for CAD cell 2 and has included the modified TSCA Determination in its Final Determination. (Although the upland remediation will be performed independently under the state cleanup program, EPA has included this work in its TSCA Determination for upland disposal of PCB remediation waste within the upland portion of the terminal

Major Federal Substantive Requirements

			and 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,	Dredging and pile driving will not adversely affect the hurricane barrier.

Table 2

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. EPA has concluded, for the reasons discussed in its final Biological Assessment that while the Project may affect the Atlantic sturgeon, as long as the Commonwealth fully implements all the mitigation measures, it is unlikely to adversely affect the species.
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	EPA has determined that impacts to EFH species will be minimized and mitigated to the greatest extent practicable provided that the

Major Federal Substantive Requirements

		regulated under a federal fisheries management plan. Consultation with National Marine Fisheries Service must be conducted.	Commonwealth fully implements all of the proposed minimization and mitigation measures.
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 concludes there are potential impacts to fish and wildlife and has reviewed potential mitigation measures and concludes that the mitigation measures included in the Final Determination are adequate. See Appendix E and Appendix O to this Final Determination.
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 completing consultation, EPA finds no adverse affect for the upland, subtidal and intertidal areas as long as the Commonwealth agrees to abide by the conditions imposed in the Final Determination.

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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.	

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 determination that there is no practicable alternative to activities that will impact wetlands. The 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 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.

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Table 3
List of Significant Submissions from the Commonwealth
Referenced in EPA's Final Determination

List of Significant Submissions from the Commonwealth Referenced in EPA's Final Determination

MassDEP 2012e – 9/18/12 Submittal concerning cultural and archeological resources. Submitted in response to EPA 8/13/2012 request for documents. Attachments include:

Attachment A - Confirmation Documentation for January 18, 2012 Distribution;
Attachment B - Commonwealth's Responses to USPEA Questions June 18, 2012;
Attachment C - Commonwealth's Responses to USEPA Questions June 26, 2012;
Attachment D - USEPA Draft Determination, July 16, 2012;
Attachment E - Map Showing Proposed Dredge Footprint;
Attachment F - Maps Showing Three Potential Site Configurations; and
Attachment G - Cultural Resources Background Study and Archeological Sensitivity Assessment, September 2012

MassDEP 2012f – 10/1/12 NBH Phase 1 Radio Tower and 9/21/12 Final, Phase 1 Environmental Site Assessment of Multiple Properties in New Bedford, MA

MassDEP 2012g – 10/12/12 Response to USEPA Questions: Disposal Location for Dredged Sediment (Q. 11 from EPA 8/13/12 letter); Marsh Island restoration work (Q. 13 from EPA 8/13/12 letter); Alternate non-blasting methods with descriptions of hoe ram, bucket removal, drill and fracture, and cutter head dredging techniques (Q. 4 from EPA 10/5/12 letter). Attachments include:

New Bedford Harbor Trustees Council Project Update, June 2012; and
New Bedford Harbor Trustees Council Funded Land Preservation Projects

MassDEP 2012h -- 10/17/12 *Revised* Response to USEPA Questions: Upland Transportation Corridors (Q. 2 from EPA 10/5/12 letter); and Fish Deterrent Plan with transects (Q. 7 from EPA 10/5/12) with maps and figures

MassDEP 2012i – 10/19/2012 email from Gary Davis, Massachusetts EOEEA to Carl Dierker, EPA confirming commitment to develop based on Configuration 2A and confirming taking authority

MassDEP 2012j – 10/22/12 Response to USEPA Questions: Endangered Species consultations (Q. 2 from EPA 10/5/12 letter); Response to EPA comments on section 9.0 of draft Mitigation Plan dated 10/19/12. Attachments include:

Appendix 1 - 10/4/12 letter to Elaine Stanley, EPA, from Commonwealth;
Appendix 2 – 10/19/2012 Essential Fish Habitat Assessment Addendum; and
Appendix 3 – 10/22/2012 Biological Assessment of the Atlantic sturgeon

MassDEP 2012k – 10/24/12 Response to USEPA Questions: Final design for silt and bubble curtains (Q. 1 from EPA 10/17/12 email); Aquatic toxicity of expandable grout (Q. 3 from EPA 10/17/12 email) with MSDS sheets attached

MassDEP 2012l –10/27/12 Response to additional Phase 1 questions from EPA emails on 10/22/12 and 10/24/12 with New Bedford Marine Commerce Terminal Proposed Configuration A2, last update 10/25/2012

MassDEP 2012m – 10/30/12 Revised Appendix S from June 18, 2012 submission (MassDEP2012a) and Revised Figure 1 of project components, last updated on 10/30/2012

MassDEP 2012n – 10/30/12 New Bedford Marine Commerce Terminal Proposed Configuration A2, ***last revised 7/7/2012*** **IS THIS THE CORRECT VERSION?**

MassDEP 2012o - Chet Myers email of 11/8/12 to Ann Williams confirming 0.41 acres of existing salt marsh at the terminal site

MassDEP 2012p – 11/8/12 Response to USEPA request for additional information on expanded dredging

MassDEP 2012q – 11/13/2012 Fish Deterrent Plan

MassDEP 2012r – 11/14/12 Final Mitigation Plan with appendices and figures; ISMP for Bulkhead, Pilings, and Facility

MassDEP 2012s – 11/16/12 email from Chet Myers to Phil Colarusso with 10/15/2012 Final Underwater Acoustic Modeling of Construction Activities for Marine Commerce South Terminal in New Bedford, MA attached

MassDEP 2012t – 11/16/12 email from Gary Davis confirming there will be no further changes to the Commonwealth's ARAR letter of June 18, 2012.

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Appendix A
Final 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 South Terminal Project upland work. The means and methods shall be designed and implemented in a manner that minimizes airborne PCBs, particulates, lead, and asbestos, if present, to the maximum degree practicable. The Plan will detail the means and methods to be used to maintain airborne contaminant levels at the performance standards specified in Item 4, below. The Plan will be in effect continuously until completion of the work.

    b. A description of how the Commonwealth 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. The Commonwealth must first propose, and EPA must approve, the method for the comparative analysis prior to its implementation.

3. The Commonwealth shall use best management practices to comply at all times during performance of the work, with air quality performance standards. Except for the transportation corridors, a fence shall be constructed along the contiguous upland parcel boundaries during all work activities and the point of compliance for air quality performance standards shall be the fence line. Except for the transportation corridors, on the non-contiguous parcels a fence shall be constructed along the property boundary during all work activities and the point of compliance for air quality performance standards shall be the fence line.

4. PM_{10} results are used to provide information about the effectiveness of emission controls and thus when kept under control, emissions from other contaminants, such as PCBs and asbestos, will also be controlled. In order to better control conditions during the Project, tiered action levels based on real time PM_{10} results shall be taken. The Commonwealth shall initiate dust controls at levels lower than the 100 $\mu g/m^3$ 10-hour TWA, and shall apply these action levels to shorter time periods as specified below. At no time during the performance of the remedial work shall levels exceed the following standards:

CONTAMINANT	MEASURED LEVEL	ACTION
Airborne Particulates (PM_{10})	Any visible dust emissions from Project activities	Implement corrective measures to control dust (e.g., water sprays)
Airborne Particulates [(a)] (PM_{10})	> 75 $\mu g/m^3$	Increase application rate of dust controls
Airborne Particulates [(a)] (PM_{10})	> 150 $\mu g/m^3$	Continue wetting of source area. Suspend Project activities and notify EPA
Airborne Particulates [(b)] (PM_{10})	> 100 $\mu g/m^3$	Continue wetting of source area. Suspend Project activities and notify EPA
Airborne PCBs [(b)]	> 0.10 $\mu g/m^3$	Suspend Project activities and notify EPA
Airborne asbestos	> 0.1 fiber/cc	Suspend Project activities and notify EPA
Airborne Lead	> 50 $\mu g/m^3$	Suspend Project activities and notify EPA

[(a)] Based on 5-minute average TEOM® data or equivalent
[(b)] Based on a 10-hour Time Weighted Average (TWA)

5. The Commonwealth may propose an alternate airborne PCB standard (Not To Exceed 0.260 $\mu g/m^3$) for properties along the fence line where no residential property exists within 200 feet of said fence line.

6. In the event of an exceedance and work stoppage is required, the Commonwealth shall submit a proposed corrective action plan to address the exceedance. Work shall resume only with EPA's approval and upon implementation of the corrective action plan.

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Appendix B
EPA Guidelines for
Fish Consumption in New Bedford Harbor

EPA United States Environmental Protection Agency

EPA Cleanups: Communities around New Bedford Harbor

Fish Consumption Regulations and Recommendations

Since 1979, Massachusetts regulations have prohibited eating fish and/or shellfish caught in certain areas of New Bedford Harbor. The Massachusetts Department of Environmental Protection samples local fish and shellfish every year to determine whether PCB concentrations are declining as a result of cleanup activities around New Bedford Harbor.

U.S. EPA recommends that recreational fishermen, shell fishermen and everyone else follow the Massachusetts regulations. In addition, we recommend limited eating of certain species not covered by the 1979 state regulations.

*Please see below for information on species specific information and recommendations for sensitive groups -- pregant women, nursing mothers, children under age 12 and women who may become pregnant.

Original Fishing Ban (in effect 1979 – present)

Updated 2010 EPA Recommendations

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
- tautog / tautoga / bodião da ostra
- scup / sargo / sargo
- eel / anguila / anguila

On this page:

More Information

- Information about Massachusetts fish consumption advisories
- Contaminant monitoring reports for seafood harvested in the NBH area

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.

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.

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 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 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.

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 I

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 2

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, 3.3MB, 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 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

html

Closure Area 3

-- 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.

WCMS
Last updated on Saturday, May 05, 2012

EPA Final Determination for the South Terminal Project
New Bedford State Enhanced Remedy

Appendix C
Final Water Quality Performance Standards

Water Quality Performance Standards

I. Introduction

1. These Water Quality Performance Standards ("Performance Standards") shall apply to the South Terminal Project as defined by EPA's Final Determination for the South Terminal Project issued on November 19, 2012.

2. The Commonwealth of Massachusetts is the lead agency for the State Enhanced Remedy work, and has a designated State Enhanced Remedy Project Manager ("SER PM").

3. Pursuant to the Memorandum of Agreement entered into between EPA and the Commonwealth in 2005 relative to the New Bedford Harbor State Enhanced Remedy, the SER PM shall continue to coordinate with the Regulatory Agencies for this South Terminal Project. In addition, to ensure consistency with EPA's Final Determination for the South Terminal Project, EPA shall have review and approval authority as described in these Water Quality Performance Standards.

4. No modifications may be made to these Water Quality Performance Standards without prior written agreement of EPA.

5. In the event of a conflict between these Performance Standards and the Final Mitigation Plan included in EPA's Final Determination, the Final Mitigation Plan shall prevail.

II MADEP 401 Water Quality Program Standards:

1. Anti-degradation provisions of the Massachusetts Surface Water Quality Standards protect all waters, including wetlands. The Commonwealth shall ensure that all necessary steps are taken to assure that the proposed activities will be conducted in a manner, which will avoid violations of said standards.

2. Environmental Monitor. The Commonwealth shall ensure that the contractor shall employ an "Environmental Monitor" (EM) and that the contract requires the EM to report directly to the SER PM and EPA. 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 SER PM and the Regulatory Agencies 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 SER PM and EPA directly for any matter involving wetland protection. The EM shall submit bi-weekly reports to the SER PM and EPA, following the commencement of construction and continuing until completion of the work in resource areas. The bi-weekly reports shall summarized, 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.

3. All in-water work shall meet EPA's Final Determination conditions to protect aquatic life, including winter flounder spawning & the alewife fish run that passes through the harbor to the Acushnet Sawmill Pond spawning area.

4. A Storm Water Pollution Prevention Plan (SWPPP) for the entire project as required by EPA's Final Determination, 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 SER PM for prior review and written approval prior to commencement of construction. 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 EPA's NPDES Construction Stormwater 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 specific measures to be taken to adjust the pH to acceptable limits [for example, carbon dioxide (CO2) bubbling when concrete pouring is also occurring].

5. The Commonwealth shall ensure that the contractor shall implement the use of silt curtains and absorbent booms, and/or the Fish Deterrent Program as outlined below:

    a. **CDF Filling**: At all times of year, when filling below Mean High Water occurs in association with construction of the CDF, the area being filled shall either be completely encircled with steel sheet piling, or completely encircled with a combination of steel sheet piling and silt curtains, or completely encircled with silt curtains.

        1. Monitoring: Turbidity monitoring must be conducted outside of and within 15 feet from the silt curtain and at a reference site located 200 feet from the silt curtain. Turbidity standards outlined in Section II.9 must be satisfied.

b. **Compensatory Mitigation**: At any depth and at all times of year, all areas where there is filling and capping associated with compensatory mitigation (i.e. winter flounder mitigation creation and intertidal and subtidal mitigation capping) will be completely encircled by silt curtains and absorbent booms for the duration of the filling and capping activity.

1. Monitoring: Turbidity monitoring must be conducted outside of and within 15 feet from the silt curtain and at a reference site located 200 feet from the silt curtain. Turbidity standards outlined in Section II.9 must be satisfied.

c. **Dredging, Filling Capping, and Rock Removal at Depths Shallower Than -5 Meters MLLW**: In all areas where dredging, filling (except for filling below Mean High Water associated with construction of the CDF, addressed in Section II.5.a, and compensatory mitigation activities, addressed in Section II.5.b.), capping, and other activities such as rock removal will occur, the following is required:

1. *From January 15 through June 15 of any year*, the Fish Deterrent Program (see Section II.8 and Attachment 1) must be implemented. This Program requires that absorbent booms, silt curtains, bubble curtains and fish weirs be erected around the work area to prevent fish, particularly winter flounder, from entering the work area. [Note: other Fish Deterrent Program requirements as specified in Section II.8 must also be employed.]

A. Monitoring: Inside the silt curtain (except for areas below Mean High Water to be filled in association with construction of the CDF), turbidity monitoring is required at a reference location established approximately 200-feet up-current from the dredge and at a monitoring location established 200-feet down-current from the dredge, unless dredging is conducted within 200 feet of the silt curtain, in which case turbidity monitoring must be conducted outside of and within 15 feet from the silt curtain and at a reference site located 200 feet from the silt curtain. Turbidity standards outlined in Section II.9 must be satisfied.

2. *From June 16 through January 14 of any year*, work may proceed without silt curtains unless necessary to ensure compliance with turbidity standards.

A. Monitoring: Turbidity monitoring is required at a reference location established approximately 200-feet up-current from the dredge and at a monitoring location established 200-feet down-current from the dredge. Turbidity standards outlined in Section 9 must be satisfied.

B. If silt curtains are deployed to ensure compliance with turbidity standards, turbidity monitoring must be conducted outside of and within 15 feet from the silt curtain and at a reference site located 200 feet from the silt curtain. Turbidity standards outlined in Section II.9 must be satisfied.

d. **Filling and Capping At Depths Equal To or Greater Than -5 Meters MLLW**: In all areas (except for filling associated with construction of the CDF (addressed in Section II.5.a,) that are not already enclosed, and compensatory mitigation activities (addressed in Section II.5.b), where filling (including CAD cell capping) will occur, the following is required:

1. *From January 15 through June 15 of any year*, CAD cells (including the borrow pit) that are being filled or capped shall be completely encircled by silt curtains and absorbent booms for the duration of the filling activity.

A. Monitoring: Turbidity monitoring must be conducted outside of and within 15 feet from the outside edge of silt curtain and at a reference site located 200 feet from the silt curtain. Turbidity standards outlined in Section II.9 must be satisfied.

2. *From June 16 through January 14 of any year*; CAD cell filling and capping may proceed without silt curtains unless necessary to ensure compliance with turbidity standards.

A. Monitoring: Turbidity monitoring is required at a reference location established approximately 200-feet up-current from the dredge and at a monitoring location established 200-feet down-current from the dredge. Turbidity standards outlined in Section II.9 must be satisfied.

B. If silt curtains are deployed to ensure compliance with turbidity standards, turbidity monitoring must be conducted outside of and within 15 feet from the outside edge of silt curtain and at a reference site located 200 feet from the silt curtain. Turbidity standards outlined in Section II.9 must be satisfied.

e. **Dredging At Depths Equal to or Greater than -5 Meters MLLW**: In all areas where dredging and associated activities such as rock removal will occur in depths equal to or greater than -5 meters MLLW:

1. *From January 15 through June 15 of any year*, silt-curtains and absorbent booms shall be deployed to enclose all areas being dredged.

A. Monitoring: Inside the silt curtain, turbidity monitoring is required at a reference location established approximately 200-feet up-current from the dredge and at a monitoring location established 200-feet down-current from the dredge, unless dredging is conducted within 200 feet of the silt curtain, in which case turbidity monitoring must be conducted outside of and within 15 feet from the silt curtain and at a reference site located 200 feet from the silt curtain. Turbidity standards outlined in Section II.9 (below) must be satisfied.

2. *From June 16 through January 14 of any year*, work may proceed without silt curtains unless necessary to ensure compliance with turbidity standards.

A. Monitoring: Turbidity monitoring is required at a reference location established approximately 200-feet up-current from the dredge and at a monitoring location established 200-feet down-current from the dredge. Turbidity standards outlined in Section II.9 must be satisfied.

B. If silt curtains are deployed to ensure compliance with turbidity standards, turbidity monitoring must be conducted outside of and within 15 feet from the silt curtain and at a reference site located 200 feet from the silt curtain. Turbidity standards outlined in Section II.9 must be satisfied.

6. The Commonwealth shall ensure that the contractor shall, prior to the start of any in-water work, submit a plan for deployment of silt curtains, absorbent booms, fish weirs and bubble curtains in accordance with Section II.5 to SER PM and to EPA for review and approval.

7. The Commonwealth shall ensure that the contractor shall, prior to the start of any in-water work, submit to the SER PM and to EPA for review and approval, a Contingency Plan, outlining the steps that the contractor will take, should dredging, filling, capping or rock removal activities cause an exceedance of the Water Quality Monitoring criteria outlined within these Performance Standards (see Section II.9). At a minimum, the Contingency Plan shall include measures that may be undertaken by the contractor to reduce turbidity such as reduction of the rate of operations, use of silt curtains and absorbent booms, alternate dredging and capping methodologies, and the total halt of operations. The Contingency Plan shall also include a provision that if the deployment of silt-curtains and absorbent booms cannot be implemented in accordance with Section II.5

during the period of time from January 15 to June 15 of any year, work in the area may not begin until June 16 of that year and the SER PM and EPA shall be notified.

8. *Fish Deterrent Program* – A Fish Deterrent Program in accordance with the Fish Deterrent Plan in Attachment 1 shall be implemented for any work conducted within waters shallower than -5 Mean Lower Low Water between January 15th and June 15th of any year. If the Fish Deterrent Program is not implemented in an area shallower than -5 Mean Lower Low Water prior to January 15th of any year, work in the area may not begin until June 16th of that year. Proposed modifications to the Fish Deterrent Plan must be submitted to the SER PM and to EPA for review.

9. Water Quality Monitoring Schedule and Methods

a. *When in-water work is contained within a silt-curtained area* in accordance with Section II.5, the following water-quality monitoring program shall be carried out daily for the first three days of activities commencing and once a week thereafter and during those times when dewatering activities are ongoing from the CDF filling operation:

1. 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.

2. Turbidity shall be measured at both the monitoring and reference site prior to the start of dredging, and once every two hours during dredging.

3. 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 Over Reference
<10	20 NTUs
11-20	15 NTUs
>21	30% of reference

4. 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, total and dissolved PCBs, and total metals for 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 Commonwealth shall ensure that its contractor takes operational action(s) designed to limit such exceedances (as outlined within the approved Contractor's Contingency Plan, see Section II.7), 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 II.9.a until compliance is reestablished.

5. If compliance cannot be reestablished within 48 hours, in-water work shall cease and the SER PM and EPA, in consultation with the Environmental Monitor and the Commonwealth's 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. EPA, in consultation with the SER PM and the Environmental Monitor, shall have final authority to determine the requirements for additional mitigation, if any.

6. In the event the exceedence occurs during an activity and in an area in which silt curtains are required from January 15 through June 15 in accordance with Section II.5, if all additional mitigation measures exercised in accordance with Section II.7, and compliance cannot be reestablished within 48 hours of the implementation of the additional mitigation measures, the work shall stop and may not resume again until June 16, unless the Commonwealth can demonstrate to the satisfaction of EPA that it has instituted measures sufficient to reestablish compliance and EPA concurs that work may proceed with such measures.

b. *When in-water work is not conducted within a silt curtain area* in accordance with Section II.5 the following water-quality monitoring program shall be carried out daily for the first three days of activities commencing and twice a week thereafter and during those times when dewatering activities are ongoing from the CDF filling operation:

1. 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.

2. Turbidity shall be measured at both the reference location and the monitoring site (see Section II.5) prior to the start of dredging, and once every two hours of dredging.

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

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

4. If, in two consecutive monitoring events, the average turbidity at the monitoring site 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 site and the monitoring site shall be collected and submitted for analysis of Total Suspended Solids, total and dissolved PCBs, and total metals for 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 Commonwealth shall ensure that its contractor takes operational action(s) designed to limit such exceedences (as outlined within the approved Contractor's Contingency Plan, see Section II.7), such as increasing the dredge cycle time, deployment of silt curtains, 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 II.9.b.iii, until compliance is reestablished.

5. If compliance cannot be reestablished within 48 hours, in-water work shall cease and the SER PM and EPA, in consultation with the Commonwealth's 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. EPA, in consultation with the SER PM, shall have final approval to determine the requirements for additional mitigation, if any.

10. 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 piling/debris

removal shall be minimized to the greatest extent practicable. Should dredging with the environmental bucket become infeasible or unsuccessful, such dredging must halt and the SER PM and EPA must be notified. EPA, in consultation with the SER PM, must approve any contaminated sediment dredging not using the environmental bucket before such dredging may recommence. The contractor must continue to meet the project Water Quality Standard Performance Standards when an alternate dredging method is used.

11. Water discharged from the barge shall be appreciably free of suspended sediment and meet the water quality criteria established in Section II.9. 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 SER PM) prior to discharge.

12. The SER PM and EM shall be responsible for anticipating the need for and installation of additional erosion/sediment/turbidity controls and shall have the authority, subject to EPA review and approval, 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. Within 30 days of the completion of all dredging, all bathymetric surveys of the dredge footprint shall be sent to the SER PM and EPA.

III MADEP Chapter 91 Waterways Standards

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

2. Within 90 days after completion of the authorized South Terminal Project work, the Commonwealth shall require its contractors to furnish to the SER PM a suitable plan showing the depths at mean low water over all filled (except areas filled above Mean High Tide) and dredged areas. Dredging 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 Commonwealth shall at its expense, remove the shoal areas. The Commonwealth shall pay all costs of supervision, and if at any time the SER PM deems necessary a survey or surveys of the filled and dredged areas, the Commonwealth shall pay all costs associated with such work.

3. The Commonwealth shall ensure that its contractor shall, at least three business days prior to the commencement of any dredging and filling in tide water, give written notice to the SER PM and EPA of the time, location, and amount of the proposed work.

IV Special Waterways Conditions

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

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

3. The Commonwealth 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 Commonwealth shall maintain vehicular access to water-dependent users throughout construction activities. As part of the final design plan, the Commonwealth shall ensure it 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 Commonwealth 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, fish weirs, bubble curtains, and siltation curtains.

FISH DETERRENT PLAN

Project Summary

The New Bedford Marine Commerce Terminal (NBMCT) (see **Figure 1** for a site location plan) in New Bedford Harbor has been promulgated in order to develop a multi-purpose marine terminal, a primary purpose of which will be to provide critical infrastructure to serve offshore renewable energy facilities and accommodate international shipping at the new facility. The proposed facility will also be capable of supporting other industries within New Bedford, and will beneficially re-use sand from navigational dredging or the construction of confined aquatic disposal facilities to the extent approved by US EPA.

An assessment of the potential locations for supporting offshore renewable energy facilities and international shipping completed within the document entitled "State Enhanced Remedy in New Bedford, South Terminal", promulgated by the Commonwealth on January 18, 2012 has resulted in the conclusion that South Terminal in New Bedford, Massachusetts is the only practicable location due to a number of constraints, including: horizontal clearance, jack-up barge access, overhead clearance, total wharf and yard upland area, berthing space, site control/availability, and proximity. Due to the lack of other practicable alternatives, and the avoidance and minimization of impacts to resource areas to the maximum extent practicable, the South Terminal CDF is the Least Environmentally Damaging Practicable Alternative that will meet the primary Project Purpose.

During construction of the NBMCT, many activities (including dredging) may have a temporary detrimental effect to the fish that may be present within New Bedford Harbor. A Fish Monitoring Workgroup (including members from NMFS, EPA and MassDMF) was convened to prepare a Fish Deterrent Plan that could be utilized to reduce the impact to fish by excluding them from a proposed area. The input from the Fish Monitoring Workgroup has been incorporated into this Fish Deterrent Plan. This Fish Deterrent Plan (FDP) will include all measures to be taken that will decrease the chance of mortality to marine species of concern and their spawning activities (where applicable), including: Atlantic sturgeon, Winter and Windowpane Floudners, Scup, and Anadromous fish species as directed by the National Marine Fisheries Service (NMFS).

Objectives

The objective of this FDP is to construct the NBMCT without restricting access to daily fishing traffic and have the "least environmentally damaging as practicable alternative" in place to deter fish species from the NBMCT construction area, so that none are harmed or inadvertently "taken." The system is also intended to prevent spawning within the area of work, such that the eggs of the species in question will not be present when work commences, and therefore will not be damaged or destroyed. The fish species in question are as noted in the "NMFS comments on the Draft Determination for South Terminal in New Bedford, MA" dated August 21, 2012 and included below:

- Atlantic Sturgeon;
- Winter Flounder;
- Windowpane Flounder;
- Scup;
- Black Sea Bass.

Methods

Engineered Barriers

A series of engineered barriers will be in place to exclude fish from entering the areas where dredging and other marine construction are to take place. The barriers will re-direct, but not otherwise limit vessel traffic in the area of work. The three types of barriers to be erected are a fish weir, silt curtain, and bubble barrier. Coupled with an extensive monitoring program, the system is intended to exclude fish from using the area while work is taking place. The layout of the engineered barriers is depicted on **Figure 2.**

Fish Weir

A fish weir is a net which is placed in the water column and extends approximately 4 feet off the bottom. It is designed to channel ground fish away from the area where work is to take place. The weir will be placed on the outside of all the engineered barriers in close proximity to the bubble curtain and silt curtain. A detail of the fish weir is depicted on **Figure 3.**

Silt Curtains

Turbidity Barriers, also known as turbidity curtains, silt barriers, and silt curtains in the industry are designed specifically to contain and control the dispersion of floating turbidity and silt in a water body related to marine construction, pile driving, site work, and dredging activities. Silt curtains or silt protectors minimize these impacts by improving settling times and settling suspended solids in a defined area well away from natural resources.

For the NBMCT project, a modified silt curtain will be used both for turbidity control and also as a fish barrier. Traditional silt curtains may or may not touch the harbor bottom. In the past silt curtains which do not touch the bottom have been utilized in the Harbor during disposal activities at CAD Cell #2, and during dredging activities during the posted time of year (TOY) restriction when water depth is greater than 4 feet. The water depth is critical as when there is a tidal exchange the bottom of the curtain creates turbidity as it moves up and down in the mud. The Commonwealth proposes to create a solid barrier extending silt curtains to the harbor bottom; however the curtain will be modified so that the curtain does not create turbidity. Two sections will be at the site of the proposed New Bedford Marine Commerce Terminal and the third section will be at the proposed CAD Cell #3. The silt curtain will utilize a tidal flux pocket, the tidal flux pocket consists of a continuous line of floatation running the length of the silt curtain that is 4 feet from the harbor bottom, ensuring that the portion of the silt curtain nearest the bottom is always held taut and vertical preventing the contact which often is the cause of increased turbidity common in traditional silt curtain installations. This floatation accounts for the tidal range of New Bedford Harbor, which is ± 5 feet. When the tide is high, the silt curtain will be extended and will be stretched to its full length. When the tide falls, the floats at the 4 foot level will hold the bottom portion of the silt curtain off of the harbor floor, while the upper portion of the silt curtain will be supported on one side by the lower floats and on the other side by the surface floats. This modified silt curtain design will eliminate potential turbidity generation by the silt curtain, while allowing the silt curtain to extend from the water surface to the harbor floor. (**See cross section Figure 4**).

Bubble Barrier

The bubble barrier is a fairly recent addition to the mitigation techniques used in marine construction. Bubble barriers are, in their simplest form, a perforated pipeline running along the bottom of a waterway. Compressed air is pushed through the pipeline creating an array of bubbles along the northern limits of proposed construction site. This barrier carries three significant functions. First, fish species see the bubble array as a solid barrier, in effect a wall of air bubbles. Second, the air bubbles dampen sounds created by construction activities. Third, because the bubble barrier is a non-physical barrier, vessels may still use the existing South Terminal and Gifford Street channels during construction.

For the NBMCT project, one bubble barrier will be incorporated into the fish barrier. The bubble barrier will be placed on the northern end of the channel leading from the Gifford Street Boat Ramp. The bubble barriers and silt curtain will be overlapped to eliminate the potential for fish swimming around the barriers. A cross section of the barrier is attached as **Figure 5**. The combination of fish barrier silt curtain and bubble barrier for a fish barrier system.

Fish Monitoring

After the fish exclusion efforts are installed, a weekly monitoring procedure will be carried out. This procedure will be first implemented one day after the initial fish exclusion efforts are undertaken and once a week thereafter. The survey will be done with a sonar fish finder and a towed video system. The perimeter of the area will be surveyed twice: first to verify the silt curtain and bubble curtains are in place and second to verify the weir leader net is in place). Then the dredge area will be surveyed to determine if fish are present using the following procedure:

- Run transects parallel to shore or depth contours with a randomly selected start point for each survey.
- The survey area is approximately 1200 feet in length and runs parallel to shore. Survey will be run at approximately 1 nautical mile per hour.
- Transects will be spaced 100' on center and will begin 50' from the eastern boundary of the Silt Curtain.
- Two methods for detecting fish will be utilized: a fish finder used for identifying pelagic fish schools, and a video surveillance system used to identify flat fish.
- The video method is most appropriate for detecting flat fish. In order to ensure that visibility is acceptable for the survey, a laser scaling method will be used at each transect to visually confirm the seafloor.
- If a transect fails the visibility test, the monitoring them can select up to 5 additional grids to transect.
- If more than 5 transects fail the visibility test, then divers will complete the survey. Since the camera survey will image at a maximum 3% of the dredge area, the conservative measure of a single fish being imaged will be used as the threshold for implementing additional fish exclusion efforts.

The following decision tree will be used for the implementation of fish exclusion efforts:

VIDEO

If no flatfish are encountered → the area will be considered free of fish.

If 1 or more flatfish are encountered → fish removal procedure will be initiated.

SONAR

If <5 pelagic schools are encountered on sonar → the area will be considered free of fish.

If >=5 pelagic school are encountered on sonar → fish removal procedure will be initiated.

Reporting

A video monitoring report will be provided to the Fish Monitoring Workgroup weekly within 4 days of the monitoring. For every video monitoring event the report will describe:

1. The condition of the engineered barriers (silt curtain, bubble curtains, and weir leader net);
2. The prevalence of flatfish and other fish at the base of the fish exclusion devices;
3. Any actions taken to improve the conditions of the fish exclusion devices;
4. The total count of grid/transects completed;
5. The total count of grid transects skipped due to visibility – if grid survey method used;
6. Description of any survey alterations due to lack of visibility;
7. Total count of flatfish encountered;
8. Total count of other fish encountered;
9. Total count of schools on the sonar record;
10. Description of any actions taken to remove fish from the area;
11. Any turbidity monitoring exceedances;
12. Recommendations to improve the survey methodology, the fish exclusion devices, or the fish removal tactics;
13. Field notes from video and sonar survey (note that the video and sonar data will be observed in the field but will not be recorded).

Fish Exclusion Efforts

In the event that fish are found to be present during the monitoring surveys (the first video survey), measures will be taken to use a "fish startle system" to move fish outside the aforementioned barriers. The bubble barrier will be turned off and fish exclusion techniques will the deployed. The three different types of systems that will be mounted to the survey vessel to startle fish species are:

- Light
- Sound
- Tactile

All three systems will be used during all fish startling activities. The light system will include strobe lights mounted on either side of the helm with extendable poles. The lights range in size

from four to eight feet in length. Range of the color of light projected will vary, as will the intensity of light emitted. Bright lights have been shown to startle fish in many studies. The extendable poles will allow the lights to startle fish farther down in the water column than if the system was mounted to the helm. The sound emitting part of the startle system will be an underwater speaker capable of sound ranges from 100-1200 hertz. The speaker will hang on a tether into the water column. The tactile fish deterrent will be made of a fish net with light chain hanging to the harbor bottom. The net will be large enough gauge line that the fish will see it but will have large openings so they are not caught. The system will progress through the deterrence area at 2-4 knots on a calm day. During the fish startle activities the bubble barrier will not be active to allow fish to pass through these areas unimpeded (see **Figure 7** for schematic of fish startle boat mount set up). The bubble curtain will then be turned on.

The video survey will be repeated (second video survey). If fish are found again, time permitting a second attempt at removing the fish will be attempted and the video survey will be repeated again. If fish are still found in the work area during the third video survey, the Commonwealth will re-inspect the integrity of the fish exclusion methodology. If there is a breach or other issue with implementation of the fish exclusion methodology, it will be repaired and monitoring will begin again.

If, after one month of deployment, the fish exclusion methodology does not appear to be meeting all of the goals of the fish exclusion program, the Commonwealth will meet with the Fish Monitoring Workgroup (FMW), the Commonwealth's monitoring team, and others with relevant expertise, to discuss issues and potential mitigation measures. The procedures implemented will be reviewed with the FMW, and potential alternate methods for monitoring and/or silt curtain maintenance, mitigation, or additional fish exclusion methods will be discussed.

Once a breach, issue, or problem, or once a potential alteration/mitigation measure is implemented, the monitoring will begin again to determine its effectiveness. Should fish be found in three consecutive video surveys after implementation of the mitigation measure, the Commonwealth will first re-inspect the integrity of the fish exclusion methodology. If there is a breach or otherwise issue with implementation of the fish exclusion methodology, it will be repaired and monitoring will begin again. Otherwise, either a subsequent alteration/mitigation measure will be implemented, or a meeting with the FMW will be scheduled to discuss whether or not modifications to the engineering controls could be made.

Figure 1: SITE LOCUS SCALE 1"=2400'	NEW BEDFORD MARINE COMMERCE TERMINAL FIN FISH EXCLUSION PLAN NEW BEDFORD, MA	APEX 184 High Street, Suite 502 Boston, Massachusetts Phone: (617) 728-0070

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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

PROJECT
NEW BEDFORD
MARINE COMMERCE
TERMINAL

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

NO.	DATE	DESCRIPTION	BY

PROJECT NO.	6690
CADD FILE	GIFFORD_ST
DESIGNED BY	JER
DRAWN BY	JER
CHECKED BY	CHM
DATE	9-27-12
DRAWING SCALE	1"=150'

GRAPHIC SCALE
SCALE: 1"=150'
0 75 150 300

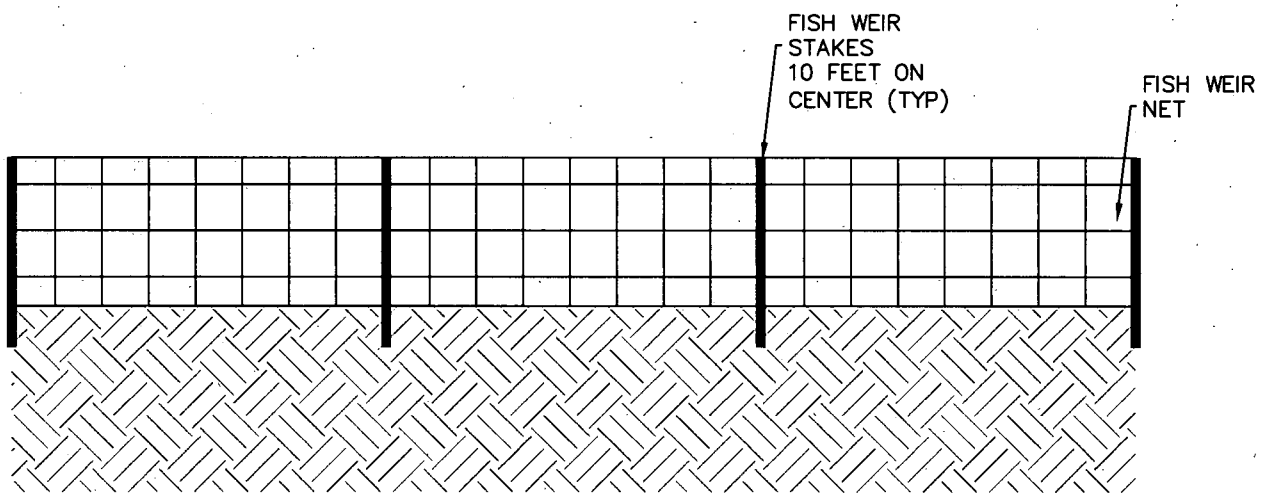
SHEET TITLE

NEW BEDFORD
MARINE COMMERCE
TERMINAL
FISH BARRIER

DRAWING NO.

FIGURE 2

1 OF 1



NOTE: ALL DIMENSIONS ARE APPROXIMATE

FIGURE 3: FISH WEIR DETAILS	FISH PROTECTION PLAN NEW BEDFORD MARINE COMMERCE TERMINAL	APEX 184 High Street, Suite 502 Boston, Massachusetts Phone: (617) 728-0070

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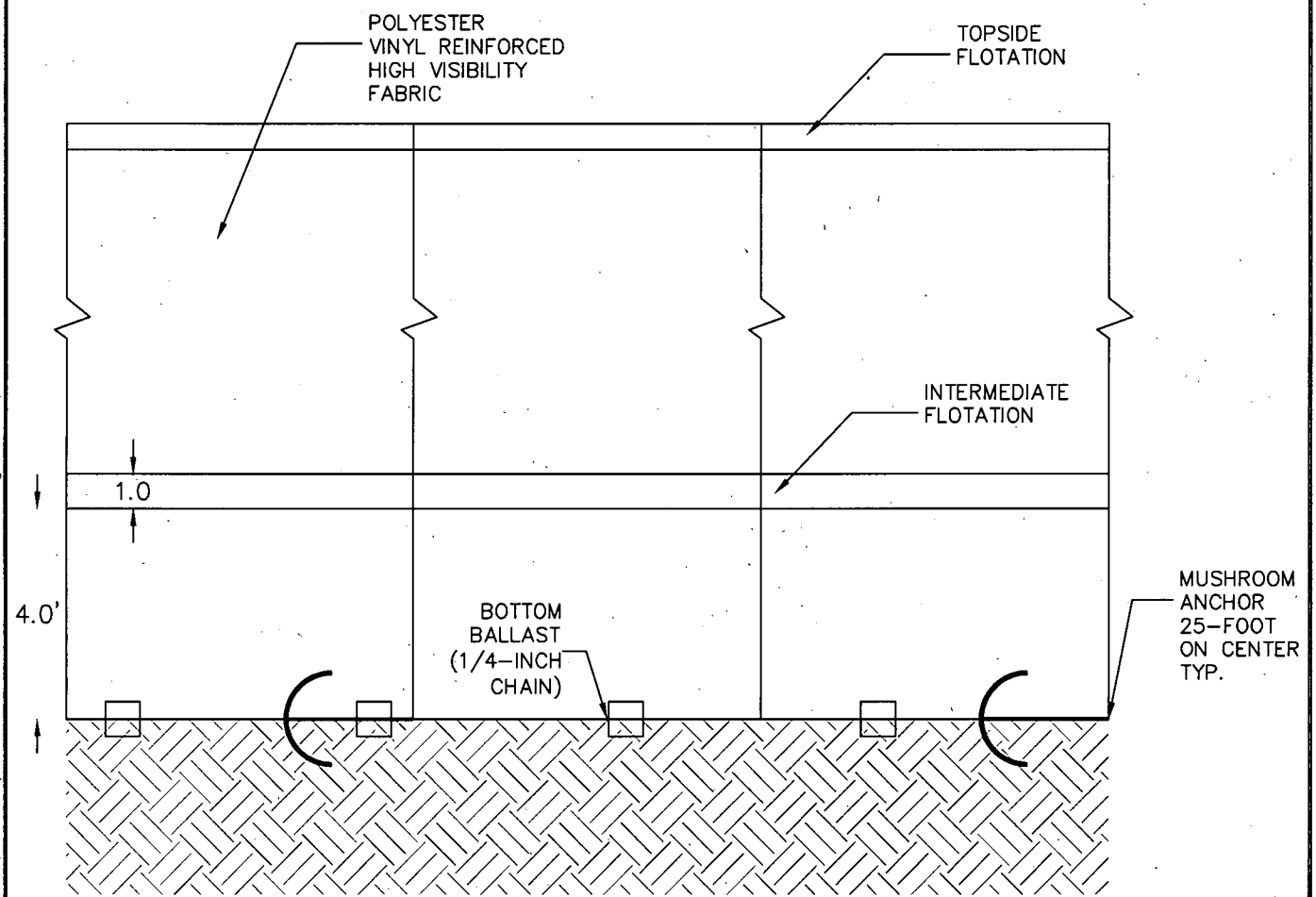
SPECIFICATIONS
- FABRIC – POLYESTER REINFORCED VINYL HIGH VISIBILITY YELLOW
- CONNECTOR – SECTIONS ARE LACED TOGETHER THROUGH GROMMETS AND LOAD LINES ARE BOLTED TOGETHER.
- FLOTATION – 6" EXPANDED POLYSTYRENE OVER 9 LBS./FT. BUOYANCY.
- BALLAST – 1/4" GALVANIZED CHAIN (.7 LBS/FT)



NOTE: ALL DIMENSIONS ARE APPROXIMATE

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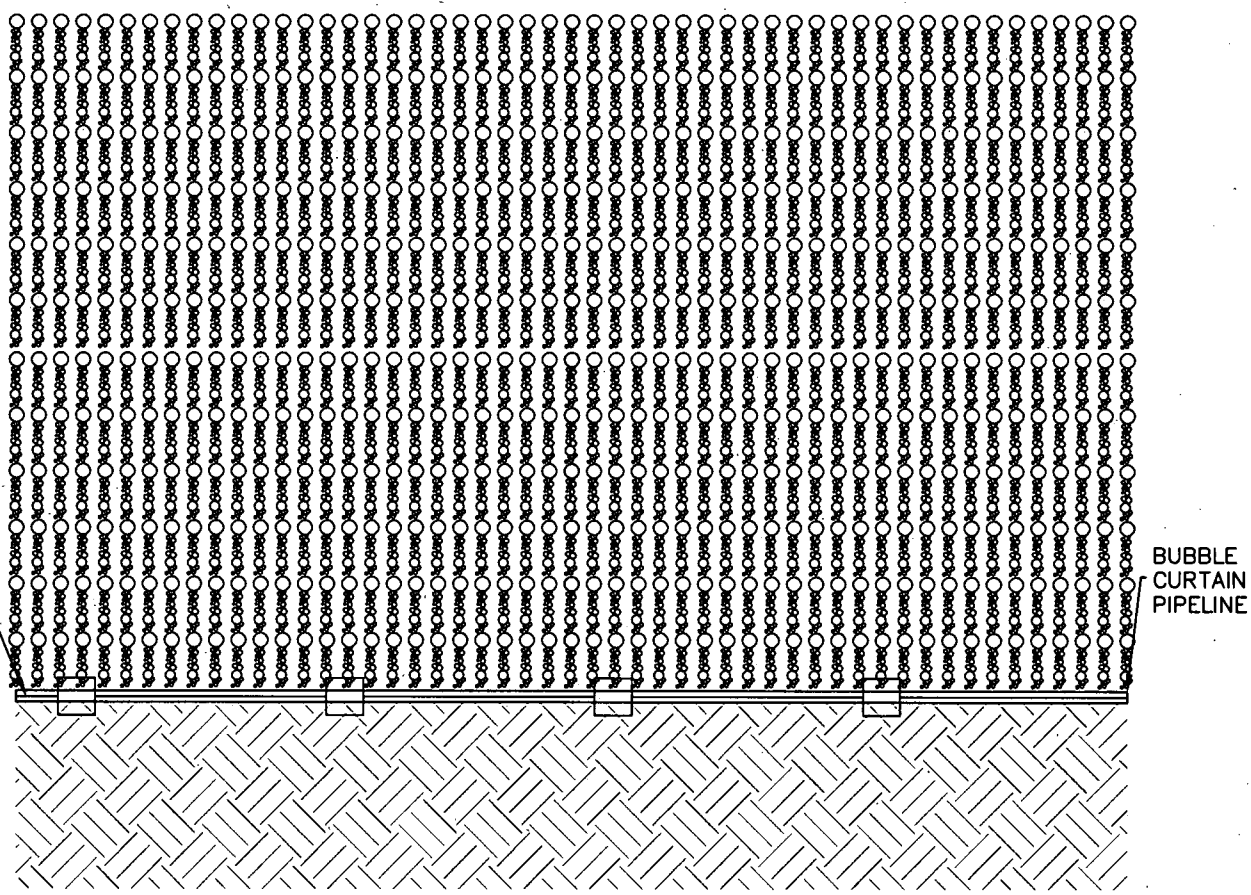
FIGURE 4: SILT CURTAIN DETAILS	FISH PROTECTION PLAN NEW BEDFORD MARINE COMMERCE TERMINAL	APEX 184 High Street, Suite 502 Boston, Massachusetts Phone: (617) 728–0070



NOTE: ALL DIMENSIONS ARE APPROXIMATE

FIGURE 5: BUBBLE CURTAIN DETAILS	FISH PROTECTION PLAN NEW BEDFORD MARINE COMMERCE TERMINAL	APEX 184 High Street, Suite 502 Boston, Massachusetts Phone: (617) 728-0070

P:\Jobs\6690 NBH_ Phase IV\PLANS\SILT & BUBBLE CURTAIN.dwg

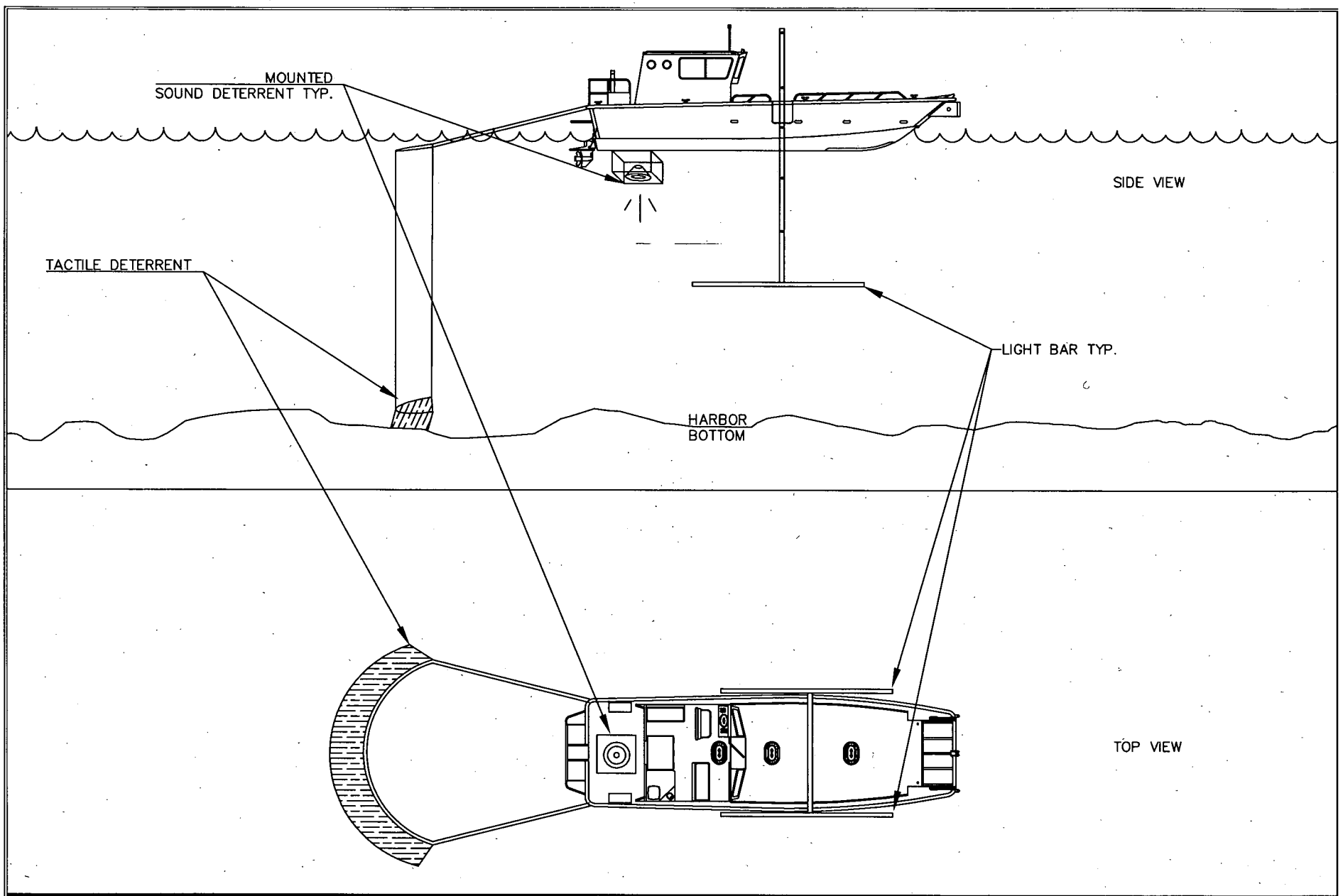


FIGURE 6:
FISH STARTLE SYSTEM

NEW BEDFORD MARINE
COMMERCE TERMINAL

APEX
125 Broad Street, Fifth Floor
Boston, Massachusetts 02110
Phone: (617) 728-0070

P:\Jobs\6690 NBH_ Phase IV\Acoustic Fish Studies\Fish Deterrent Schematic.dwg

EPA Final Determination for the South Terminal Project
New Bedford State Enhanced Remedy

Appendix D
Commonwealth of Massachusetts ARAR Letters
August 27, 2010
February 10, 2012
June 18, 2012

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.

- 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

314 CMR 9.00 Water Quality Certification

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:

Water Quality Regulations, 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 navigational dredging activities will comply with the substantive requirements of the Water Quality program.

Waterways Regulations, 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
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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.

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Executive Office of Energy & Environmental Affairs

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To: Matt Schweisberg, EPA Region 1
From: Philip Weinberg, MassDEP, Office of Operations and Environmental Compliance
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.

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.

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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.

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

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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

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.

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 Final Determination for the South Terminal Project
New Bedford 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)

ENVIRONMENTAL PROTECTION AGENCY
REGION I

SOUTH TERMINAL PROJECT, NEW BEDFORD HARBOR

FINAL 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") final evaluation and compliance determination for the State Enhanced Remedy, New Bedford Harbor – South Terminal project proposed by the Commonwealth of Massachusetts. This final determination finds that the project complies 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 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). As of the date of EPA's Draft Determination, the Commonwealth had 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). Between the Draft Determination and the Final Determination, the Commonwealth provided numerous additional documents. A list of significant submissions referenced in EPA's Final Determination, including this Appendix E, can be found in Table 3 of the Final Determination. The relationship between the proposal to construct a marine terminal and the SER is discussed more fully in EPA's November 19, 2012 Final Determination for the South Terminal Project.

The project's components include:

1. Installation of a 1000 linear foot bulkhead in the Harbor adjacent to an existing 200 foot bulkhead to form a 1200 linear foot bulkhead, and placement of approximately 134,000 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 21.5 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[1]:

Intertidal area:	2.07 acres
Shallow, near-shore sub-tidal area:	4.73 acres[2]
Salt marsh:	0.11 acres
Total:	6.91 acres

For areas to be filled for construction of the main terminal site:

Freshwater wetlands	0.106 acres
Total waters to be filled:	7.016 acres

For areas to be dredged (depths are expressed in feet):

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
Shallow, near-shore sub-tidal area (to be dredged from between -1 and -6 MLLW to -30 to -32 MLLW)(Quayside Areas):	3.68 acres[3]
Total:	12.14 acres
Total Permanent Impacts:	19.16 acres

[1] These figures have changed slightly from the information presented in EPA's Draft Determination as a result of a site visit conducted by EPA and the Commonwealth on September 13, 2012.

[2] 4.06 acres will be completely filled and 0.67 acres will be dredged and partially filled.

[3] The Commonwealth had also sought approval to dredge 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. As discussed in Appendix Q of the Final Determination, EPA is not approving that additional dredging at this time.

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):	8.54 acres[4]
Deeper, sub-tidal area (to be dredged from between -20 to -25 MLLW to -30 MLLW)(South Terminal Channel):	7.01 acres.[5]
Deeper, sub-tidal area (to be dredged from between -26 to -30 MLLW to -30 MLLW)(Maintenance Dredging of Federal Navigation Project):	13.3 acres[6]
Total:	35.02 acres

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.

[4] The Commonwealth had also sought approval to dredge an additional 0.22 acres to accommodate additional excavate from the potential expansion of the deep-draft quayside dredging area and potential additional widening of the deep-draft channel. See MassDEP 2012b, pp. 3-4. As discussed in Appendix Q of the Final Determination, EPA is not approving that additional dredging at this time.

[5] The Commonwealth had also sought approval to dredge 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. As discussed in Appendix Q of the Final Determination, EPA is not approving that additional dredging at this time.

[6] Some or all of the 13.3 acres of dredging may not need to occur depending on the elevations in the existing channel, so this is the worst case scenario. The Commonwealth had also sought approval to dredge an additional 1.74 acres in the Federal Channel associated with potential additional widening of the deep-draft channel. See MassDEP 2012a at pp. 2-3, 4-5, and 10. As discussed in Appendix Q of the Final Determination, EPA is not approving that additional dredging at this time.

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 clean 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 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 several 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 0.11 acre freshwater wetland 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 (0.1acre) in area.[7] EPA confirmed the results of the investigation during a site visit on September 13, 2012. 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, flood flow 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

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[7] The Commonwealth characterized this wetland as "isolated" and therefore not subject to federal jurisdiction. However, given that it is located within approximately 150 feet from the Harbor's high tide line, EPA believes that it is adjacent to (i.e., neighboring) a traditional navigable water and therefore subject to CWA jurisdiction.

[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.

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 EPA on July 11, 2012. The salt marsh resource is estimated to be approximately 0.41 acres in size. (MassDEP 2012o.) 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 alterniflora*, *Spartina patens,* 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 (MassCZM) conducted finfish sampling in New Bedford Inner Harbor for a 12 month period between 1998 and 1999 (MassCZM, 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 (MassCZM, 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 (MassCZM, 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). MassCZM sampling in 1998-1999 found alewife in the fall sampling, and rainbow smelt in the spring and the summer (MassCZM, 1999). White perch was collected in the spring, while blueback herring and American shad were not observed during the sampling (MassCZM, 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 initiated consultation with NMFS and provided its biological assessment on October 31, 2012. As discussed further in Section 5.3 below and Appendix K2, EPA has concluded that with appropriate mitigation measures, the project is not likely to cause adverse effects to the Atlantic sturgeon. NMFS confirmed EPA's conclusion on November 14, 2012.

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 harvesting of shellfish has been banned.

Sampling sponsored by MassCZM 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* (MassCZM, 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 are 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 (MassDMF) 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 MassDMF. 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 is discussed in Section 5.3 below and in Appendix K(1).

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 feasibility 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

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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.

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.)

The Region has 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) (MassDEP 2012). 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 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 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 greater than 20 acres and likely approximately 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,

[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.

as discussed above. Therefore the Region has 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 0.11 acre of salt marsh and 6.8 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 18.31 acres of shallow sub-tidal habitat and 7.01 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 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 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.

Most important in EPA's analysis 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 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.)

The Region has determined that this site is not practicable to meet the basic project purpose

[12] Although the South Terminal Project also involves the potential for up to 13.3 acres of maintenance dredging in the Federal Navigation Project, this dredging is expected to result in only minimal temporary impacts.

because of the presence of unsuitable substrate.[13] 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.[14]

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 determined that this site is not practicable due to the unsuitable substrate, we have not reached any conclusions about the effect of these factors on the practicability of this alternative.

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.

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[13] In the Draft Determination, EPA also tentatively concluded that another basis for rejecting the alternative on the grounds of practicability is that only 13-14 acres of land are 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. However, the Commonwealth does have eminent domain authority; it is not clear how long it would take to exercise such authority. In this Final Determination, EPA is not reaching a conclusion regarding the availability of this additional land.

[14] 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.

Because the acreage at the Fall River State Pier is only 9 acres and 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 has determined 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. [15] (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 assembled units would extend 250 feet above the transport barge. (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 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 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.

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[15] 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.

For all of these reasons, the Region has 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 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 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 has determined 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 determined that these issues render the Pope's Island site impracticable.[16]

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[16] 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

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 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 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 11.1 contiguous acres of existing upland and 6.91 acres of additional land created by construction of a CDF in adjacent waters. There are an additional 1.3 acres that comprise a 'transportation corridor," and another 9.1 acres of upland west and south of the main portion that would be used for wind blade lay-down. The overall facility is approximately 28.45 acres. The configuration of the facility and the specific parcels and acreages are depicted in MassDEP 2012m.[17] 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. (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.)

The Commonwealth has stated that it is committed to developing the terminal facility on parcels identified in Configuration 2A. It has also stated that "[t]he Commonwealth commits to securing its legal interest in all parcels that comprise the South Terminal site prior to commencement of any activities covered under the final EPA determination for the South Terminal," and it confirmed that "it has the requisite taking authority to acquire any such parcels for the benefit of the South Terminal Project." See MassDEP 2012i. Although the Commonwealth does not yet have site control, EPA believes it is reasonable to issue its Final Determination based on assurances that the Commonwealth has the necessary taking authority to obtain control.

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whether the resulting aquatic impacts from terminal construction at these sites would be greater or less than what is proposed for South Terminal.

[17] This configuration A2 is slightly different from configuration A, one of the two alternate configurations discussed in the Draft Determination.

However, to ensure that no harm to the aquatic environment occurs as long as the actual site control is uncertain, EPA is conditioning its final approval by requiring that the Commonwealth demonstrate full site control before it commences any work in waters of the U.S. See Section 20 below.

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 0.11acres of salt marsh, 2.07 acres of intertidal habitat, and 4.06 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; see also Appendix Q.) 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 a concrete blanket to prevent erosion of the area under the concrete decking. See MassDEP 2012j, Appendix 2 at page 2. 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 addition, the construction of the main terminal facility adjacent to the CDF will involve filling approximately 0.11 acres of freshwater wetlands.

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 18.31 acres of shallow sub-tidal habitat and 7.01 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 13.3 acres of deeper subtidal areas in the Federal Navigation Project channel. The Commonwealth also proposes to dredge 8.54 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 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.[18]

EPA has determined that the South Terminal site is practicable in light of the basic project purpose. The Commonwealth has the authority to obtain control of the site, and EPA is conditioning its final approval on the Commonwealth's demonstration that it has control of all necessary parcels necessary for the terminal site before it conducts any work in waters of the U.S. EPA has further determined that the South Terminal site represents the LEDPA, based on the 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 6.35 acres of waters to create uplands; partially filling approximately 0.67 acres of waters; and deepening through dredging approximately 38.62 acres of waters. There will also be temporary impacts associated with dredging an 8.54 acre confined aquatic disposal (CAD) cell and filling several existing CAD cells, and creating compensatory mitigation areas.

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

[18] As discussed above in footnotes 3-6, and in Appendix Q, the Commonwealth also sought approval of additional dredging that it does not now intend to conduct but may decide to do so in the future. EPA is not approving that additional dredging at this time because of its speculative nature, but EPA is willing to consider modifying the Final Determination in the future to allow the additional dredging if the Commonwealth provides new information that would better justify the expansion.

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; and
- Storm water runoff from construction vehicle washing, maintenance and storage refueling areas could contribute oil, grease and fuel and foaming.[19]

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:

- From January 15 through June 15 of any year, absorbent booms and silt curtains will encircle areas where any dredging, CAD cell capping, and disposal of contaminated sediments into CAD cells will occur, to prevent the migration of sediments from the work area to the rest of the harbor. Stringent turbidity levels must be satisfied either inside or outside the silt curtains (depending on the activity). From June 16 through January 14 of any year, when silt curtains are not in place, stringent turbidity levels must be satisfied at the edge of a 200-foot mixing zone, and control measures must be implemented if necessary to ensure compliance with those levels.
- For CDF construction, and for capping to create intertidal, subtidal, and winter flounder spawning habitat, absorbent booms and silt curtains will encircle areas of work at all times of the year, for the duration of the work. Stringent turbidity levels must be satisfied within 15 feet of the outer edge of the silt curtain.
- Erosion and migration of excavated, dredged and stockpiled materials will be controlled 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.
- From January 15 through June 15, silt curtains, bubble curtains and fish weirs will be erected around areas of dredging, filling, and capping in water depths shallower than -5 m MLLW to prevent fish, particularly winter flounder, from entering the project area. Fish startle systems will be deployed before construction begins to move fish out of harm's way. Weekly monitoring will occur to ensure the barriers maintain their physical integrity and that no fish have made it into the project area. Within the barriers, stringent

[19] The Draft Determination also identified blasting as a potential impact on water quality, but the Final Determination does not authorize blasting. See Section 6.2.2 below and Appendices H and I for further discussion.

turbidity levels must be satisfied at the edge of a 200-foot mixing zone, and control measures must be implemented if necessary to ensure compliance with those levels.
- 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 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[20] 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, capping, and filling activities are conducted consistent with the Performance Standards in Appendix C of EPA's Final Determination.

5.1.2 Habitat, Fishery, and Shellfish Impacts: EPA's water quality 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)[21]. In this case, there will be a permanent loss of approximately 7 acres of aquatic habitat as a result of the construction of the South Terminal confined disposal facility ("CDF") and adjacent terminal site development, as well as temporary and permanent impacts to approximately 47 acres of 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 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.[22] Therefore, the project would not violate the federal and state antidegradation provisions.

Based on the foregoing, EPA has determined that the proposed project will not cause or contribute to violations of water quality standards. [23]

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[20] National Pollutant Discharge Elimination System General Permit for Discharges from Construction Activities, effective February 16, 2012.

[21] EPA, *Questions & Answers on: Antidegradation*, page 5, 1985.

[22] 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.

[23] 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.

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. See Appendix K(1). For the reasons discussed in the final BA, EPA has concluded that the proposed South Terminal project may affect the roseate tern, but is unlikely to adversely affect the species. EPA transmitted its final Biological Assessment to FWS on August 2, 2012, and FWS concurred with EPA's conclusion in its letter dated August 29, 2012.

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. After obtaining technical assistance from NMFS, EPA initiated informal consultation and transmitted its Biological Assessment and conclusions to NMFS on October 31, 2012. See Appendix K(2). As discussed in the BA, EPA concluded the proposed South Terminal project may affect the Atlantic sturgeon but, with specified mitigating measures, is unlikely to adversely affect the species. NMFS concurred with EPA's conclusions by letter dated November 14, 2010. 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 0.11 acres of salt marsh, 0.11 acres of freshwater wetlands, and approximately 6.13 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 (partially filled) 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. There will also be temporary impacts to 0.04 acres of an existing salt marsh during construction of the salt marsh mitigation area at River's End Park.

Finally, approximately 47 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 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 Project 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, 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 Project 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,, 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 completed informal consultation with FWS regarding the roseate tern (see Section 5.3 above) and obtained 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 also completed informal consultation with NMFS regarding the Atlantic sturgeon and obtained NMFS's concurrence with EPA's determination that the proposed NBH-South Terminal project may affect the Atlantic sturgeon but, with specified mitigating measures, is unlikely to adversely affect the species See Appendix I, Appendix K(1), and Appendix K(2) 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.)

To construct the South Terminal Project, approximately 0.11 acres of salt marsh and 6.80 acres of intertidal and sub-tidal benthic habitat will be permanently impacted by complete or partial 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 habitat 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. There will also be temporary impacts to 0.04 acres of an existing salt marsh during construction of the salt marsh mitigation

area at River's End Park. An additional 47.16 acres of subtidal benthic habitat will be deepened associated with the dredging of adjacent navigation channels and mooring areas and construction of CAD cell #3. 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 are of special concern. Regionally, the number of winter flounder has been greatly reduced in recent years. Winter flounder, which typically spawn in water depths between 0.3 and 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 16.87 acres of winter flounder spawning and nursery habitat.[24] 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. Because of the potentially severe long term impacts on winter flounder and shellfish habitat, EPA is requiring compensatory mitigation to ensure that significant impacts will not occur (discussed further in section 7 below).

In addition to causing impacts due to habitat loss, the dredging and filling activities have the potential to cause adverse impacts to aquatic life due to noise associated with pile driving and

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[24] The Commonwealth has stated that there would be 11.75 acres of permanent impact to winter flounder spawning habitat. The Commonwealth's estimate does not include the 8.46 acres of dredging to -14 MLLW in the shallow-draft quayside area and tug channel. EPA includes this acreage in its estimate of permanent impacts because of the likely secondary impacts. Resuspension of sediments due to prop wash and vessel traffic will result in the burial of winter flounder eggs; even minimal burial of winter flounder eggs can lead to mortality. Berry et al., 2011.

rock removal. To minimize the noise impacts to Atlantic sturgeon and other finfish from pile driving to construct the CDF, the Commonwealth is required to use vibratory hammers for the installation of sheet piles, and to eliminate the need to drive pipe piles into bedrock, a "rock socket" installation method will be used. This technique involves drilling a "rock socket" in place, placing the piling in the hole and then grouting it in place. See Appendix I for more information.

In the Draft Determination for this Project, EPA expressed concerns about potential adverse impacts to fish species from the use of blasting to remove fractured rock from within the footprint of the dredge area. NMFS also expressed concerns about fisheries impacts from blasting, and the Corps of Engineers expressed concerns about potential impacts from blasting on the Hurricane Barrier. In this Final Determination, EPA is prohibiting the use of blasting as a method of rock removal because there is not sufficient information to enable EPA to reach a judgment about the potential effects of blasting on the aquatic environment and on the nearby Hurricane Barrier. If blasting is ultimately deemed necessary, the Commonwealth will need to seek a modification of the Final Determination, and will need to provide additional information on potential impacts from blasting and mitigation steps needed to minimize or eliminate those impacts.

In lieu of blasting, the Commonwealth has identified four alternate methods of rock removal, commonly referred to as Hoe Ram, Bucket Removal, Drill and Fracture, and Cutter Head Dredging. (MassDEP 2012g.) Based on the Commonwealth's submission of results from an acoustical study (MassDEP 2012j, Appendix 3), EPA finds the predicted environmental impacts resulting from any of these techniques to be substantially lower than those predicted for blasting and are unlikely to cause adverse effects on the Atlantic sturgeon and other finfish. On November 16, 2012, the Commonwealth submitted the final acoustic modeling report, which includes the details for the model, assumptions, and how the model works. (MassDEP 2012s.) Due to the late date of the submission of this report, EPA has not had adequate time to review it and confirm the results of the study. EPA intends to review the report expeditiously. EPA is conditioning its approval on the requirement that the rock removal activities may not proceed until EPA evaluates the acoustic modeling study that the Commonwealth submitted and determines the acceptability of the modeling methods and results, to ensure that the noise impacts will not adversely affect fish species. See Appendix H and Appendix I for more information.

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 0.11 acres of salt marsh wetlands will be permanently

filled as part of the creation of the confined disposal facility/marine terminal. Also, approximately 0.30 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 0.11 acre in area, will be filled. [25]

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). The existing salt marsh resource is approximately 0.41 acres in size. 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 alterniflora*, *Spartina patens,* 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. (MassDEP 2012c). 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. [26] During a September 13, 2012 site visit, EPA confirmed that the wetland is approximately 0.106 acres. 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 have 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

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[25] In the Draft Determination, EPA referred to an additional 0.4 acre freshwater wetland on one of the properties that the Commonwealth was considering incorporating into the terminal site, and noted that if the parcel were included, the impacts of filling that wetland would need to be evaluated and additional mitigation would need to be implemented. Since then, the Commonwealth has decided not to include that parcel as part of the terminal site.

[26] As noted in footnote 7 above, EPA considers this wetland to be adjacent to a traditional navigable water and therefore subject to federal jurisdiction.

and the surrounding landscape.

Wetland mitigation: The Commonwealth initially proposed a compensatory mitigation plan to address the project's impacts to the salt marsh and freshwater wetlands through salt marsh restoration and enhancement in the vicinity of the existing tidal tributary adjacent to the Hurricane Barrier. However, following issuance of EPA's draft determination, the Commonwealth abandoned that plan and proposed an alternative compensatory mitigation plan. See MassDEP 2012r. Under this plan, the Commonwealth will restore and create approximately 1.02 acres of salt marsh adjacent to the Acushnet River at River's End Park in New Bedford. The plan and EPA's conclusions regarding the adequacy of the mitigation are discussed in more detail in Section 7.3 below.

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 2.07 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 mitigation measures will be located in areas without substantial fisheries resources outside of the main navigation channels or in areas that will be 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 Project 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.[27]

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

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[27] The Commonwealth no longer plans to use the Gifford Street boat ramp parcel as a lay down area for storing wind turbine components; therefore the Project will not affect recreational boaters who use this parcel for access to the Harbor.

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. Depending on future activities at the site upon its completion, the facility may also become subject to NPDES permit requirements for other discharges, including storm water requirements for discharges associated with industrial activity. The operator of the facility would need to obtain any required NPDES permit or general permit authorization from EPA before any regulated discharge could commence.

6.5.2 Dredging: The largest quantity of secondary impacts will result from the proposed dredging associated with the construction of South Terminal. Up to 47 acres of seafloor will be disturbed by dredging. Approximately 3.68 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 and benthic species. To minimize these impacts, the Commonwealth will comply with performance standards set forth in Appendix C of EPA's Final Determination. Among other things, these performance standards provide for turbidity levels that must be satisfied; the use of protective measures such as silt curtains and absorbent booms from January 15 through June 15 of any year, and at other times when necessary to achieve the turbidity levels; and the use of an "environmental" bucket when dredging contaminated fine sediment. EPA believes the turbidity levels are sufficiently protective. 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 (both with and without the use of silt curtains) 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 that meets the turbidity levels and that implements the aforementioned control techniques where necessary can be done with limited impacts to the water column and aquatic species. Monitoring will be conducted during construction to ensure that the Commonwealth's dredging performance standards are met.

In addition, to protect winter flounder during the sensitive spawning period, the Commonwealth will erect silt curtains, bubble curtains and fish weirs around any dredging or filling work in areas that are shallower than -5 meters Mean Lower Low Water ("MLLW") between January 15th and June 15th of any year, to prevent fish, particularly winter flounder, from entering the

work area. Fish startle systems will be deployed, before construction begins, to move fish out of harm's way. (MassDEP 2012q.) From January 15 to June 15, weekly monitoring will occur to ensure the barriers maintain their physical integrity and that no fish have made it into the work area. As discussed in Appendix H of EPA's Final Determination, EPA believes these techniques will ensure that dredging during this sensitive time period will not cause more than minimal impacts to winter flounder and other finfish.

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, the Commonwealth will implement an Invasive Species Management Plan. Pursuant to this plan, the Commonwealth will conduct annual surveys of the pilings at the facility to inspect for the presence of invasive species. A 3 person dive team will be deployed with video and still cameras to document marine life on the pilings. The dive team will have copies of the Massachusetts Aquatic Invader Identification cards with them on site. One third of the total number of pilings will be inspected on any given year, so 100% of the pilings will be covered in 3 years. It is a virtual certainty that the pilings will be colonized by invasive species. However, the intent of the inspection is to identify "new" invaders, species that have not yet been documented in New England. Results of the annual surveys will be sent to the Invasive Species Coordinator at the Massachusetts Office of Coastal Zone Management ("MassCZM"), MIT Sea Grant, and EPA. If the survey identifies an invasive species not previously identified in New England, the Commonwealth will work with MassCZM to assess the ecological risk posed by the new invasive species and to develop and implement an invasive species control plan for the new species. See MassDEP 2012r, *"New Bedford Marine Commerce Terminal Invasive Species Monitoring Plan – Facility, Bulkhead and Pilings."*

In addition, there is a potential for invasive species to intrude into the salt marsh compensatory mitigation area at River's End Park. The Commonwealth has incorporated an Invasive Species Management Plan ("ISMP") into its Final Compensatory Mitigation Plan described in Section 7.3. See MassDEP 2012r, Appendix 12. The ISMP identifies existing vegetation the vicinity of the project area, and notes that while many are indigenous and non-invasive, there are several species present within the upland portion of the project area which pose a threat of invasion. The ISMP also identifies species that pose a threat of invasion due to previous land disturbances in the area and their presence and persistence in the watershed, as well as other potentially invasive species that will be monitored. Of the numerous species identified, due the tidal nature of the creation and restoration project, common reed (*Phragmites australis*) is identified as a species with especially high potential to spread into the mitigation area, potentially undermining its ecological integrity.

Invasive species control will be overseen by a wetland scientist with expertise in the area of salt marsh restoration and invasive species control. The ISMP establishes a monitoring program for the mitigation site, consisting of baseline monitoring followed by inspections three times annually in May, July and September for each of the five years following the establishment of the mitigation project. Methods of invasive species control are identified, and performance standards for the mitigation site and invasive species control are established. Annual monitoring reports will be submitted to EPA for review and approval. The ISMP notes that monitoring beyond five years may be necessary, to confirm the efficacy of any necessary corrective actions that may be needed to address failure to meet performance standards. Two years of follow-up monitoring of corrective actions is required to assure the success of any corrective actions.

EPA believes the ISMP will 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.

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. The Commonwealth has designed the 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). Based upon this information, EPA believes that the interference with other adjacent boating users 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.[28] To date, EPA has constructed two CDF facilities, the sediment dewatering CDF and the Sawyer Street CDF. The latter is a pilot CDF facility used for the temporary disposal of contaminated dredged sediments. Approximately 2.05 acres of waters of the United States were filled to create the sediment dewatering CDF, and approximately 2.21 acres of waters were filled to create the Sawyer Street CDF. 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 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

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[28] 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.

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).[29] 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 Fairhaven, ("DMMP") issued by the Massachusetts Office of Coastal Zone Management.[30] 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

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[29] 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 Final 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.

[30] The DMMP may be found in the Administrative Record for this Final Determination and at www.mass.gov/cam/dredgereports/2003/feirnm-f.htm.

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.

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 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 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 taken 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 0.67 acre 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 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.

Impacts have been further minimized as a result of EPA's decision not to approve the Commonwealth's request for approval of additional dredging to expand the channel width and the quay-side deep-draft dredge area in anticipation of a future need to accommodate larger vessels. As discussed in Section 2 above and in Appendix Q, EPA has decided not to approve such expansion at this time but is willing to entertain a request to modify the Final Determination in the event that new information becomes available that would better justify the need for additional dredging.

EPA has determined that the project as authorized by the Final Determination 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 conditions section (Section 20) of this decision document for details on these additional measures to be taken.

7.3 Compensatory Mitigation: The Commonwealth submitted its Final Compensatory Mitigation Plans on November 14, 2012, to provide compensatory mitigation for unavoidable direct and secondary impacts to the various resources affected by the project. (MassDEP 2012r.) EPA's evaluation of the final Compensatory Mitigation Plans is described below. EPA is requiring that these plans be implemented as a condition of its approval of the Project. See Section 20 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). According to the Commonwealth's final mitigation plan to address impacts to winter flounder spawning habitat, the Commonwealth will place clean sand excavated from the CAD cell and navigational dredging to fill in an area south of the hurricane barrier to reduce the existing depths. 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 will 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 Project will result in approximately 16.87 acres of impact to winter flounder spawning habitat.[31] As a result, the Commonwealth has committed to a slightly greater than 1 to 1 replacement ratio of winter flounder spawning habitat. 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 that benthic community ecology follows is 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 polychaetes (Rhoads and Germano, 1986). Full recovery to a Stage III successional community

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[31] These impacts may increase if the Commonwealth obtains future approval to increase dredging, as discussed above. EPA is requiring the Commonwealth to provide sufficient mitigation now to address impacts from both the approved and potential expanded dredging, to avoid adverse impacts that could result from creating some habitat initially and then doing additional work at the same areas at a future date.

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 3 years post construction. The data will be statistically analyzed for differences between sampling locations and through time.

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. 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 adequate winter flounder spawning habitat is replicated.

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 plan will replace at a slightly greater than 1 to 1 ratio the quantity of winter flounder spawning habitat impacted by the proposed project. EPA expects that the quality of the newly created spawning habitat is likely to be superior to what it is replacing as it will be built with clean material free from any PCB contamination. EPA has determined that this mitigation plan adequately offsets the unavoidable impacts to winter flounder spawning habitat.

7.3.2 Intertidal habitat creation and near-shore, shallow, sub-tidal enhancement: According to the Commonwealth's final mitigation plan to address impacts to intertidal and near-shore, shallow subtidal habitat, the Commonwealth will place clean sand excavated from the navigational dredging in an area referred to as the OU-3 Hot-Spot. 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 2.07 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 such 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 a 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. 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 adequately replaces 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 determined that equivalent compensation is necessary. The Commonwealth's plan will compensate for these impacted habitats in a slightly greater than 1 to 1 ratio. 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 determined that this mitigation will adequately address the proposed unavoidable impacts to intertidal and near shore shallow sub-tidal habitats.

7.3.3 Shellfish mitigation: 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). Nine to ten million shellfish, which is the range of expected shellfish loss from construction of the Project, represent a substantial prey base for demersal fish.

According to the Commonwealth's final mitigation plan to address impacts to the shellfish resource, the Commonwealth will purchase and plant approximately 24,542,803 seed quahogs, 20-25 mm in size, in multiple locations south of the hurricane barrier. The number of seed to be planted is based on an expected 40% survival rate for seed clams of this size. The planting will occur in 10 separate sub-areas of approximately 150 acres each, on a rotational basis over 10-15 years. Each area that is planted will be closed to shellfishing for three to six years to allow for the seed to grow and spawn and reach legal harvest size. Phasing of the shellfish mitigation effort is reasonable for several logistical reasons. Currently, the Commonwealth's hatchery can reliably produce about 2 million spat a year. They do not have the facilities in place to dramatically increase that number. The success of this effort depends on not just the quantity of shellfish spat, but also the quality of it. At current production rates, the Commonwealth produces high quality spat. Substantially scaling the operation upwards may risk compromising the quality of the product. Finally, for management purposes, the Commonwealth will be closing areas that are seeded for 3 years post seeding. This is done to allow the seed stock to mature. Phasing the seeding operation allows the Commonwealth to stagger the closures, in order to minimize the impact to recreation and commercial fishermen.

EPA believes this plan will adequately compensate for the loss of shellfish due to the Project.

The shellfish mitigation plan may be modified in the future in two possible ways. The first potential modification of this shellfish mitigation plan relates to the NMFS's desire for the Commonwealth to include oysters as part of this mitigation effort, since oysters will be lost during construction of the Project. Accordingly, the Commonwealth intends to develop a plan for an oyster reef, which would represent somewhere between 10-20% of the total shellfish seed to be planted. Plan details regarding the number of shellfish, the apportionment of the species, and the design and location of the oyster reef would be developed under the guidance of EPA, NMFS, and MassDMF. The Commonwealth will submit the oyster reef plan to EPA for approval, and the shellfish mitigation plan would be modified accordingly.

The second potential modification relates to the Commonwealth's plan to adjust the number of shellfish to be seeded if the full extent of the dredging as described in the Commonwealth's June 18, 2012 submission (MassDEP 2012a) is reduced. In that event, the Commonwealth would recalculate the expected shellfish impacts from a smaller dredge footprint and then size the mitigation effort accordingly. This approach is acceptable to EPA, provided that the Commonwealth provide EPA with information to document the reduction in impact and the planned reduction in mitigation and obtain EPA's written approval. In particular, because EPA is not, at this time, authorizing expansion of the deep-draft quayside dredging area and additional widening of the deep-draft channel (see footnotes 3-6 above), the Commonwealth may calculate the related reduction in shellfish loss and obtain EPA's approval of an equivalent reduction in shellfish to be seeded.

7.3.4 Wetland mitigation: Compensatory mitigation for the project's impacts to wetlands at the South Terminal facility will be accomplished through a restoration and creation mitigation project at River's End Park, situated just south of Main Street, and east of River Road along the Acushnet River in New Bedford, Massachusetts. The goal of the River's End Park Salt Marsh mitigation project is the creation and restoration of 1.02 acres of salt marsh. Currently, the site contains approximately 0.402 acres of salt marsh immediately adjacent to the Acushnet River.

The mitigation work involves removal of historic fill from immediately adjacent to the existing salt marsh, and to expand the salt marsh along and to the west of the Acushnet River. In order to maximize the tidal flow of water into and out of the new marsh, final grading at the mitigation site will result in temporary impacts to a small area (approximately 0.04 acre) of existing salt marsh. This wetland area will be restored in place, resulting in no net loss of wetlands from these temporary impacts.

The total size of the creation and restoration area mitigation will be 1.06 acres. Since 0.04 acre of that total is the existing salt marsh that will be temporarily impacted and then restored in place, the project will result in a net increase of 1.02 acres of salt marsh. Engineering plans and details for the mitigation project were provided in Appendix 2 of the Final Mitigation Plan.

Construction of the mitigation project will involve the removal of existing soil at the site, re-grading, and planting appropriate native salt marsh species. The soil currently located at Rivers End Park is contaminated with heavy metals (lead, cadmium, zinc, chromium, and nickel) and Benzo(a)pyrene (a PAH constituent). This Final Determination is conditioned on the

Commonwealth's submission of a characterization, removal, and disposal work plan (Soil and Sediment Work Plan) for both soil and sediment that will remain in-place or that will be excavated during mitigation activities at River's End Park. The Soil and Sediment Work Plan must be submitted to EPA for review and approval at least thirty days prior to the start of land or water work at River's End Park, and it must be approved before any land or water work at River's End Park may occur.

Plantings at the mitigation creation and restoration area will consist of: smooth cordgrass (*Spartina alterniflora*) within the low marsh zone; and, salt meadow grass (*Spartina patens*), spike grass (*Distichlis spicata*), black grass (*Juncus gerardii*), marsh elder (*Iva frutescens*) and a New England coastal salt tolerant grass mix within the high marsh zone. In addition, the transitional buffer zone adjacent to the high marsh zone will be planted with seaside goldenrod (*Solidago sempervirens*), marsh elder (*Iva frutescens*), eastern showy aster (*Eurybia spectabilis*) , threadleaf coreopsis (*Coreopsis verticillata*), beach plum (*Prunus maritima*), northern bayberry (*Myrica pensylvanica*), and a New England coastal salt tolerant grass mix.

In addition, a walkway will be constructed in the adjacent upland to the west of the mitigation area. This will provide educational opportunities for the community using the park to view and learn about the wetland creation and restoration project, and the value of wetlands in general. The walkway will be separated from the mitigation area by a spilt rail fence, which, along with signage, will discourage people from entering the mitigation area. Educational signage will also be posted at the fence line.

The construction and ongoing maintenance of the mitigation area will be overseen by a wetland scientist with expertise in the area of tidal marsh restoration and creation. Performance standards have been established to assure successful salt marsh creation and restoration, and a monitoring and reporting program has been developed. An invasive species control plan has also been developed, to assure that the wetland mitigation area is not adversely impacted by invasive species colonization.

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 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 result

in the conservation of approximately 1.02 new acres of salt marsh at the mitigation area at River's End Park. 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 0.11 acres of salt marsh wetlands will be permanently filled as part of the creation of the confined disposal facility/marine terminal. Also, approximately 0.30 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 0.11 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. The existing salt marsh resource is approximately 0.41 acres in size. 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 alterniflora*, *Spartina patens* 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.[32] During a September 13, 2012 site visit, EPA confirmed that the wetland is approximately 0.106 acres. The project will result in filling this wetland. [33]

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, flood flow 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: Compensatory mitigation for the project's impacts to wetlands at the South Terminal facility will be accomplished through a restoration and creation mitigation project at River's End Park, situated just south of Main Street, and east of River Road along the Acushnet River in New Bedford, Massachusetts. The goal of the River's End Park Salt Marsh mitigation project is the creation and restoration of 1.02 acres of salt marsh. Currently, the site contains approximately 0.402 acres of salt marsh immediately adjacent to the Acushnet River.

The mitigation work involves removal of historic fill from immediately adjacent to the existing salt marsh, and to expand the salt marsh along and to the west of the Acushnet River. In order to maximize the tidal flow of water into and out of the new marsh, final grading at the mitigation site will result in temporary impacts to a small area (approximately 0.04 acre) of existing salt marsh. This wetland area will be restored in place, resulting in no net loss of wetlands from these temporary impacts.

The total size of the creation and restoration area mitigation will be 1.06 acres. Since 0.04 acre of that total is the existing salt marsh that will be temporarily impacted and then restored in place, the project will result in a net increase of 1.02 acres of salt marsh. Engineering plans and details for the mitigation project were provided in Appendix 2 of the Final Mitigation Plan.

Construction of the mitigation project will involve the removal of existing soil at the site, re-grading, and planting appropriate native salt marsh species. The soil currently located at Rivers End Park is contaminated with heavy metals (lead, cadmium, zinc, chromium, and nickel) and

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[32] As noted in footnote 7 above, EPA considers this wetland to be adjacent to a traditionally navigable water and therefore subject to federal jurisdiction.

[33] In the Draft Determination, EPA referred to an additional 0.4 acre freshwater wetland on one of the properties that the Commonwealth was considering incorporating into the terminal site, and noted that if the parcel were included, the impacts of filling that wetland would need to be evaluated and additional mitigation would need to be implemented. Since then, the Commonwealth has decided not to include that parcel as part of the terminal site.

Benzo(a)pyrene (a PAH constituent). This Final Determination is conditioned on the Commonwealth's submission of a characterization, removal, and disposal work plan (Soil and Sediment Work Plan) for both soil and sediment that will remain in-place or that will be excavated during mitigation activities at River's End Park. The Soil and Sediment Work Plan must be submitted to EPA for review and approval at least thirty days before the start of land or water work at River's End Park, and it must be approved before any land or water work at River's End Park may occur.

Plantings at the mitigation creation and restoration area will consist of: smooth cordgrass (*Spartina alterniflora*) within the low marsh zone; and salt meadow grass (*Spartina patens*), spike grass (*Distichlis spicata*), black grass (*Juncus gerardii*), marsh elder (*Iva frutescens*) and a New England coastal salt tolerant grass mix within the high marsh zone. In addition, the transitional buffer zone adjacent to the high marsh zone will be planted with seaside goldenrod (*Solidago sempervirens*), marsh elder (*Iva frutescens*), eastern showy aster (*Eurybia spectabilis*) , threadleaf coreopsis (*Coreopsis verticillata*), beach plum (*Prunus maritima*), northern bayberry (*Myrica pensylvanica*), and a New England coastal salt tolerant grass mix.

In addition, a walkway will be constructed in the adjacent upland to the west of the mitigation area. This will provide educational opportunities for the community using the park to view and learn about the wetland creation and restoration project, and the value of wetlands in general. The walkway will be separated from the mitigation area by a spilt rail fence, which, along with signage, will discourage people from entering the mitigation area. Educational signage will also be posted at the fence line.

The construction and ongoing maintenance of the mitigation area will be overseen by a wetland scientist with expertise in the area of tidal marsh restoration and creation. Performance standards have been established to assure successful salt marsh creation and restoration, and a monitoring and reporting program has been developed. An invasive species control plan has also been developed, to assure that the wetland mitigation area is not adversely impacted by invasive species colonization.

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). EPA initiated consultation under section 106 of the National Historic Preservation Act with the Massachusetts State Historic Preservation Officer ("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. In accordance with comments from the SHPO and consulting parties, the Commonwealth changed the footprint of the proposed CDF to avoid the Paleosols. Following issuance of EPA's Draft Determination, the Commonwealth confirmed the findings of the 2010 uplands area assessment and concluded that no additional cultural resources background research or archeological sub-surface investigation is necessary in the expanded upland study area. After considering all pertinent information, EPA, on September 28, 2012, issued its finding that no historic property

will be affected by the Project. On October 16, 2012, the SHPO issued its concurrence with EPA's determination. 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 0.11 acres of salt marsh, 0.11 acres of freshwater wetlands, and 6.80 acres of intertidal and sub-tidal benthic habitat will be permanently impacted due to filling to construct the CDF and adjacent terminal site. 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 47 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 16.87 acres of winter flounder spawning and nursery habitat and the loss of 9-10 million individual shellfish.

As part of the South Terminal Project, approximately 225,600 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 2012m).[34] Removal and segregation of these contaminated sediments will result in long-term positive impacts for fish and wildlife habitat within New Bedford Harbor. As mitigation for the aquatic impacts from the South Terminal Project, the Commonwealth will 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 ten shellfish areas with over 24 million shellfish in the Outer New Bedford Harbor to mitigate for unavoidable shellfish impacts associated with this project. It will also restore and create 1.02 acres of salt marsh at River's End Park.

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[34] This figure does not include contaminated dredged material associated with the expanded dredging that EPA is not approving at this time.

As discussed in Section 6.2.2, activities associated with the dredging and filling to construct the Project may cause adverse impacts to aquatic life due to noise. To minimize these impacts, EPA is requiring the CDF to be constructed by using vibratory hammers to install sheet pilings and by using the "rock socket" installation method for installation of a portion of the pipe pilings. In addition, EPA is prohibiting the use of blasting to remove fractured bedrock. [35] The Commonwealth may employ any of four alternate methods of rock removal, but only after EPA evaluates the acoustic modeling study that the Commonwealth submitted on November 16, 2012 and determines the acceptability of the modeling methods and results, to ensure that the rock removal will not have adverse impacts on the Atlantic sturgeon or other finfish.

As discussed in Section 5.3 above, EPA completed informal consultation with FWS regarding the roseate tern and obtained 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 also completed informal consultation with NMFS regarding the Atlantic sturgeon and obtained NMFS's concurrence with EPA's determination that the proposed NBH-South Terminal project may affect the Atlantic sturgeon but, with specified mitigating measures, is unlikely to adversely affect the species. See Appendix I, Appendix K(1), and Appendix K(2) for additional information.

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. The Commonwealth has documented that the New Bedford Harbor Trustee Council will be implementing the 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; MassDEP 2012g). The New Bedford Harbor Trustee Council issued a fact sheet in June 2012, which states that the 12-acre salt marsh restoration at Marsh Island in Fairhaven is anticipated to begin in late 2013. See http://www.darrp.noaa.gov/northeast/new_bedford/pdf/FINAL2_fact_sheet_New_Bedford_6-8-12.pdf . The Commonwealth has stated that, as long as the Marsh Island restoration and the South Terminal project proceed on schedule, the flood storage mitigation work will occur on a schedule that will, to the extent practicable, parallel the loss of flood storage capacity from construction of the South Terminal project. EPA has determined that the proposed Marsh Island Restoration Project will adequately mitigate for unavoidable floodplain storage losses associated with the South Terminal project. Completion of the mitigation project within one year of

[35] If blasting is ultimately deemed necessary, the Commonwealth will need to seek a modification of the Final Determination, and will need to provide additional information on potential impacts from blasting and mitigation steps needed to minimize or eliminate those impacts

completion of the CDF is a condition of EPA's approval of 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 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 0.11 acres of salt marsh, 0.11 acres of freshwater wetlands, as well as 6.8 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.

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 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 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 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 0.11 acres of salt marsh, 0.11 acres of freshwater wetlands, and 6.80 acres of tidal waters will be fully or partially filled. In addition, the Commonwealth proposes to cap the existing Borrow Pit and CAD cell 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 dredging to construct the CAD cell 3; 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; 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. Approximately 47 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 requested the Commonwealth to develop and implement a plan to mitigate for this lost flood storage. The Commonwealth has documented that the New Bedford Harbor Trustee Council will be implementing a 12-acre salt marsh restoration and creation project at Marsh Island in Fairhaven, 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; MassDEP 2012g.) EPA has determined that the proposed Marsh Island Restoration Project will adequately mitigate for unavoidable floodplain storage losses associated with the South Terminal Project. Completion of the mitigation project within one year of completion of the CDF is a condition of EPA's approval of the South Terminal Project. See Appendix L for more details on this issue.

The Commonwealth's compensatory mitigation plans have been designed to compensate for impacts to specific habitat types. The River's End Park wetland mitigation project will result in the creation and restoration of 1.02 acre of salt marsh within the same watershed as the South Terminal facility. The goal of the River's End Park mitigation is to compensate for the lost or impaired ecological functions and values of the wetlands impacted by the construction and operation of the South Terminal facility. 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 will 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 projects involve partial filling of sub-tidal areas with clean sand excavated from CAD cell 3 and navigational dredging. Finally, the Commonwealth will 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 plans, 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 determined that the Final Mitigation Plan with additional EPA conditions provided in Section 20 below 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 determined that the South Terminal Project is not contrary to the overall public interest.

OTHER FEDERAL LAWS AND EXECUTIVE ORDERS

10.0 Endangered Species Act: For detailed discussion, see Appendix I – Endangered Species Act, Appendix K(1) – Final Biological Assessment for the Roseate Tern, and Appendix K(2), Biological Assessment for the Atlantic Sturgeon. Summary information is 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 is 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 is 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 and Appendix P -- Tribal Consultation

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 is 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 an approximately 0.11 acre freshwater depressional wetland as well as 0.41 acres of salt marsh wetland within the South Terminal/Confined Disposal Facility project area. The 0.11 acre freshwater wetland is located within the middle of the proposed terminal site and there are no

practicable alternatives to avoid filling this wetland. In designing the South Terminal Project, the Commonwealth was able to minimize direct fill impacts to only 0.11 acre of salt marsh by carefully choosing the alignment of the facility bulkhead. The remaining 0.30 acres of existing salt marsh will be directly adjacent to the facility bulkhead. It is possible that secondary impacts (salt marsh erosion) will affect the remaining salt marsh, although the Commonwealth has explained why it does not believe that will occur. (MassDEP 2012b at 6-7.) The Commonwealth will provide compensatory mitigation for these unavoidable wetland impacts through the restoration and creation of 1.02 acres of salt marsh at River's End Park in New Bedford, adjacent to the Acushnet River. This mitigation is large enough to address both the direct impacts and any secondary impacts if they occur.

18.0 Invasive Species E.O. (E.O. 13112): For detailed discussion, see Appendix N. Summary information is provided in Sections 6.5 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

A. Overall Project Special Conditions:

1. Within 30 days of EPA's Final Determination, the Commonwealth shall submit a final and complete set of plans and figures for all project components consistent with the conditions set forth in EPA's Final Determination. Upon EPA's approval, the Commonwealth shall complete the project in accordance with the approved plans. If in the future the Commonwealth proposes to increase the scope of construction within or adjacent to the Acushnet River/New Bedford Harbor, it must contact EPA immediately to discuss modification of this authorization. EPA must approve any changes prior to their implementation.

2. All work associated with the South Terminal Project shall be completed in accordance with all of the requirements in the Final Determination including those contained in Appendix A and Appendix C of EPA's Final Determination and the conditions in the TSCA Determinations in Appendix J(1) and Appendix J(2) of the Final Determination.

3. No dredging or filling activities in waters of the U.S. may occur until the Commonwealth demonstrates to EPA's satisfaction that it has ownership or control over all parcels that make up the South Terminal Project site.

4. At least ten working days in advance of the start date, the Commonwealth or its contractor shall notify the First Coast Guard District, Local Notice to Mariners Office, (617) 223-8356, and Aids to Navigation Office, (617) 223-8358, of the location and estimated duration of the dredging, filling, and capping operations.

5. Except where stated otherwise, reports, drawings, correspondence and any other submittals required by EPA's Final Determination shall be marked with the words "South Terminal Project in New Bedford, Massachusetts" and shall be addressed to:

Elaine Stanley
Remedial Project Manager
Office of Site Remediation and Restoration
EPA Region 1, Suite 100, OSRR 7-04
5 Post Office Square
Boston, MA 02176

with a copy to:

Cynthia Catri
Senior Enforcement Counsel
EPA Region 1, Suite 100, OES04-2
5 Post Office Square
Boston, MA 02176

Documents which are not marked and addressed in this manner may not reach their intended destination and do not comply with the requirements of these conditions.

B. Dredging, Filling, and Capping Special Conditions:

1. Dredging of fine grained materials must be conducted using an environmental bucket.

2. The Commonwealth shall implement the Fish Deterrent Program set forth in Attachment 1 to Appendix C of the Final Determination, for any work conducted within waters shallower than -5 meters Mean Lower Low Water ("MLLW") from January 15th through June 15th of any year.

3. Dredging in the New Bedford Harbor Federal Navigation Project channel shall only occur in areas that are above target depths of -30 MLLW. The Commonwealth has indicated that it is possible that no dredging will be necessary. The estimate of 13.3 acres is a worst case scenario.

C. Pile Driving Special Conditions:

1. To avoid the need to drive pipe pilings into bedrock, a "rock socket" installation method shall be used for 87 of the pipe pilings, consistent with the Commonwealth's description set forth in MassDEP 2012j, Appendix 1. This technique involves drilling a "rock socket" in place, placing the piling in the hole and then grouting it in place.

2. Only vibratory hammers shall be used for the installation of sheet pilings.

D. Rock Removal Special Conditions:

1. Blasting for removal of bedrock or for any other under-water purpose is prohibited.

2. The Commonwealth may use any of the rock removal techniques identified in MassDEP 2012g that are approved by EPA (or approved with conditions) following EPA's evaluation of the Commonwealth's acoustic modeling study and determination of the acceptability of the modeling methods and results.

E. Mitigation Special Conditions:

1. The Commonwealth shall implement the Final Mitigation Plan and revised Appendices dated November 14, 2012 (MassDEP 2012r). This mitigation requirement will not be considered fulfilled until the Commonwealth has demonstrated mitigation success consistent with the Final Mitigation Plan and has received written verification from EPA.

2. The shellfish mitigation plan may be modified with EPA's approval in two ways:

a. The Commonwealth has proposed to include oysters as part of this mitigation plan, representing somewhere between 10-20% of the total shellfish seed to be planted. To implement this proposal, the Commonwealth shall develop the details regarding the number of shellfish, the apportionment of the species, and the design and location of the oyster reef under the guidance of EPA, NMFS, and MassDMF. The Commonwealth must submit its oyster reef plan to EPA for review and approval and receive an amendment to this Final Determination, prior to constructing the oyster reef.

b. The number of shellfish to be seeded may be modified if the full extent of the dredging as described in the Commonwealth's June 18, 2012 submission is reduced. In that event, the Commonwealth must recalculate the expected shellfish impacts from a smaller dredge footprint and then size the mitigation effort accordingly. The Commonwealth must provide EPA with information to document the reduction in impact and the planned reduction in mitigation and obtain EPA's written approval. In particular, because EPA is not, at this time, authorizing expansion of the deep-draft quayside dredging area and additional widening of the deep-draft channel, the Commonwealth may calculate the related reduction in shellfish loss and obtain EPA's approval of an equivalent reduction in shellfish to be seeded.

3. The Commonwealth shall hire a wetland scientist with experience in salt marsh creation projects and invasive species control to oversee the construction of the River's End Park Salt Marsh Creation Project.

4. Determination of the success of salt marsh establishment by the onsite wetland scientist shall include an estimate of percent cover of salt marsh vegetation (in accordance with the planting plan) for each planting zone over the entire site, and shall include the identification and relative abundance of species present.

5. The Commonwealth shall submit a characterization, removal, and disposal work plan (Soil and Sediment Work Plan) for both soil and sediment that will remain in-place or that will be excavated during mitigation activities at River's End Park to EPA for review and approval at least thirty days prior to the start of land or water work at River's End Park. The Soil and Sediment Work Plan must be approved before any land or water work at River's End Park may occur. The Soil and Sediment Work Plan shall detail the procedures that will be employed for characterization of soil and sediment within the mitigation area. The Soil and Sediment Work Plan shall also include information on the required criteria for either leaving soil/sediment in-place, and/or for removal, storage, handling, and disposal to meet all applicable or relevant and appropriate state and federal standards.

6. The Commonwealth shall execute and record a conservation restriction ("Restriction") to protect the River's End Park mitigation area in perpetuity from any future development. The Restriction shall be in a form substantially similar to the Draft Declaration of Restriction ("Draft Restriction") provided in Appendix 13 of the Final Mitigation Plan, and consistent with any modifications required by EPA following its review and comment on the Draft Restriction. The Restriction shall be executed and recorded with the Bristol County District Registry of Deeds within **90** days of the date of EPA's Final Determination, or within 60 days of receipt of EPA's comments on the Draft Restriction, whichever is later. A copy of the executed and recorded document must be sent to EPA within 30 days of the date it was recorded. The Restriction shall expressly allow for the creation, restoration, remediation and monitoring activities required by the Final Mitigation Plan and the Soil and Sediment Work Plan. It shall prohibit all other filling, clearing, and other disturbances (including vehicle access) on the mitigation site except for activities explicitly authorized in the Plans.

7. In the event a Massachusetts c. 21E ("21E") remediation is required for the mitigation area of River's End Park, the Commonwealth shall execute and record an Activity and Use Limitation ("AUL") if necessary pursuant to 21E.

8. The Commonwealth shall execute a Site Protection Instrument for the River's End Park mitigation area, and a Long-term Site Control Instrument for the winter flounder habitat and OU-3 capping mitigation areas, within 60 days of receipt of EPA's comments on the proposed templates for those documents provided in Appendix 9 and Appendix 18, respectively, of the Final Mitigation Plan. A copy of the executed documents must be sent to EPA within 30 days of signature.

9. The Commonwealth shall provide financial security for the construction of the mitigation in the form of a construction bond consistent with the draft provided in Appendix 17 of the Final Mitigation Plan. The Commonwealth shall provide a complete draft (identifying a proposed surety and penal sum of the bond) to EPA for review and comment within 30 days of EPA's Final Determination, and shall execute a final bond consistent with EPA's comments

within 30 days of receipt of those comments. A copy of the executed construction bond must be sent to EPA within 30 days of signature.

10. The Commonwealth shall provide financial security for the monitoring and maintenance activities, and any necessary corrective actions, at the mitigation areas during the initial 5 year post-construction monitoring period, plus an additional 2 years' worth of follow-up monitoring and maintenance activities after any corrective actions are taken. The security shall be in the form of a performance bond consistent with the draft provided in Appendix 17 of the Final Mitigation Plan. The amount of the bond shall be sufficient to cover not only the costs for the 5 year performance maintenance period (identified in section 13 of the Final Mitigation Plan), but also to cover the costs of any necessary corrective actions and the costs for monitoring and maintenance for up to an additional 2 years' worth of follow-up monitoring and maintenance activities after corrective actions are taken. The Commonwealth shall provide a complete draft (identifying a proposed surety and penal sum of the bond) to EPA for review and comment within 30 days of EPA's Final Determination, and shall execute a final bond consistent with EPA's comments within 30 days of receipt of those comments. A copy of the executed performance bond must be sent to EPA within 30 days of signature.

F. Invasive Species Management Special Conditions:

1. Invasive species management within upland and salt marsh portions of the South Terminal project site, and at the bulkhead and pilings, shall be managed in accordance with the Invasive Species Management Plan ("ISMP") titled: *"New Bedford Marine Commerce Terminal Invasive Species Monitoring Plan – Facility, Bulkhead and Pilings,"* November, 2012 (MassDEP 2012r).

2. Invasive species management for the River's End Park mitigation project shall be conducted in accordance with the Invasive Species Management Plan titled: *"New Bedford Marine Commerce Terminal Invasive Species Monitoring Plan – Mitigation Locations,"* November, 2012 (MassDEP 2012r, Appendix 12).

3. Photographic documentation shall be included in the annual monitoring reports specified in the ISMPs.

4. The annual surveys of pilings shall be submitted to MIT Sea Grant and EPA, in addition to and at the same time that they are submitted to MassCZM.

G. Conditions to Protect the New Bedford Harbor Federal Navigation Project ("FNP"):

1. The Commonwealth and its contractors shall locate all structures (including vessels and floats) far enough outside the New Bedford Harbor Federal Navigation Project ("FNP") limits so neither the structures, nor any vessels tied to these structures, encroach into the FNP unless expressly authorized as part of a U.S. Coast Guard Notice to Mariner review process. The Commonwealth will need to move construction equipment and allow access within the New Bedford FNP if adequate access cannot be provided by other means.

H. Miscellaneous Special 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 to the New Bedford Harbor Hurricane Barrier at all times.

2. Environmental Monitor: The Commonwealth shall appoint an environmental compliance monitor who shall not be subject to the authority of the resident engineer, design consultant, contractor or others associated with the design and construction of the project; shall have unrestricted access to the construction sites; and shall be required to report directly to the Commonwealth's State Enhanced Remedy Project Manager ("SER PM") and to EPA. The purpose for appointing and maintaining an environmental monitor is to help ensure compliance with the terms and conditions of this Final Determination, and the monitor shall work with the resident engineer toward that end. The environmental monitor is to observe, report, and recommend and shall not have authority over activities or personnel. Before the start of any on-site construction, the name, affiliation and contact information of this monitor shall be provided to the EPA points of contact referenced in paragraph A.5 above. The environmental monitor shall report any non-compliance and the proposed resolution to the EPA within 48 hours of the occurrence. The environmental monitor shall provide monthly reports to the EPA points of contact until project construction is complete. The monthly reports shall summarize the status of construction, the condition of the site, the general weather conditions and shall report any erosion, sedimentation or pollution problems and how they were corrected, along with recommendations on how to prevent similar problems in the future. The environmental monitor shall immediately report any problems to the Commonwealth's SER PM, who shall take immediate steps to correct those problems.

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EPA Final Determination for the South Terminal Project
New Bedford 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)(including construction activity disturbing greater than one acre); those associated with construction activity as defined in 40 C.F.R. § 122.26(b)(15); and those designated by EPA as a significant contributor of pollutants.

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. [1] 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

[1] 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 industrial storm water program. 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.

- 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.

Appendix E of EPA's Draft Determination noted that the Commonwealth's submission entitled *State Enhanced Remedy in New Bedford, South Terminal (January 18, 2012)* contained an abbreviated storm water plan and explained that 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. Appendix E also identified the key elements that the Commonwealth needed to address more completely in its SWPPP. On November 1, 2012 the Commonwealth submitted a draft/template of a complete SWPPP plan, which will be finalized after a contractor is procured and information is obtained from the contractor.

Based on the information contained in the Commonwealth's submission, EPA has 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.

Final Condition

EPA's authorization of storm water discharges associated with construction activities as part of the State Enhanced Remedy is conditioned upon the Commonwealth's 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; on the Commonwealth's implementation of the SWPPP consistent with the terms and conditions of the CGP; and on the implementation of 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.

EPA Final Determination for the South Terminal Project
New Bedford State Enhanced Remedy

Appendix G
Determination of Compliance –
National Historic Preservation Act (16 U.S.C. §470)
36 C.F.R. Part 800

National Historic Preservation Act

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 section 106 of the National Historic Preservation Act and at the behest of EPA, the Commonwealth commissioned a number of archeological investigations and assessments of the area projected to be impacted by the Project to determine its impacts, if any, on historic properties. After reviewing the archeological investigations and assessments of the areas projected to be impacted by the Project, and in consideration of input by the Massachusetts Historical Commission (MHC) and the consulting parties, including the Massachusetts Bureau of Underwater Archaeological Resources (MBUAR), and the federally recognized Wampanoag Tribes of Gay Head (Aquinnah), and Mashpee (collectively, the Tribes), EPA finds that no historic properties will be affected within the Project's area of potential effects.

The areas of investigation associated with this Project include the subtidal, intertidal, and upland portions of the Project site. In particular, the Project includes the construction of a Confined Disposal Facility in the intertidal and subtidal portions, navigational dredging in the intertidal and subtidal portions, and construction of a marine terminal facility on the upland portion of the site. The archeological investigations and assessments of these areas are summarized in the following reports (listed chronologically):

- Cultural Resources Background Study and Archeological Assessment, South Terminal Marine Infrastructure Park (Upland Portion) by John Milner Associates, Inc. (June 2010);
- Phase I & IB Underwater Archeological Investigations, South Terminal Marine Infrastructure Park, New Bedford, MA, submitted to MBUAR by Dolan Research, Inc. (September 2010);
- Assessment of Prehistoric Archeological Site Potential: Subtidal Portions of the Proposed South Terminal Marine Infrastructure Park, New Bedford, MA, submitted to the Massachusetts Historical Commission and MBUAR by John Milner Associates, Inc. (October 2010);
- Assessment of Prehistoric Archeological Site Potential: Intertidal Portions of the Proposed South Terminal Marine Infrastructure Park, New Bedford, MA, submitted to the Massachusetts Historical Commission and MBUAR by John Milner Associates, Inc. (October 2010);
- Phase II Investigation of target M4/S5, Proposed South Terminal Marine Infrastructure Park, New Bedford, MA, submitted to MBUAR by Dolan Research, Inc. (January 2011); and
- Cultural Resources and Background Study and Archeological Sensitivity Assessment, submitted to the Massachusetts Historical Commission and MBUAR by John Milner Associates, Inc. (September 2012).

These studies, with the exception of the September 2012 Cultural Resources Background Study and Archeological Sensitivity Assessment of the upland portion of the site, were initially submitted to the Tribes on March 23, 2011. The studies were resubmitted to the MHC and the consulting parties as part of the Commonwealth's January 18, 2012 comprehensive submittal to EPA entitled State Enhanced Remedy in New Bedford, South Terminal. The September 2012 Cultural Resources Background Study and Archeological Sensitivity Assessment was transmitted to the MHC and consulting parties on September 18, 2012.

The June 2010 study and assessment, Cultural Resources Background Study and Archeological Assessment, South Terminal Marine Infrastructure Park (Upland Portion), concerns a cultural resources background research and an archeological sensitivity assessment of the upland portion of the Project. Because this portion of the Project expanded as the Project developed, a second assessment, Cultural Resources and Background Study and Archeological Sensitivity Assessment, was conducted in September 2012. The June 2010 assessment noted that the upland area was extensively disturbed by 19th century industrial development and concluded that no additional

cultural resources background research or archeological subsurface investigation was necessary in the upland area. In the July 6, 2010 letter from the MHC to the U.S. EPA, the MHC concurred with the findings and recommendations of this report.

The September 2012 assessment, which included the June 2010 study area, confirms the findings of the June 2010 assessment and concluded that no additional cultural resources background research or archeological sub-surface investigation is necessary in the expanded upland study area. (See Attachment A to this document which depicts the June 2010 and September 2012 study areas.) Note, however, that this assessment recommended that a Phase 1B archeological survey be performed to test for the presence of intact archeological features and deposits associated with the former dwellings in the former Acushnet Mills company housing before any Project-related construction activities intrude more than 12 inches below present ground surface. In response, the Commonwealth confirmed that the Project will not impact this culturally sensitive area because activities contemplated in the final designs will not involve the disturbance of soil in this area. In addition, as a condition of this final decision, before any contemplated ground disturbance of more than 12 inches in the Acushnet Mills company housing area is undertaken, a Phase 1B archeological survey of this area must be submitted to EPA for review and approval. (See Attachment A for location of former Acushnet Mills company housing.)

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, Phase I & IB Underwater Archeological Investigations, South Terminal Marine Infrastructure Park, New Bedford, MA, were submitted to MBUAR in September 2010. The Phase I survey found, and the Phase IB survey confirmed, the presence of a late 20th/early 19th century sailing ship. The report concerning the results of additional archeological research into the wreck site, Phase II Investigation of Target M4/S5, Proposed South Terminal Marine Infrastructure Park, New Bedford, MA (January 2011), concluded that because of the deteriorated condition of this vessel, the archeological research potential of the wreck site is limited. In addition, the report recommended that further investigation was not warranted. On February 17, 2011, EPA and the Commonwealth's consultant, Apex Companies, LLC (Apex) received concurrence letters from the MHC and MBUAR which agreed that the shipwreck does not meet the Criteria of Eligibility for listing in the National Register of Historic Places (36 CFR Part 60), the site lacks integrity, and no further investigation is warranted.

In addition, the Commonwealth conducted assessments of prehistoric archeological site potential for the intertidal and subtidal portions of the Project. The intertidal report, Assessment of Prehistoric Archeological Site Potential: Intertidal Portions of the Proposed South Terminal Marine Infrastructure Park, New Bedford, MA, concluded that the portion has low prehistoric archeological potential, and recommended that no further prehistoric evaluation of the intertidal portions of the Project areas be performed.

The subtidal report, Assessment of Prehistoric Archeological Site Potential: Subtidal Portions of the Proposed South Terminal Marine Infrastructure Park, New Bedford, MA, concluded that this portion 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. In accordance with this report, and in consultation with the Tribes, the Commonwealth agreed to have a suitably trained archeologist on board dredging vessels to monitor ground disturbing activities.

The consulting parties also noted concerns about the preservation of paleosol, i.e., fossilized soils preserved within a sequence of geological deposits that are indicative of past conditions, in the subtidal and intertidal areas. In particular, in MHC's November 18, 2010 letter to EPA regarding the intertidal and subtidal investigations, the MHC noted that both the subtidal and intertidal zone investigations identified areas with intact paleosol, and requested that the Project planners consider an alternative to avoid and protect these soils.

In its January 12, 2011 letters to the MHC and to the MBUAR, Apex confirmed that "in keeping with the comments of MHC and MBUAR, the project footprint has been re-evaluated and Re-designed [sic] such that it avoids the mapped Paleosol areas [emphasis in original]." Moreover, the Project planners will take the following actions to protect subtidal and intertidal paleosol from inadvertent impacts:

- The location of the paleosol will be identified on contract drawings and within the specifications issued to contractors as an off-limits area (without identifying it as an archaeological feature). The areas will be marked as off-limits (with only very minor exceptions for maneuvering small craft on the water surface if necessary).
- Physical indicators will be installed at the water surface prior to the start of construction to show the location of the paleosol and assist in keeping contractors, subcontractors and delivery personnel from entering and inadvertently impacting the area.
- Pathways for use by heavy equipment, established to specifically avoid the paleosol area, will be clearly identified on the Project plans.
- Locations for material stockpiles and other components of construction will be identified in locations that safely avoid the location of the paleosol.
- Construction site supervisory staff, trained in the location of paleosol areas, will alert contractors to its presence on an as-needed basis and ensure that the Harbor bottom above the paleosol remains undisturbed.

Because of recent changes proposed by the Commonwealth to the dredge footprint in the intertidal and subtidal portions of the site, EPA requested written confirmation that the October 2010 assessments of prehistoric archeological site potential for the subtidal and intertidal portions of the Project were broad enough to cover all potential work in these areas. In its September 18, 2012 response to this request, Apex stated that "all areas of

the proposed dredge footprint as well as proposed expansions fall entirely within area of cultural resources investigation that has been completed for the Project."

In light of the surveys, assessments, and investigations described above and actions that will be taken to avoid effects to historic properties, in accordance with 36 CFR 800.4(d), EPA has determined that the proposed Project will not affect historic properties. On September 28, 2012, EPA notified the MHC and consulting parties of its no affect finding. On October 16, 2012, the MHC concurred with this finding. Accordingly, EPA has fulfilled its responsibilities under section 106, and may proceed with its final decision concerning the Commonwealth's South Terminal Project Application, subject to the provisions contained in 36 CFR Section 800.12 for treating historic properties discovered during implementation of this Project.

Appendix G - Attachment A

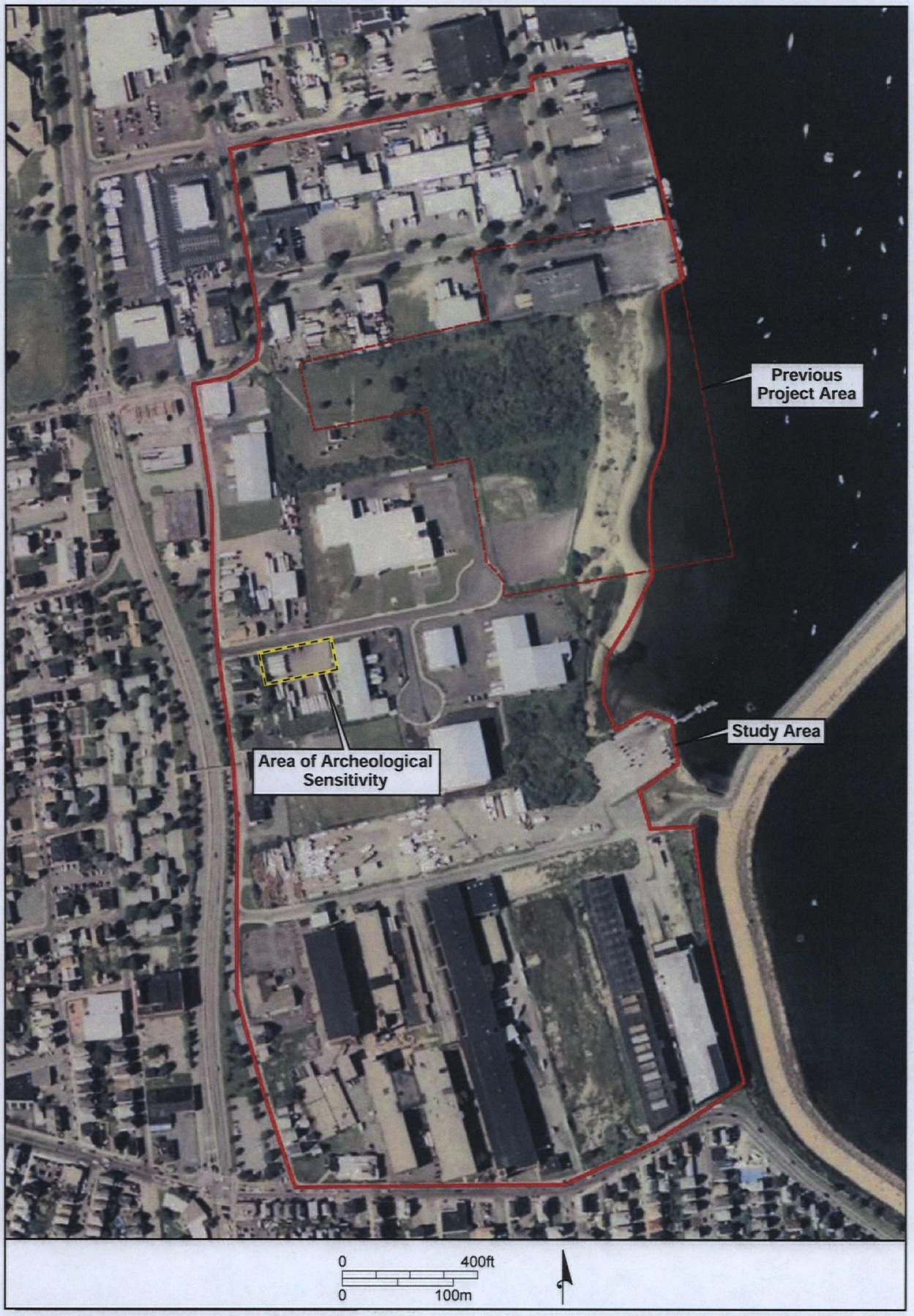


Figure 11. Aerial photography view (2009) depicting the location of the current Study Area, as well as the previous Project Area (JMA June 2010), and location of archeologically sensitive area.

EPA Final Determination for the South Terminal Project
New Bedford 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 this final 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 with regard 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). As of the date of EPA's Draft Determination, the Commonwealth had updated and supplemented its January 18, 2012 submission with 4 additional submissions (including attachments), dated June 18, 2012 (MassDEP 2012a), June 29, 2012 (MassDEP 2012b), July 11, 2012 (MassDEP 2012c) and July 12, 2012 (MassDEP 2012d). Between the Draft Determination and the Final Determination, the Commonwealth provided numerous additional documents. A list of significant submissions referenced in EPA's Final Determination, including this Appendix E, can be found in Table 3 of the Final Determination.

The project's components include:

1. Installation of a 1000 linear foot bulkhead in the Harbor adjacent to an existing 200 foot bulkhead to form a 1200 linear foot bulkhead, 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 21.5 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;

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; and

5. Compensatory mitigation to address impacts to wetlands, intertidal habitat, subtidal habitat, and shellfish resources.

Species Least Likely to be Impacted: Not all of 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 determined that the species listed below may not be impacted at all or at most may suffer minor temporary impacts. EPA's Final Determination approving the South Terminal Project is conditioned upon the Commonwealth employing a variety of safeguards (discussed on pages 11-14 below) to minimize the size and duration of any temporary impacts from dredging.

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 2.07 acres of intertidal habitat, 4.73 acres of near-shore shallow subtidal habitat and 0.11 acres of fringing salt marsh, for a total permanent loss of just over 6.91 acres of habitat.

There will also be temporary impacts from filling. First, the final 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. See MassDEP 2012r. 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 will be temporary, because aquatic habitat will be available for recolonization and use by organisms upon completion. There will also be temporary impacts to 0.04 acres of salt marsh during construction of the salt marsh mitigation area at River's End Park.

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 53.21 acres of marine 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	2.07	Permanent
Shallow subtidal	4.73	Permanent
Salt marsh	0.11	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 47.16 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	3.68[1]	-1 to -6	-30 to -32
Quayside areas/tug channel	8.46	-1 to -6	-14
Gifford St. mooring	6.17	-1 to -6	-6 to -7
CAD cell #3	8.54[2]	-4 to -6	-45 then filled to original elevation and capped

1 The Commonwealth had also sought approval to dredge 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. As discussed in Appendices E and Q , EPA is not approving that additional dredging at this time.

2 The Commonwealth had also sought approval to dredge an additional 0.22 acres to accommodate additional excavate from the potential expansion of the deep-draft quayside dredging area and potential additional widening of the deep-draft channel. See MassDEP 2012b, pp. 3-4. As discussed in Appendices E and Q EPA is not approving that additional dredging at this time.

South Terminal Channel	7.01[3]	-20 to -25	-30
Federal Channel	13.3[4]	Existing depths	-30
	Total = 47.16		

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. The impacts associated with the filling to construct the terminal will be permanent and represent a loss of approximately 6.91 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 cells will be temporary for most species, although epibenthic invertebrates of limited mobility (snails, sea stars, sand dollars) will 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. 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

3 The Commonwealth had also sought approval to dredge 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. As discussed in Appendices E and Q, EPA is not approving that additional dredging at this time.

4 Some or all of the 13.3 acres of dredging may not need to occur depending on the elevations in the existing channel, so this is the worst case scenario. The Commonwealth had also sought approval to dredge an additional 1.74 acres in the Federal Channel associated with potential additional widening of the deep-draft channel. See MassDEP 2012a at pp. 2-3, 4-5, and 10. As discussed in Appendices E and Q, EPA is not approving that additional dredging at this time.

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 38.62 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 16.87 acres of winter flounder spawning or nursery habitat. EPA views this 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. EPA expects similar results during dredging for the South Terminal Project. The Commonwealth will employ an environmental bucket for dredging fine-grained sediments, and it

will adhere to performance standards (discussed further below) designed to minimize potential turbidity impacts.

Blasting: In its Draft Determination for this Project, EPA expressed concerns about potential adverse impacts to fish species from the use of blasting to remove fractured rock from within the footprint of the dredge area. The Commonwealth proposed engineering controls on blasting activities for rock removal, such as the use of bubble curtains as an acoustic damping measure, for blasting that occurs between January 15 and June 30 of any year. (MassDEP 2012g.) It also identified alternative methods of rock removal. Id.

EPA is not approving the use of blasting to remove rock in the Final Determination for this Project, because there is not sufficient information to enable EPA to reach a judgment about the potential effects of blasting on the aquatic environment and on the nearby Hurricane Barrier. If blasting is ultimately deemed necessary, the Commonwealth will need to seek a modification of the Final Determination, and will need to provide additional information on potential impacts from blasting and mitigation steps needed to minimize or eliminate those impacts.

The Commonwealth has identified four primary alternative methodologies for non-blasting rock removal that it could implement (Mass DEP 2012g). They are commonly referred to as Hoe Ram, Bucket Removal, Drill and Fracture and Cutter Head Dredging. Based on the Commonwealth's submission, the details of each methodology, its benefits and drawbacks, is discussed below.

The Hoe Ram technique uses a hydraulically actuated tip on the end of an excavator arm to essentially hammer the target rock. The intent is, through the repeated physical pressure, to create and propagate fractures in the rock until it splits. The broken pieces are then removed by an excavator bucket. This technique does not create a pressure wave, but does generate noise. The peak noise levels are well below noise levels associated with blasting. Little to no turbidity will be generated by this technique. The technique is time consuming, so this represents an extended period of heavy equipment operation.

Bucket Removal, also referred to as rock ripping, is a technique used to fracture rock by exceeding the compressive strength of the rock. Standard excavator buckets can be used to generate the sufficient force to rip the rock. Rock pieces are then removed in the excavator bucket. No pressure wave is generated and noise levels are lower than the peak noise levels generated by blasting. Turbidity generated by this technique is dependent on the type of rock, but is not anticipated to be any worse than what is found with dredging. In many cases, it will be much lower. This technique is also time consuming, so this also represents an extended period of heavy equipment operation.

The Drill and Fracture technique requires drilling narrow shafts into the rock and then placing an expanding grout. The expanding grout exerts a pressure on the rock until the tensile strength is

exceeded and then the rock fractures. The fractured rock pieces can be removed by an excavator bucket. No pressure wave is generated by this technique. Noise is limited to the time of the drilling and will be far below noise generated by blasting. Turbidity levels generated by this technique are highly dependent on the type of rock. Similar to Bucket Removal it will be no worse than dredging, but often much lower. Common grouts used for this type of work include Calcium Oxide (CaO) and Calcium Hydroxide (CaOH). These grouts have a fairly minimal potential for toxicity and other negative impacts in the marine environment (Mass DEP 2012k). This technique requires a great amount of precision, making underwater applications of it challenging and time consuming.

Cutter Head Dredging relies on high point loads exerted on the rock to chip it into pieces. The chipped rock fragments are carried as suspended sediment in the water being drawn in by the suction pump of the dredge. This technique generates no pressure waves. The levels of turbidity generated are partially dependent on the type of rock and in large part are mitigated by the suction pump of the dredge. This technique generates the greatest amount of noise of the non-blasting alternatives.

The Commonwealth conducted an acoustical analysis to examine the potential acoustic impacts associated with blasting and Cutter Head Dredging. EPA has not had an opportunity to review the details of the model, but several important conclusions can be drawn from the results described by the Commonwealth in MassDEP 2012j, Appendix 3 (Biological Assessment of the Atlantic sturgeon):

1. Noise levels generated by Cutter Head Dredging are below levels that would trigger acute mortality to Atlantic sturgeon.
2. Noise levels generated by Cutter Head Dredging exceeding thresholds that may trigger a behavioral response (avoidance) in Atlantic sturgeon occur in a relatively small area near the project site.
3. Acoustic impacts from the Cutter Head Dredge are substantially lower than those predicted for blasting.

Based on these results, any of the 4 techniques outlined here provide a reduced level of impact compared to blasting. The difference in level of impact between the 4 techniques is highly dependent on the type of rock and is likely to be minimal.

On November 16, 2012, the Commonwealth submitted the final acoustic modeling report, which includes the details for the model, assumptions, and how the model works. (MassDEP 2012s). Due to the late date of the submission of this report, EPA has not had adequate time to review it and confirm the results of the study. EPA intends to review the report expeditiously. EPA is conditioning its approval on the requirement that the rock removal activities may not proceed until EPA evaluates the acoustic modeling study and determines the acceptability of the modeling methods and results, to ensure that the noise impacts will not adversely affect fish species.

Finally, it should be noted that rock removal, independent of the technique used, must meet the Water Quality Performance Standards outlined in Appendix C.

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, EPA is requiring the following measures to be employed as a condition of project approval:

- Dredging in the Federal Navigation Project channel will only target areas that are above -30 MLLW. The Commonwealth has indicated that it is possible that no dredging will be necessary. The estimate of 13.3 acres is a worst case scenario.

- Dredging of contaminated fine sediments will be done using an environmental bucket.

- The project will adhere to the Performance Standards for dredging outlined in Appendix C of EPA's Final Determination for the South Terminal Project. These Performance Standards require adherence to specified turbidity levels, with potential use of silt curtains or other containment measures where necessary to ensure compliance with the turbidity levels. Ambient water column monitoring will occur to ensure that those Performance Standards are met.

- From January 15 through June 15 of any year, silt-curtains and absorbent booms will be deployed to enclose all areas being dredged and filled; such deployment will occur at all times of the year for CDF construction, and for capping to create intertidal, subtidal, and winter flounder spawning habitat.

- A Fish Deterrent Program will be implemented for any work conducted within waters shallower than -5 meters Mean Lower Low Water between January 15th and June 15th of any year. The Commonwealth will erect silt barriers that will be anchored to the bottom. A fish weir will be installed outside of the silt curtains to

provide a second obstacle to benthic fish movement. Gaps in the silt curtain (if required for vessel access) will be constructed with the use of a bubble curtain installed along the bottom of the harbor. The silt curtain/fish weir/bubble curtain system will be installed in such a manner as to completely enclose the area of proposed work. Prior to construction and whenever warranted by the monitoring program, multiple types of fish startle systems will be deployed within the project area to encourage fish to move out of the area. From January 15 to June 15, weekly monitoring of the exclusion devices will be done to ensure their physical integrity. Also from January 15 to June 15, weekly monitoring of the project area for fish will be done. If a single winter flounder or schools of pelagic fish are detected in the project area, the fish startle systems will be deployed to encourage them to move.

To that ensure compensatory mitigation is provided, to address both permanent and temporary aquatic impacts associated with this project, EPA is requiring the Commonwealth to implement the following mitigation as a condition of approval of the Project:

- The Commonwealth will 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 conduct a quahog seeding program in open shellfishing

areas south of the hurricane barrier. The Commonwealth will seed 24,542,803 clams to offset the expected loss of 9,817,121 shellfish, subject to two potential modifications discussed below. The quahog seeding will occur in several locations in New Bedford waters. Due primarily to the availability of seed, this replacement will take place over a 10-15 year time period. This shellfish mitigation plan may be modified in the future in two possible ways.

The first potential modification of this shellfish mitigation plan relates to the NMFS's desire for the Commonwealth to include oysters as part of this mitigation effort. Accordingly, the Commonwealth has proposed to include oysters as part of this mitigation plan representing somewhere between 10-20% of the total shellfish seed to be planted. The Commonwealth has not yet developed an oyster reef mitigation plan so EPA cannot approve this mitigation component at this time. The Commonwealth can submit an oyster reef plan to EPA for approval and ask for an amendment to the Final Determination.

The second potential modification relates to the Commonwealth's request to adjust the number of shellfish to be seeded if the full extent of the dredging as described in the Commonwealth's June 18, 2012 submission (MassDEP 2012a) is reduced. In that event, the Commonwealth would recalculate the expected shellfish impacts from a smaller dredge footprint and then size the mitigation effort accordingly. This approach is acceptable to EPA, provided that the Commonwealth provide EPA with information to document the reduction in impact and the planned reduction in mitigation and obtain EPA's written approval. Because EPA is not, at this time, authorizing expansion of the deep-draft quayside dredging area and additional widening of the deep-draft channel (see footnotes 1-4 above), the Commonwealth may calculate the related reduction in shellfish loss and obtain EPA's approval of an equivalent reduction in shellfish to be seeded.

- The Commonwealth will create approximately 1.02 acres of salt marsh at the Rivers End Park Mitigation Site, located on the Acushnet River, to the north of the Wood Street Bridge in New Bedford, Massachusetts. This salt marsh creation is intended to compensate for the functions and values associated with the 0.11 acres of salt marsh and 0.11 acres of freshwater wetlands that will be lost when they are filled during construction of the Project.

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 use of containment barriers and/or reduced dredging rates to ensure the protection of water quality. From January 15 to June 15, and in some areas at all times of the year, silt curtains and absorbent booms will be used to encircle all areas being dredged, filled, or capped. From January 15 to June 15 in water depths shallower than -5 meters Mean Lower Low Water, silt curtains, bubble curtains and fish

weirs will be erected around the areas of dredging and filling to prevent fish, particularly winter flounder, from entering the project area. In those areas, fish startle systems will be deployed before construction begins to move fish out of harm's way, and weekly monitoring will occur to ensure the barriers maintain their physical integrity and that no fish have made it into the project area. For the permanent impacts, the Commonwealth will implement a mitigation package that should offset the projected loss of winter flounder spawning habitat, salt marsh, intertidal, and subtidal habitat. The Commonwealth will also implement a shellfish seeding effort consistent with that described above, to offset the losses associated with that resource. Rock removal activities will not proceed until EPA evaluates the acoustic modeling study that the Commonwealth submitted on November 16, 2012 and determines the acceptability of the modeling methods and results. EPA has 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.

EPA Final Determination for the South Terminal Project
New Bedford 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 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. EPA subsequently determined, and FWS confirmed in a letter dated July 17, 2012, that the piping plover and the northeastern beach tiger beetle are not in the project area.

On August 2, 2012, EPA submitted a final Biological Assessment of the potential effects of the construction and long-term operation of the proposed Project on the roseate tern to FWS. For the reasons discussed in the final BA, and summarized briefly below, EPA concluded that while the proposed Project may affect the roseate tern, the Project is unlikely to adversely affect the species. The FWS replied to EPA's Biological Assessment and conclusions in an August 29, 2012 letter and concurred with EPA's determination that the Project is not likely to have an adverse effect on the roseate tern.

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. At the suggestion of the Massachusetts Natural Heritage and Endangered Species Program, the Commonwealth will conduct a tern survey to determine the extent of foraging habitat for the common and roseate terns as well as tern use of the area. The Tern Monitoring Program will take place over one season, from late April through late August, 2013. See sections

3.2.9 and 7.3.4 of the Commonwealth's November 14, 2012 Final Mitigation Plan (MassDEP 2012r) for more information.

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.

A series of meetings occurred between EPA, NMFS and the Commonwealth on September 21 and 28, 2012 to discuss in part, the details of the Project construction and the potential impact to Atlantic sturgeon. In a subsequent September 28, 2012 letter, NMFS stated the species are known to use the nearby Taunton River "as part of their estuarine/riverine habitat, and could be present anywhere within coastal waters as part of their marine habitat," and recommended that EPA initiate informal consultation under the Endangered Species Act. In its September 28, 2012 letter, NMFS requested specific information detailed below on pile driving, blasting and dredging. On October 4, 2012 the Commonwealth sent a letter to EPA providing the project information that NMFS had requested and outlining the approach that Massachusetts devised in cooperation with NMFS to mitigate impacts to the Atlantic sturgeon also detailed below. (MassDEP 2012j, Appendix 1.) The Commonwealth supplemented this information in its Biological Assessment ("Assessment") for the Atlantic sturgeon, submitted to EPA on October 22, 2012. (MassDEP 2012j, Appendix 3.)

NMFS requested the following project specific information:

> Pile driving – number of proposed piles, approximate range of pile diameters, pile driving methods and locations, any pile driving sequencing, and the use of any sound reduction mitigation being proposed.
>
> Blasting – proposed blasting schedule, proposed methodology, location, water depths, and any proposed mitigation measures.
>
> Dredging – type of equipment being used.

In response to those requests, the Commonwealth provided the following information:

> **Pile driving** - The construction of this facility calls for the installation of a 1,000 linear foot coffer dam, followed by the installation of 175 z-shaped steel sheet piles and 181 pipe piles. To construct the coffer dam, 3,034 thin flat steel sheets approximately 19" long and 0.5" thick will be installed. The z-shaped pile sheets are 30" long and 3/8" thick. Sixty-five of the pipe piles are 24" diameter and have a 5/8" wall thickness. One hundred and sixteen of the pipe piles are 30" in diameter and have a wall thickness of ¾".

To mitigate potential impacts to Atlantic sturgeon primarily from noise impacts associated with pile driving, the Commonwealth has agreed to the following construction measures:

1. To eliminate the need to pound piles into bedrock, a "rock socket" installation method will be used for 87 of the piles. This technique involves drilling a "rock socket" in place, placing the piling in the hole and then grouting it in place. This technique is consistent with the "drill and pin to ledge" criteria that NMFS has previously suggested.
2. Only vibratory hammers will be used for the installation of sheet piles.

Blasting – The Commonwealth proposed engineering controls on blasting activities for rock removal such as the use of bubble curtains as an acoustic damping measure for blasting that occurs between January 15 and June 30 of any year.

EPA is not approving the use of blasting to remove rock in the Final Determination for this project, because there is not sufficient information to enable EPA to reach a judgment about the potential effects of blasting on the aquatic environment and on the nearby Hurricane Barrier. If blasting is ultimately deemed necessary, the Commonwealth will need to seek a modification of the Final Determination, and will need to provide additional information on potential impacts from blasting and mitigation steps needed to minimize or eliminate those impacts.

In an October 12, 2012 submission, the Commonwealth identified potential alternate rock removal methods. (MassDEP 2012g.) These techniques are described below as well as their potential environmental impacts.

Alternate Rock Removal Methods - With respect to the alternative methods of rock removal, there are four primary methodologies for non-blasting rock removal. They are commonly referred to as Hoe Ram, Bucket Removal, Drill and Fracture and Cutter Head Dredging. The details of each methodology, its benefits and drawbacks will be discussed below.

The Hoe Ram technique uses a hydraulically actuated tip on the end of an excavator arm to essentially hammer the target rock. The intent is to through the repeated physical pressure to create and propagate fractures in the rock until it splits. The broken pieces are then removed by an excavator bucket. This technique does not create a pressure wave, but does generate noise. The peak noise levels are well below noise levels associated with blasting. Little to no turbidity will be generated by this technique. The technique is time consuming, so this represents an extended period of heavy equipment operation.

Bucket Removal, also referred to as rock ripping, is a technique used to fracture rock by exceeding the compressive strength of the rock. Standard excavator buckets can be used to generate the sufficient force to rip the rock. Rock pieces are then removed in the excavator bucket. No pressure wave is generated and noise levels are lower than the peak noise levels generated by blasting. Turbidity generated by this technique is dependent on the type of rock, but is not anticipated to be any worse than what is found with dredging.

In many cases, it will be much lower. This technique is also time-consuming, so this also represents an extended period of heavy equipment operation.

The Drill and Fracture technique requires drilling narrow shafts into the rock and then placing an expanding grout. The expanding grout exerts a pressure on the rock until the tensile strength is exceeded and then the rock fractures. The fractured rock pieces can be removed by an excavator bucket. No pressure wave is generated by this technique. Noise is limited to the time of the drilling and will be far below noise generated by blasting. Turbidity levels generated by this technique are highly dependent on the type of rock. Similar to Bucket Removal it will be no worse than dredging, but often much lower. Common grouts used for this type of work include Calcium Oxide (CaO) and Calcium Hydroxide (CaOH). These grouts have a fairly minimal potential for toxicity and other negative impacts in the marine environment. (MassDEP 2012k). This technique requires a great amount of precision, making underwater applications of it challenging and time consuming.

Cutter Head Dredging relies on high point loads exerted on the rock to chip it into pieces. The chipped rock fragments are carried as suspended sediment in the water being drawn in by the suction pump of the dredge. This technique generates no pressure waves. The levels of turbidity generated are partially dependent on the type of rock and in large part are mitigated by the suction pump of the dredge. This technique generates the greatest amount of noise of the non-blasting alternatives.

The Commonwealth has not yet identified a specific preferred rock removal technique. In general, EPA finds the predicted environmental impacts resulting from any of these techniques to be substantially lower than those predicted for blasting. Based on the results of the Commonwealth's acoustical study that are included in its October 22, 2012 Biological Assessment report, the noise impacts from these techniques will be below the decibel levels contained in NMFS's comment letter that would trigger acute mortality in Atlantic sturgeon and would likely only result in behavioral responses (avoidance) in a small area by the project site. (MassDEP 2012j, Appendix 3.)

On November 16, 2012, the Commonwealth submitted its final acoustic modeling report, which includes the details for the model, assumptions, and how the model works. (MassDEP 2012s.) Due to the late date of the submission of this report, EPA has not had adequate time to review it and confirm the results of the study. EPA intends to review the report expeditiously. EPA is conditioning its approval on the requirement that rock removal activities may not proceed until EPA evaluates the acoustic modeling study and determines the acceptability of the modeling methods and results, to ensure that the noise impacts will not adversely affect the Atlantic sturgeon or other fish species.

Rock removal will be required to meet all of the Water Quality Performance Standards found in Appendix C.

Dredging - To mitigate potential impacts to Atlantic sturgeon and other fishery resources from dredging, the Commonwealth has agreed to implement the following measures:

1. The use of an environmental bucket for dredging of fine grained materials;
2. Adherence to performance standards and monitoring related to turbidity levels, with potential use of silt curtains or other containment measures where necessary to ensure compliance with turbidity levels.
3. From January 15 through June 15 of any year, silt-curtains and absorbent booms will be deployed to enclose all areas being dredged and filled.
4. A Fish Deterrent Program will be implemented for any work conducted within waters shallower than -5 meters Mean Lower Low Water between January 15th and June 15th of any year. The Commonwealth will erect silt curtains that will be anchored to the bottom and encircle the work area. A fish weir will be installed outside of the silt curtains to provide a second obstacle to benthic fish movement. Gaps in the silt curtain (if required for vessel access) will be constructed with the use of a bubble curtain installed along the bottom of the harbor. The silt curtain/fish weir/bubble curtain system will be installed in such a manner as to completely enclose the area of proposed work. A fish monitoring program will also be instituted. On a weekly basis, the Commonwealth will monitor for the presence of fish in the project area. If fish are present, multiple fish startle systems will be deployed in an attempt to get the fish to move out of the project area.

The Commonwealth's October 22, 2012 Assessment contained the results of an acoustical study its consultant had conducted. The study itself was not included with the Commonwealth's submission, so EPA has not had the opportunity to review the details of the acoustic model used to generate results for this assessment. In addition, EPA does not concur with the Assessment's premise that Atlantic sturgeon could only occur within a handful of narrowly defined habitat areas within New Bedford Harbor. However, some useful conclusions can still be drawn from this Assessment:

1. Potential acoustic impacts would be primarily limited to behavioral (avoidance) effects.
2. Potential acoustic impacts seem to be limited to an area surrounding the project site that represent less than approximately 1/3 of the cross-sectional area of the river. This leaves ample room for fish passage.
3. Bubble curtains can be employed as an effective means of minimizing the potential area of impact.
4. The predicted acoustic impact from the Cutter Head Dredge, which would produce the greatest impact of the four rock removal alternatives, is substantially less than the predicted impact from blasting. The predicted acoustic impact would be well below levels that would trigger acute mortality in Atlantic sturgeon and would likely result in only behavorial responses (avoidance) in a relatively small area near the project site. In addition, from January 15 to June 15, a large percentage of the zone of potential acoustic impact will already be blocked off with fish exclusion devices (silt curtains, bubble curtains and fish weirs) designed to keep benthic fish out of the project zone. Thus, during that time frame, Atlantic sturgeon will be physically shielded from a large part of the area that could cause them harm.

After obtaining technical assistance from NMFS, EPA initiated informal consultation and transmitted its Biological Assessment ("BA") and conclusions to NMFS on October 31, 2012. As discussed in the BA, EPA concluded the proposed NBH-South Terminal project may affect the Atlantic sturgeon but, with specified mitigating measures identified above, is unlikely to adversely affect the species. NMFS concurred with EPA's conclusions by letter dated November 14, 2010.

EPA Final Determination for the South Terminal Project
New Bedford State Enhanced Remedy

Appendix J(1)
TSCA 40 C.F.R. § 761.61(c) Determination for the New Bedford Harbor South Terminal Marine Facility

TSCA § 761.61(c) Determination for New Bedford South Terminal Marine Facility

This TSCA Determination is included in EPA's Final Determination in which EPA determined that inclusion of a 28.45 acre marine terminal consisting of 6.91 acres of filled waters (referred to as "the confined disposal facility" or the "CDF") and approximately 11.075 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 ("CAD cells") (collectively the " South Terminal Project area" or the "Project area") into the New Bedford Harbor State Enhanced Remedy ("SER") is protective and meets all substantive federal and state requirements. In general, the CDF construction involves the extension of the existing terminal by installing sheet piling, dredging of sediments within the CDF footprint that are not suitable for construction, and filling of the CDF with structurally suitable materials. (See **Attachment 1 for South Terminal CDF, upland and ancillary property configuration; see Attachment 9 for areas of dredging and filling.)**

Based on prior manufacturing operations in New Bedford and at the South Terminal Project area, PCB-contaminated sediment and soils likely meet the definition of a *PCB remediation waste* as defined under 40 CFR Section 761.3 and thus are regulated for cleanup and disposal under 40 CFR Part 761.

In accordance with the requirements under the Toxic Substances Control Act (TSCA) and 40 CFR Section 761.61(c), I have reviewed the pertinent documents regarding the Project area 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, 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); Response to USEPA Comments (submitted via email on July 3, 2012); Phase 1 Environmental Site Assessments (submitted October 1, 2012); October 12, 2012 Response to USEPA Comments; and, October 27, 2012 Response to USEPA Comments.

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, as modified on June 18, 2012. (See **Attachments 2, 3 and 4**).

In addition to construction of the CDF, the following activities are associated with the South Terminal Project area and are 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 parts per million (ppm) located within the area where the CDF will be constructed with disposal in CAD cell #3;
- Potential dredging of PCB-contaminated sediments with < 50 ppm located in the federal navigational channel and turning basin, and approach and tug 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;
- Removal of greater than (>) 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*);
- Excavation and compaction of soils located within the Excluded Area of Map 31, Parcel 288 as shown on **Attachment 5**, with either on-site or off-site disposal of excavated soils;
- Grading and/or removal of less than or equal to (≤) 25 ppm PCB-contaminated soils on the current upland area;
- Construction of a protective 3-foot cap or equivalent over that portion of the Project area which has been determined to have PCB concentrations at > 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 Project 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 method of excavation, disposal, and capping of upland soils and the dredging, disposal, and capping of 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:

For Dredging and Disposal, and Capping of Sediments

1. Development and submittal of a Phase IV Work Plan to EPA New England and the SER Regulatory Agencies;

2. Compliance with water quality and turbidity performance standards as specified by **Attachment 6** to this TSCA Determination is maintained, at a minimum (Attachment 6 may also be found at Appendix C to EPA's Final Determination);

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, as modified on June 18, 2012;

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 its 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 cap. 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. 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; and

9. 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.

For TSCA Determination and Deed Restriction Area and for Excluded Area, both depicted in Attachment 5 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 7** of this TSCA Determination. (Attachment 7 may also be found at Appendix A to EPA's Final 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 disposal facility or a RCRA hazardous waste landfill in accordance with § 761.61(a)(5)(i)(B)(*2*)(*iii*). 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 8**;

3. For work conducted on the Excluded Area of Map 31, Parcel 288, as identified on **Attachment 5**, the following shall apply:

    a. If the Commonwealth is capable of obtaining temporary ownership of this Excluded Area: The Commonwealth will retain ownership and/or site control until such time as the Commonwealth has completed work within the Excluded Area. Material excavated from within this Excluded Area will be moved to the area of the TSCA Determination and will be used as backfill within the TSCA Determination area as identified on Attachment 5. Clean fill will be imported from offsite and utilized to backfill the Excluded Area. Prior to excavation of the Excluded Area, sampling will be conducted to determine the presence of contamination, including PCBs in this area. PCB-contaminated soils with > 25 ppm will be removed and disposed of at a TSCA-approved disposal facility or a RCRA hazardous waste landfill in accordance with § 761.61(a)(5)(i)(B)(*2*)(*iii*). Hazardous waste and PCB-contaminated soils with > 1 ppm but ≤ 25 ppm shall be relocated to the TSCA Determination area for consolidation beneath the final clean cap; or,

    b. If the Excluded Area remains privately owned: The Commonwealth shall sample the soil in this area prior to excavation or alternatively, this soil shall be excavated and disposed of off-site as a ≥ 50 ppm PCB waste at a TSCA-approved disposal facility or a RCRA hazardous waste landfill in accordance with

§ 761.61(a)(5)(i)(B)(*2*)(*iii*). If sampling is conducted, in the event that PCB concentrations are > 1 ppm and/or hazardous waste is identified, the soil shall be disposed of off-site at an appropriate disposal facility. Soil with PCB concentrations < 1 ppm and that do not contain hazardous waste may be backfilled into the Excluded Area along with any imported clean fill as necessary to restore to the final grade;

4. 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 > 1 ppm but < 50 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 § 761.61(a)(5)(i)(B)(*2*)(*iii*);

5. 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;

6. A long-term monitoring plan (LTMP) shall be established for maintenance of ground surfaces and for groundwater monitoring on the Project 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; and,

   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;

7. A deed restriction in the form of an Activity and Use Limitation shall be recorded on the Project 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 5**.

This TSCA Determination is based on the information contained in the Administrative Record and is limited to the TSCA Determination Area as shown on **Attachment 5**. In the event that PCBs are identified at other areas located within the South Terminal Project area that are not addressed under this TSCA Determination, the Commonwealth shall be required to comply with 40 CFR Section 761.61 for cleanup and disposal of these PCBs.

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 TSCA Determination, a condition herein, or issue a new TSCA determination based on the proposed change(s).

4/19/12

James T. Owens, III
Office of Site Remediation & Restoration

Date

Attachment 1: South Terminal CDF, upland and ancillary property configuration
Attachment 2: January 12, 2005 TSCA Determination
Attachment 3: November 12, 2008 TSCA Determination
Attachment 4: Modification to November 12, 2008 TSCA Determination
Attachment 5: Excluded Area, Map 31, Parcel 288; TSCA Determination Area; and Deed Restriction Area
Attachment 6: State Enhanced Remedy – Water Quality and Turbidity Performance Standards
Attachment 7: Minimum Air Monitoring Standards
Attachment 8: Current Upland Area PCB Excavation Areas
Attachment 9: Areas of Dredging and Filling

Attachment 1.

APEX

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

REVISIONS

NO.	DATE	DESCRIPTION

MAIN FACILITY FULL LOAD RATING

MAIN FACILITY REDUCED LOADING

ANCILLARY PROPERTY

TRANSPORTATION CORRIDOR

PREPARED FOR:

COMMONWEALTH OF MASSACHUSETTS

DRAWING TITLE:

NEW BEDFORD MARINE COMMERCE TERMINAL PROPOSED CONFIGURATION A2

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	

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.

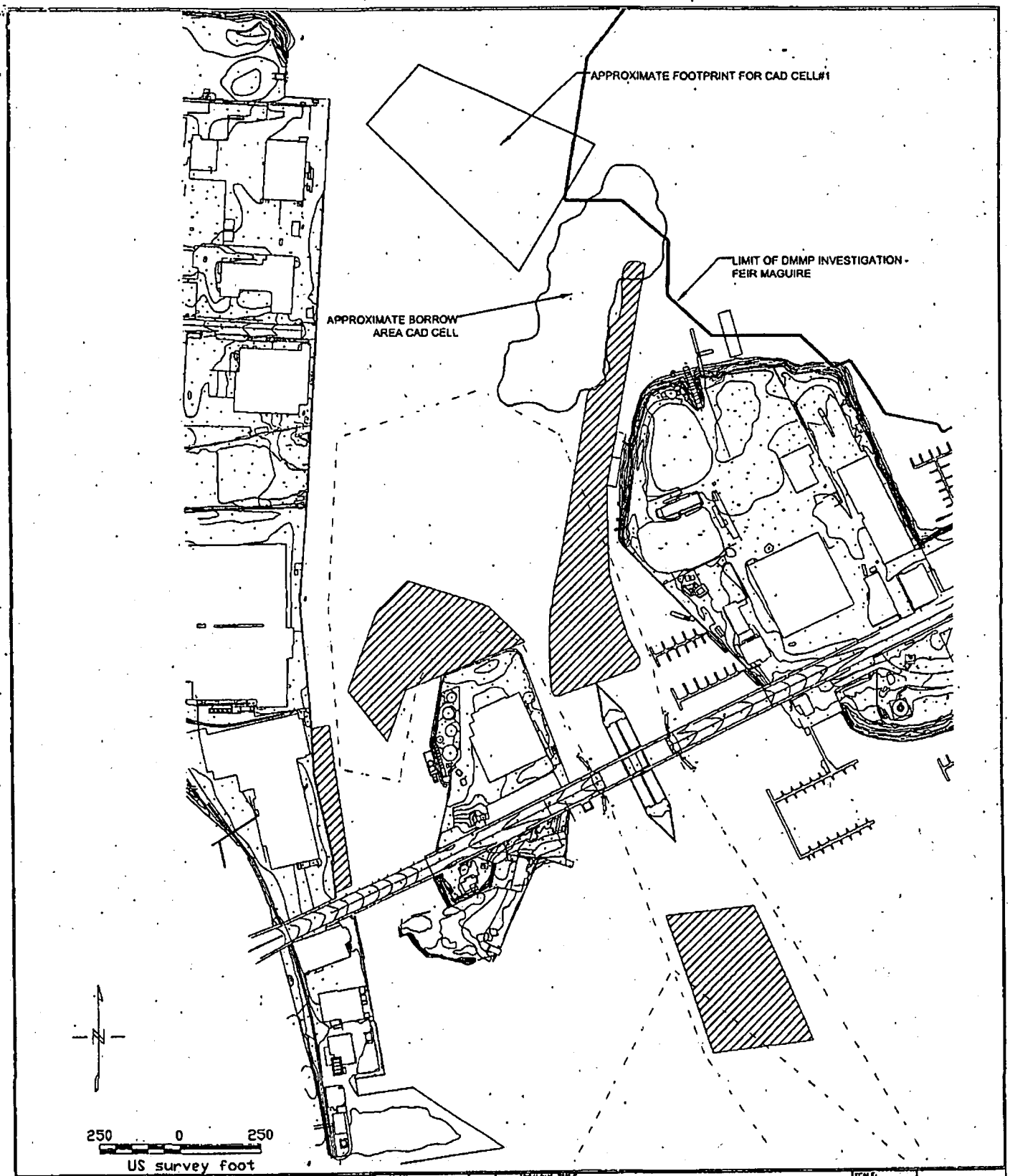
This determination is based on the information contained in the December 2004 Work Plan. Any

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



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).

11-12-08

James T. Owens, III
Director, Office of Site Remediation and Restoration

Date

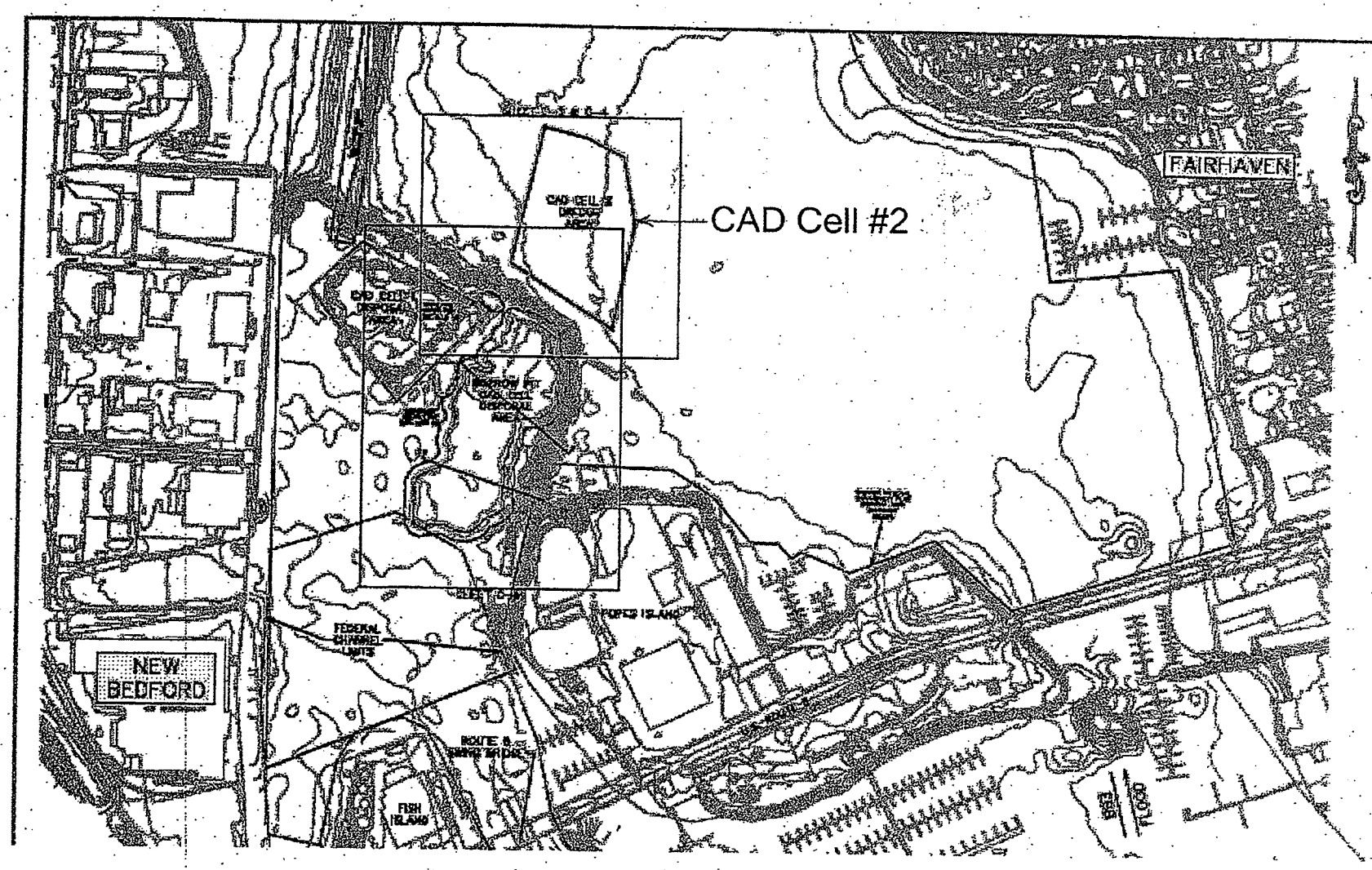


Figure 1: CAD #2 Location

Attachment 4.

Modification to 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 Contact Specifications for the New Bedford Harbor navigational dredging.

The Massachusetts Department of Environmental Protection (MassDEP) has submitted a request for a modification to the Determination to include disposal of approximately 6,000 cubic yards of PCB-contaminated sediment that will be generated by AGM Marine, Inc. from its property located at 7 Fish Island into CAD Cell #2. A map of the proposed area to be dredged is attached as Attachment A to this Modification. PCB concentrations in this sediment range from 6.8 ppm to 23.3 ppm. Documents dated July 24, 2008; December 9, 2008; June 22, 2009; May 2, 2012; and, May 16, 2012 were provided in support of this Modification. A Dredge Material Dewatering and Handling Procedures plan dated May 25, 2012 was also provided. See Attachment B for a list of these documents.

Consistent with Section 761.61(c) of the Toxic Substances Control Act (TSCA) I have reviewed these documents regarding the proposed work and have determined that disposal of this < 50 ppm PCB-contaminated sediment into CAD Cell #2 will not pose an unreasonable risk to human health or the environment provided the following conditions are met.

1. Compliance with the May 25, 2012 Dredge Material Dewatering and Handling Procedures plan and specified water quality monitoring and turbidity performance standards is maintained during all disposal operations.

2. Water quality and turbidity monitoring shall be conducted during disposal operations at the following frequencies:

    a. Turbidity shall be measured at both the reference location and the disposal location (CAD Cell #2), prior to the start of each disposal event and within 30 minutes following completion of each disposal event.

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.

4. Continuing compliance with all conditions contained in the November 12, 2008 TSCA Determination.

This Modification to the November 12, 2008 TSCA Determination is based on the information contained in the July 24, 2008; December 9, 2008; June 22, 2009; May 2, 2012; and, May 16, 2012 and May 25, 2012 submittals. 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).

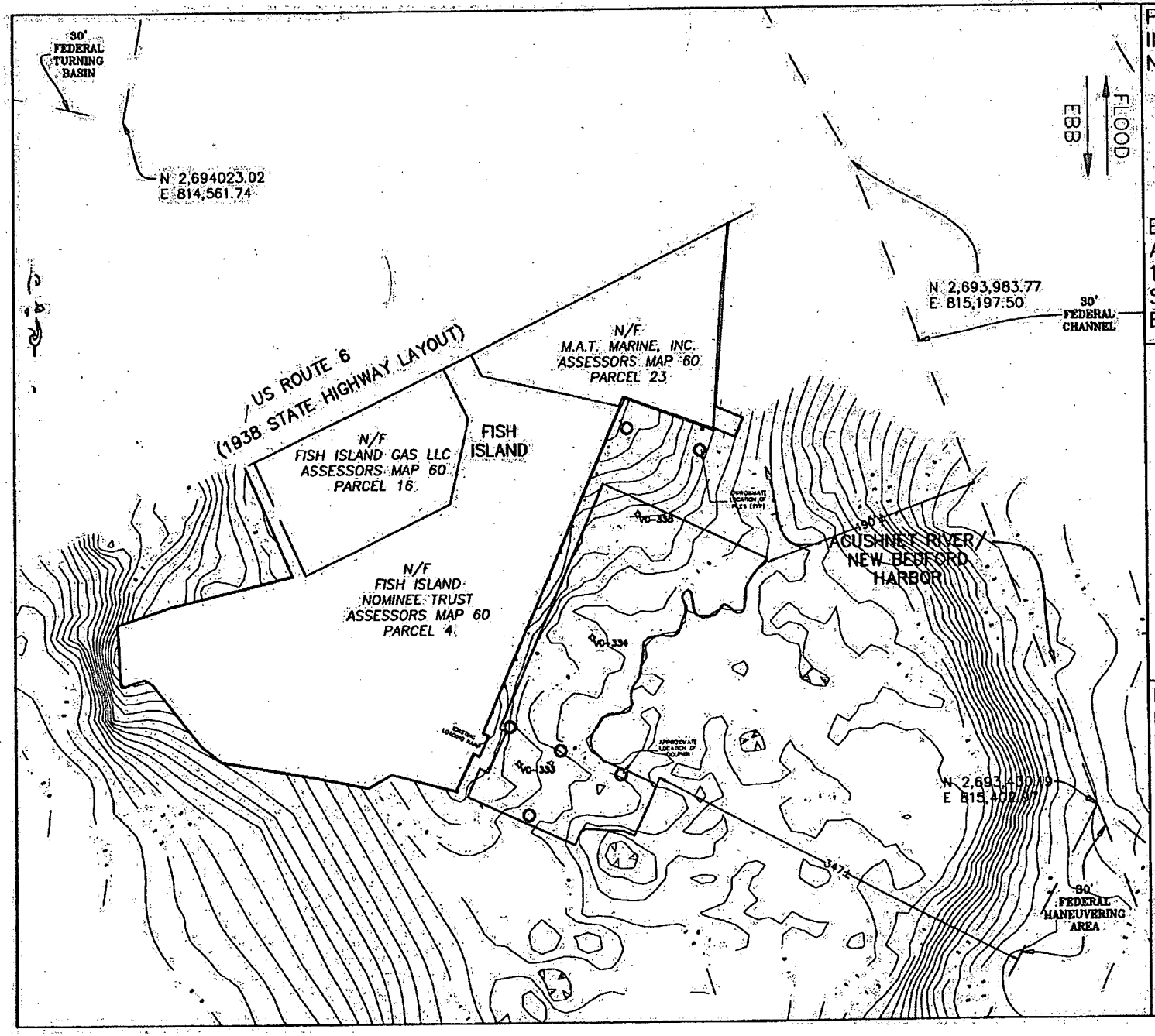
James T. Owens, III
Director, Office of Site Remediation & Restoration

6/18/12
Date

Attachment A: Map of AGM Proposed Dredging Area

Attachment B: List of Documents

Attachment A to Modification of November 12, 2008 TSCA Determination
– Map of AGM Proposed Dredging Area



PURPOSE: TO
IMPROVE ACCESS TO
NAVIGABLE WATERS

DATUM: MLLW = (
MLW = 0
MHW = 3.
HIGHEST OBS. = 5.

ENGINEER:
APEX COMPANIES LL
115 BROAD STREET
SUITE 200
BOSTON, MA. 02110

PROPOSED DREDGI
FOOTPRINT
TSCA DETERMINATIC

Scale: 1"=120'

0 60 120
FEET

PROPOSED
MAINTENANCE
DREDGING IN:

NEW BEDFORD /
FAIRHAVEN HARBO

AT:

FISH ISLAND
NEW BEDFORD, MA
COUNTY OF: BRISTC
DATE: 5-16-12
SHEET 1 OF 1

Attachment B to Modification of November 12, 2008 TSCA Determination
– List of Documents Reviewed

1. July 24, 2008 Letter and attachments to David Dickerson, EPA from Chet Myers, Apex, regarding TSCA Determination, AGM Marine, Inc., New Bedford, Massachusetts

2. December 9, 2008 Order of Conditions – MassDEP Bureau of Resource Protection – Wetlands including General and Special Conditions of City of New Bedford.

3. June 22, 2009 Clean Water Act Section 401 Water Quality Certification letter from Glenn Hass, Acting Assistant Commissioner, Bureau Resource Protection to John Mikutowicz, AGM Marine Contractors, Inc.

4. May 2, 2012 Letter and attachments from Paul Craffey, MassDEP to Kimberly Tisa, EPA regarding TSCA Determination Modification – AGM Marine, Inc.

5. May 16, 2012 Letter and attachments from Paul Craffey, MassDEP to Kimberly Tisa, EPA regarding TSCA Determination Modification Update – AGM Marine, Inc.

6. May 25, 2012 Letter from Jonah Mikutowicz, AGM Marine Contractors, Inc. to Paul Craffey, MassDEP transmitting Dredge Material Dewatering and Handling Procedures Plan.

Attachment 5.

APEX

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

REVISIONS

NO.	DATE	DESCRIPTION

Map 31, Parcel 288
"Excluded Area"

TSCA Determination Area and
Deed Restriction Area

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
Proj. Mgr.	
Design	
Check	GCD
Drawn	JER
Job. No.	6815
Last Rev.	7/7/10

Drawing No.

Water Quality Performance Standards

I. Introduction

1. These Water Quality Performance Standards ("Performance Standards") shall apply to the South Terminal Project as defined by EPA's Final Determination for the South Terminal Project issued on November 19, 2012.

2. The Commonwealth of Massachusetts is the lead agency for the State Enhanced Remedy work, and has a designated State Enhanced Remedy Project Manager ("SER PM").

3. Pursuant to the Memorandum of Agreement entered into between EPA and the Commonwealth in 2005 relative to the New Bedford Harbor State Enhanced Remedy, the SER PM shall continue to coordinate with the Regulatory Agencies for this South Terminal Project. In addition, to ensure consistency with EPA's Final Determination for the South Terminal Project, EPA shall have review and approval authority as described in these Water Quality Performance Standards.

4. No modifications may be made to these Water Quality Performance Standards without prior written agreement of EPA.

5. In the event of a conflict between these Performance Standards and the Final Mitigation Plan included in EPA's Final Determination, the Final Mitigation Plan shall prevail.

II MADEP 401 Water Quality Program Standards:

1. Anti-degradation provisions of the Massachusetts Surface Water Quality Standards protect all waters, including wetlands. The Commonwealth shall ensure that all necessary steps are taken to assure that the proposed activities will be conducted in a manner, which will avoid violations of said standards.

2. Environmental Monitor. The Commonwealth shall ensure that the contractor shall employ an "Environmental Monitor" (EM) and that the contract requires the EM to report directly to the SER PM and EPA. 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 SER PM and the Regulatory Agencies 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 SER PM and EPA directly for any matter involving wetland protection. The EM shall submit bi-weekly reports to the SER PM and EPA, following the commencement of construction and continuing until completion of the work in resource areas. The bi-weekly reports shall summarized, 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.

3. All in-water work shall meet EPA's Final Determination conditions to protect aquatic life, including winter flounder spawning & the alewife fish run that passes through the harbor to the Acushnet Sawmill Pond spawning area.

4. A Storm Water Pollution Prevention Plan (SWPPP) for the entire project as required by EPA's Final Determination, 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 SER PM for prior review and written approval prior to commencement of construction. 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 EPA's NPDES Construction Stormwater 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 specific measures to be taken to adjust the pH to acceptable limits [for example, carbon dioxide (CO2) bubbling when concrete pouring is also occurring].

5. The Commonwealth shall ensure that the contractor shall implement the use of silt curtains and absorbent booms, and/or the Fish Deterrent Program as outlined below:

   a. **CDF Filling**: At all times of year, when filling below Mean High Water occurs in association with construction of the CDF, the area being filled shall either be completely encircled with steel sheet piling, or completely encircled with a combination of steel sheet piling and silt curtains, or completely encircled with silt curtains.

      1. Monitoring: Turbidity monitoring must be conducted outside of and within 15 feet from the silt curtain and at a reference site located 200 feet from the silt curtain. Turbidity standards outlined in Section II.9 must be satisfied.

b. **Compensatory Mitigation**: At any depth and at all times of year, all areas where there is filling and capping associated with compensatory mitigation (i.e. winter flounder mitigation creation and intertidal and subtidal mitigation capping) will be completely encircled by silt curtains and absorbent booms for the duration of the filling and capping activity.

1. Monitoring: Turbidity monitoring must be conducted outside of and within 15 feet from the silt curtain and at a reference site located 200 feet from the silt curtain. Turbidity standards outlined in Section II.9 must be satisfied.

c. **Dredging, Filling Capping, and Rock Removal at Depths Shallower Than -5 Meters MLLW**: In all areas where dredging, filling (except for filling below Mean High Water associated with construction of the CDF, addressed in Section II.5.a, and compensatory mitigation activities, addressed in Section II.5.b.), capping, and other activities such as rock removal will occur, the following is required:

1. *From January 15 through June 15 of any year*, the Fish Deterrent Program (see Section II.8 and Attachment 1) must be implemented. This Program requires that absorbent booms, silt curtains, bubble curtains and fish weirs be erected around the work area to prevent fish, particularly winter flounder, from entering the work area. [Note: other Fish Deterrent Program requirements as specified in Section II.8 must also be employed.]

A. Monitoring: Inside the silt curtain (except for areas below Mean High Water to be filled in association with construction of the CDF), turbidity monitoring is required at a reference location established approximately 200-feet up-current from the dredge and at a monitoring location established 200-feet down-current from the dredge, unless dredging is conducted within 200 feet of the silt curtain, in which case turbidity monitoring must be conducted outside of and within 15 feet from the silt curtain and at a reference site located 200 feet from the silt curtain. Turbidity standards outlined in Section II.9 must be satisfied.

2. *From June 16 through January 14 of any year*, work may proceed without silt curtains unless necessary to ensure compliance with turbidity standards.

A. Monitoring: Turbidity monitoring is required at a reference location established approximately 200-feet up-current from the dredge and at a monitoring location established 200-feet down-current from the dredge. Turbidity standards outlined in Section 9 must be satisfied.

B. If silt curtains are deployed to ensure compliance with turbidity standards, turbidity monitoring must be conducted outside of and within 15 feet from the silt curtain and at a reference site located 200 feet from the silt curtain. Turbidity standards outlined in Section II.9 must be satisfied.

d. **Filling and Capping At Depths Equal To or Greater Than -5 Meters MLLW**: In all areas (except for filling associated with construction of the CDF (addressed in Section II.5.a,) that are not already enclosed, and compensatory mitigation activities (addressed in Section II.5.b), where filling (including CAD cell capping) will occur, the following is required:

1. *From January 15 through June 15 of any year*, CAD cells (including the borrow pit) that are being filled or capped shall be completely encircled by silt curtains and absorbent booms for the duration of the filling activity.

A. Monitoring: Turbidity monitoring must be conducted outside of and within 15 feet from the outside edge of silt curtain and at a reference site located 200 feet from the silt curtain. Turbidity standards outlined in Section II.9 must be satisfied.

2. *From June 16 through January 14 of any year*, CAD cell filling and capping may proceed without silt curtains unless necessary to ensure compliance with turbidity standards.

A. Monitoring: Turbidity monitoring is required at a reference location established approximately 200-feet up-current from the dredge and at a monitoring location established 200-feet down-current from the dredge. Turbidity standards outlined in Section II.9 must be satisfied.

B. If silt curtains are deployed to ensure compliance with turbidity standards, turbidity monitoring must be conducted outside of and within 15 feet from the outside edge of silt curtain and at a reference site located 200 feet from the silt curtain. Turbidity standards outlined in Section II.9 must be satisfied.

e. **Dredging At Depths Equal to or Greater than -5 Meters MLLW**: In all areas where dredging and associated activities such as rock removal will occur in depths equal to or greater than -5 meters MLLW:

1. *From January 15 through June 15 of any year*, silt-curtains and absorbent booms shall be deployed to enclose all areas being dredged.

A. Monitoring: Inside the silt curtain, turbidity monitoring is required at a reference location established approximately 200-feet up-current from the dredge and at a monitoring location established 200-feet down-current from the dredge, unless dredging is conducted within 200 feet of the silt curtain, in which case turbidity monitoring must be conducted outside of and within 15 feet from the silt curtain and at a reference site located 200 feet from the silt curtain. Turbidity standards outlined in Section II.9 (below) must be satisfied.

2. *From June 16 through January 14 of any year*, work may proceed without silt curtains unless necessary to ensure compliance with turbidity standards.

A. Monitoring: Turbidity monitoring is required at a reference location established approximately 200-feet up-current from the dredge and at a monitoring location established 200-feet down-current from the dredge. Turbidity standards outlined in Section II.9 must be satisfied.

B. If silt curtains are deployed to ensure compliance with turbidity standards, turbidity monitoring must be conducted outside of and within 15 feet from the silt curtain and at a reference site located 200 feet from the silt curtain. Turbidity standards outlined in Section II.9 must be satisfied.

6. The Commonwealth shall ensure that the contractor shall, prior to the start of any in-water work, submit a plan for deployment of silt curtains, absorbent booms, fish weirs and bubble curtains in accordance with Section II.5 to SER PM and to EPA for review and approval.

7. The Commonwealth shall ensure that the contractor shall, prior to the start of any in-water work, submit to the SER PM and to EPA for review and approval, a Contingency Plan, outlining the steps that the contractor will take, should dredging, filling, capping or rock removal activities cause an exceedance of the Water Quality Monitoring criteria outlined within these Performance Standards (see Section II.9). At a minimum, the Contingency Plan shall include measures that may be undertaken by the contractor to reduce turbidity such as reduction of the rate of operations, use of silt curtains and absorbent booms, alternate dredging and capping methodologies, and the total halt of operations. The Contingency Plan shall also include a provision that if the deployment of silt-curtains and absorbent booms cannot be implemented in accordance with Section II.5

during the period of time from January 15 to June 15 of any year, work in the area may not begin until June 16 of that year and the SER PM and EPA shall be notified.

8. *Fish Deterrent Program* – A Fish Deterrent Program in accordance with the Fish Deterrent Plan in Attachment 1 shall be implemented for any work conducted within waters shallower than -5 Mean Lower Low Water between January 15th and June 15th of any year. If the Fish Deterrent Program is not implemented in an area shallower than -5 Mean Lower Low Water prior to January 15th of any year, work in the area may not begin until June 16th of that year. Proposed modifications to the Fish Deterrent Plan must be submitted to the SER PM and to EPA for review.

9. Water Quality Monitoring Schedule and Methods

a. *When in-water work is contained within a silt-curtained area* in accordance with Section II.5, the following water-quality monitoring program shall be carried out daily for the first three days of activities commencing and once a week thereafter and during those times when dewatering activities are ongoing from the CDF filling operation:

1. 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.

2. Turbidity shall be measured at both the monitoring and reference site prior to the start of dredging, and once every two hours during dredging.

3. 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 Over Reference
<10	20 NTUs
11-20	15 NTUs
>21	30% of reference

4. 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, total and dissolved PCBs, and total metals for 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 Commonwealth shall ensure that its contractor takes operational action(s) designed to limit such exceedances (as outlined within the approved Contractor's Contingency Plan, see Section II.7), 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 II.9.a until compliance is reestablished.

5. If compliance cannot be reestablished within 48 hours, in-water work shall cease and the SER PM and EPA, in consultation with the Environmental Monitor and the Commonwealth's 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. EPA, in consultation with the SER PM and the Environmental Monitor, shall have final authority to determine the requirements for additional mitigation, if any.

6. In the event the exceedence occurs during an activity and in an area in which silt curtains are required from January 15 through June 15 in accordance with Section II.5, if all additional mitigation measures exercised in accordance with Section II.7, and compliance cannot be reestablished within 48 hours of the implementation of the additional mitigation measures, the work shall stop and may not resume again until June 16, unless the Commonwealth can demonstrate to the satisfaction of EPA that it has instituted measures sufficient to reestablish compliance and EPA concurs that work may proceed with such measures.

b. *When in-water work is not conducted within a silt curtain area* in accordance with Section II.5 the following water-quality monitoring program shall be carried out daily for the first three days of activities commencing and twice a week thereafter and during those times when dewatering activities are ongoing from the CDF filling operation:

1. 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.

2. Turbidity shall be measured at both the reference location and the monitoring site (see Section II.5) prior to the start of dredging, and once every two hours of dredging.

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

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

4. If, in two consecutive monitoring events, the average turbidity at the monitoring site 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 site and the monitoring site shall be collected and submitted for analysis of Total Suspended Solids, total and dissolved PCBs, and total metals for 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 Commonwealth shall ensure that its contractor takes operational action(s) designed to limit such exceedences (as outlined within the approved Contractor's Contingency Plan, see Section II.7), such as increasing the dredge cycle time, deployment of silt curtains, 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 II.9.b.iii, until compliance is reestablished.

5. If compliance cannot be reestablished within 48 hours, in-water work shall cease and the SER PM and EPA, in consultation with the Commonwealth's 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. EPA, in consultation with the SER PM, shall have final approval to determine the requirements for additional mitigation, if any.

10. 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 piling/debris

removal shall be minimized to the greatest extent practicable. Should dredging with the environmental bucket become infeasible or unsuccessful, such dredging must halt and the SER PM and EPA must be notified. EPA, in consultation with the SER PM, must approve any contaminated sediment dredging not using the environmental bucket before such dredging may recommence. The contractor must continue to meet the project Water Quality Standard Performance Standards when an alternate dredging method is used.

11. Water discharged from the barge shall be appreciably free of suspended sediment and meet the water quality criteria established in Section II.9. 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 SER PM) prior to discharge.

12. The SER PM and EM shall be responsible for anticipating the need for and installation of additional erosion/sediment/turbidity controls and shall have the authority, subject to EPA review and approval, 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. Within 30 days of the completion of all dredging, all bathymetric surveys of the dredge footprint shall be sent to the SER PM and EPA.

III MADEP Chapter 91 Waterways Standards

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

2. Within 90 days after completion of the authorized South Terminal Project work, the Commonwealth shall require its contractors to furnish to the SER PM a suitable plan showing the depths at mean low water over all filled (except areas filled above Mean High Tide) and dredged areas. Dredging 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 Commonwealth shall at its expense, remove the shoal areas. The Commonwealth shall pay all costs of supervision, and if at any time the SER PM deems necessary a survey or surveys of the filled and dredged areas, the Commonwealth shall pay all costs associated with such work.

3. The Commonwealth shall ensure that its contractor shall, at least three business days prior to the commencement of any dredging and filling in tide water, give written notice to the SER PM and EPA of the time, location, and amount of the proposed work.

IV Special Waterways Conditions

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

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

3. The Commonwealth 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 Commonwealth shall maintain vehicular access to water-dependent users throughout construction activities. As part of the final design plan, the Commonwealth shall ensure it 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 Commonwealth 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, fish weirs, bubble curtains, and siltation curtains.

FISH DETERRENT PLAN

Project Summary

The New Bedford Marine Commerce Terminal (NBMCT) (see **Figure 1** for a site location plan) in New Bedford Harbor has been promulgated in order to develop a multi-purpose marine terminal, a primary purpose of which will be to provide critical infrastructure to serve offshore renewable energy facilities and accommodate international shipping at the new facility. The proposed facility will also be capable of supporting other industries within New Bedford, and will beneficially re-use sand from navigational dredging or the construction of confined aquatic disposal facilities to the extent approved by US EPA.

An assessment of the potential locations for supporting offshore renewable energy facilities and international shipping completed within the document entitled "State Enhanced Remedy in New Bedford, South Terminal", promulgated by the Commonwealth on January 18, 2012 has resulted in the conclusion that South Terminal in New Bedford, Massachusetts is the only practicable location due to a number of constraints, including: horizontal clearance, jack-up barge access, overhead clearance, total wharf and yard upland area, berthing space, site control/availability, and proximity. Due to the lack of other practicable alternatives, and the avoidance and minimization of impacts to resource areas to the maximum extent practicable, the South Terminal CDF is the Least Environmentally Damaging Practicable Alternative that will meet the primary Project Purpose.

During construction of the NBMCT, many activities (including dredging) may have a temporary detrimental effect to the fish that may be present within New Bedford Harbor. A Fish Monitoring Workgroup (including members from NMFS, EPA and MassDMF) was convened to prepare a Fish Deterrent Plan that could be utilized to reduce the impact to fish by excluding them from a proposed area. The input from the Fish Monitoring Workgroup has been incorporated into this Fish Deterrent Plan. This Fish Deterrent Plan (FDP) will include all measures to be taken that will decrease the chance of mortality to marine species of concern and their spawning activities (where applicable), including: Atlantic sturgeon, Winter and Windowpane Floudners, Scup, and Anadromous fish species as directed by the National Marine Fisheries Service (NMFS).

Objectives

The objective of this FDP is to construct the NBMCT without restricting access to daily fishing traffic and have the "least environmentally damaging as practicable alternative" in place to deter fish species from the NBMCT construction area, so that none are harmed or inadvertently "taken." The system is also intended to prevent spawning within the area of work, such that the eggs of the species in question will not be present when work commences, and therefore will not be damaged or destroyed. The fish species in question are as noted in the "NMFS comments on the Draft Determination for South Terminal in New Bedford, MA" dated August 21, 2012 and included below:

- Atlantic Sturgeon;
- Winter Flounder;
- Windowpane Flounder;
- Scup;
- Black Sea Bass.

Methods

Engineered Barriers

A series of engineered barriers will be in place to exclude fish from entering the areas where dredging and other marine construction are to take place. The barriers will re-direct, but not otherwise limit vessel traffic in the area of work. The three types of barriers to be erected are a fish weir, silt curtain, and bubble barrier. Coupled with an extensive monitoring program, the system is intended to exclude fish from using the area while work is taking place. The layout of the engineered barriers is depicted on **Figure 2.**

Fish Weir

A fish weir is a net which is placed in the water column and extends approximately 4 feet off the bottom. It is designed to channel ground fish away from the area where work is to take place. The weir will be placed on the outside of all the engineered barriers in close proximity to the bubble curtain and silt curtain. A detail of the fish weir is depicted on **Figure 3.**

Silt Curtains

Turbidity Barriers, also known as turbidity curtains, silt barriers, and silt curtains in the industry are designed specifically to contain and control the dispersion of floating turbidity and silt in a water body related to marine construction, pile driving, site work, and dredging activities. Silt curtains or silt protectors minimize these impacts by improving settling times and settling suspended solids in a defined area well away from natural resources.

For the NBMCT project, a modified silt curtain will be used both for turbidity control and also as a fish barrier. Traditional silt curtains may or may not touch the harbor bottom. In the past silt curtains which do not touch the bottom have been utilized in the Harbor during disposal activities at CAD Cell #2, and during dredging activities during the posted time of year (TOY) restriction when water depth is greater than 4 feet. The water depth is critical as when there is a tidal exchange the bottom of the curtain creates turbidity as it moves up and down in the mud. The Commonwealth proposes to create a solid barrier extending silt curtains to the harbor bottom; however the curtain will be modified so that the curtain does not create turbidity. Two sections will be at the site of the proposed New Bedford Marine Commerce Terminal and the third section will be at the proposed CAD Cell #3. The silt curtain will utilize a tidal flux pocket, the tidal flux pocket consists of a continuous line of floatation running the length of the silt curtain that is 4 feet from the harbor bottom, ensuring that the portion of the silt curtain nearest the bottom is always held taut and vertical preventing the contact which often is the cause of increased turbidity common in traditional silt curtain installations. This floatation accounts for the tidal range of New Bedford Harbor, which is ± 5 feet. When the tide is high, the silt curtain will be extended and will be stretched to its full length. When the tide falls, the floats at the 4 foot level will hold the bottom portion of the silt curtain off of the harbor floor, while the upper portion of the silt curtain will be supported on one side by the lower floats and on the other side by the surface floats. This modified silt curtain design will eliminate potential turbidity generation by the silt curtain, while allowing the silt curtain to extend from the water surface to the harbor floor. (**See cross section Figure 4**).

Bubble Barrier

The bubble barrier is a fairly recent addition to the mitigation techniques used in marine construction. Bubble barriers are, in their simplest form, a perforated pipeline running along the bottom of a waterway. Compressed air is pushed through the pipeline creating an array of bubbles along the northern limits of proposed construction site. This barrier carries three significant functions. First, fish species see the bubble array as a solid barrier, in effect a wall of air bubbles. Second, the air bubbles dampen sounds created by construction activities. Third, because the bubble barrier is a non-physical barrier, vessels may still use the existing South Terminal and Gifford Street channels during construction.

For the NBMCT project, one bubble barrier will be incorporated into the fish barrier. The bubble barrier will be placed on the northern end of the channel leading from the Gifford Street Boat Ramp. The bubble barriers and silt curtain will be overlapped to eliminate the potential for fish swimming around the barriers. A cross section of the barrier is attached as **Figure 5.** The combination of fish barrier silt curtain and bubble barrier for a fish barrier system.

Fish Monitoring

After the fish exclusion efforts are installed, a weekly monitoring procedure will be carried out. This procedure will be first implemented one day after the initial fish exclusion efforts are undertaken and once a week thereafter. The survey will be done with a sonar fish finder and a towed video system. The perimeter of the area will be surveyed twice: first to verify the silt curtain and bubble curtains are in place and second to verify the weir leader net is in place). Then the dredge area will be surveyed to determine if fish are present using the following procedure:

- Run transects parallel to shore or depth contours with a randomly selected start point for each survey.
- The survey area is approximately 1200 feet in length and runs parallel to shore. Survey will be run at approximately 1 nautical mile per hour.
- Transects will be spaced 100' on center and will begin 50' from the eastern boundary of the Silt Curtain.
- Two methods for detecting fish will be utilized: a fish finder used for identifying pelagic fish schools, and a video surveillance system used to identify flat fish.
- The video method is most appropriate for detecting flat fish. In order to ensure that visibility is acceptable for the survey, a laser scaling method will be used at each transect to visually confirm the seafloor.
- If a transect fails the visibility test, the monitoring them can select up to 5 additional grids to transect.
- If more than 5 transects fail the visibility test, then divers will complete the survey. Since the camera survey will image at a maximum 3% of the dredge area, the conservative measure of a single fish being imaged will be used as the threshold for implementing additional fish exclusion efforts.

The following decision tree will be used for the implementation of fish exclusion efforts:

VIDEO

If no flatfish are encountered → the area will be considered free of fish.

If 1 or more flatfish are encountered → fish removal procedure will be initiated.

SONAR

If <5 pelagic schools are encountered on sonar → the area will be considered free of fish.

If >=5 pelagic school are encountered on sonar → fish removal procedure will be initiated.

Reporting

A video monitoring report will be provided to the Fish Monitoring Workgroup weekly within 4 days of the monitoring. For every video monitoring event the report will describe:

1. The condition of the engineered barriers (silt curtain, bubble curtains, and weir leader net);
2. The prevalence of flatfish and other fish at the base of the fish exclusion devices;
3. Any actions taken to improve the conditions of the fish exclusion devices;
4. The total count of grid/transects completed;
5. The total count of grid transects skipped due to visibility – if grid survey method used;
6. Description of any survey alterations due to lack of visibility;
7. Total count of flatfish encountered;
8. Total count of other fish encountered;
9. Total count of schools on the sonar record;
10. Description of any actions taken to remove fish from the area;
11. Any turbidity monitoring exceedances;
12. Recommendations to improve the survey methodology, the fish exclusion devices, or the fish removal tactics;
13. Field notes from video and sonar survey (note that the video and sonar data will be observed in the field but will not be recorded).

Fish Exclusion Efforts

In the event that fish are found to be present during the monitoring surveys (the first video survey), measures will be taken to use a "fish startle system" to move fish outside the aforementioned barriers. The bubble barrier will be turned off and fish exclusion techniques will the deployed. The three different types of systems that will be mounted to the survey vessel to startle fish species are:

- Light
- Sound
- Tactile

All three systems will be used during all fish startling activities. The light system will include strobe lights mounted on either side of the helm with extendable poles. The lights range in size

from four to eight feet in length. Range of the color of light projected will vary, as will the intensity of light emitted. Bright lights have been shown to startle fish in many studies. The extendable poles will allow the lights to startle fish farther down in the water column than if the system was mounted to the helm. The sound emitting part of the startle system will be an underwater speaker capable of sound ranges from 100-1200 hertz. The speaker will hang on a tether into the water column. The tactile fish deterrent will be made of a fish net with light chain hanging to the harbor bottom. The net will be large enough gauge line that the fish will see it but will have large openings so they are not caught. The system will progress through the deterrence area at 2-4 knots on a calm day. During the fish startle activities the bubble barrier will not be active to allow fish to pass through these areas unimpeded (see **Figure 7** for schematic of fish startle boat mount set up). The bubble curtain will then be turned on.

The video survey will be repeated (second video survey). If fish are found again, time permitting a second attempt at removing the fish will be attempted and the video survey will be repeated again. If fish are still found in the work area during the third video survey, the Commonwealth will re-inspect the integrity of the fish exclusion methodology. If there is a breach or other issue with implementation of the fish exclusion methodology, it will be repaired and monitoring will begin again.

If, after one month of deployment, the fish exclusion methodology does not appear to be meeting all of the goals of the fish exclusion program, the Commonwealth will meet with the Fish Monitoring Workgroup (FMW), the Commonwealth's monitoring team, and others with relevant expertise, to discuss issues and potential mitigation measures. The procedures implemented will be reviewed with the FMW, and potential alternate methods for monitoring and/or silt curtain maintenance, mitigation, or additional fish exclusion methods will be discussed.

Once a breach, issue, or problem, or once a potential alteration/mitigation measure is implemented, the monitoring will begin again to determine its effectiveness. Should fish be found in three consecutive video surveys after implementation of the mitigation measure, the Commonwealth will first re-inspect the integrity of the fish exclusion methodology. If there is a breach or otherwise issue with implementation of the fish exclusion methodology, it will be repaired and monitoring will begin again. Otherwise, either a subsequent alteration/mitigation measure will be implemented, or a meeting with the FMW will be scheduled to discuss whether or not modifications to the engineering controls could be made.

Figure 1: SITE LOCUS SCALE 1"=2400'	NEW BEDFORD MARINE COMMERCE TERMINAL FIN FISH EXCLUSION PLAN NEW BEDFORD, MA	APEX 184 High Street, Suite 502 Boston, Massachusetts Phone: (617) 728-0070

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APEX

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

184 HIGH STREET, SUITE 502
BOSTON, MA 02210

56H CONNECTICUT AVENUE
SOUTH WINDSOR, CT

PROJECT
NEW BEDFORD
MARINE COMMERCE
TERMINAL

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

NO.	DATE	DESCRIPTION	BY

PROJECT NO.	6690
CADD FILE	GIFFORD_ST
DESIGNED BY	JER
DRAWN BY	JER
CHECKED BY	CHM
DATE	9-27-12
DRAWING SCALE	1"=150'

GRAPHIC SCALE
SCALE: 1"=150'
0 75 150 300

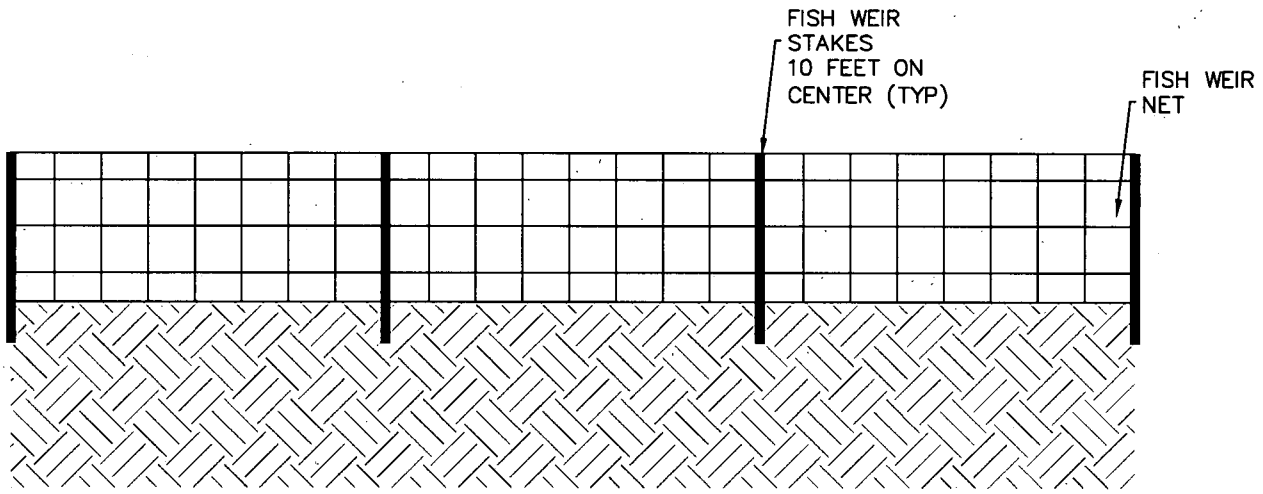
SHEET TITLE

NEW BEDFORD
MARINE COMMERCE
TERMINAL
FISH BARRIER

DRAWING NO.

FIGURE 2

1 OF 1



NOTE: ALL DIMENSIONS ARE APPROXIMATE

FIGURE 3: FISH WEIR DETAILS	FISH PROTECTION PLAN NEW BEDFORD MARINE COMMERCE TERMINAL	APEX 184 High Street, Suite 502 Boston, Massachusetts Phone: (617) 728-0070

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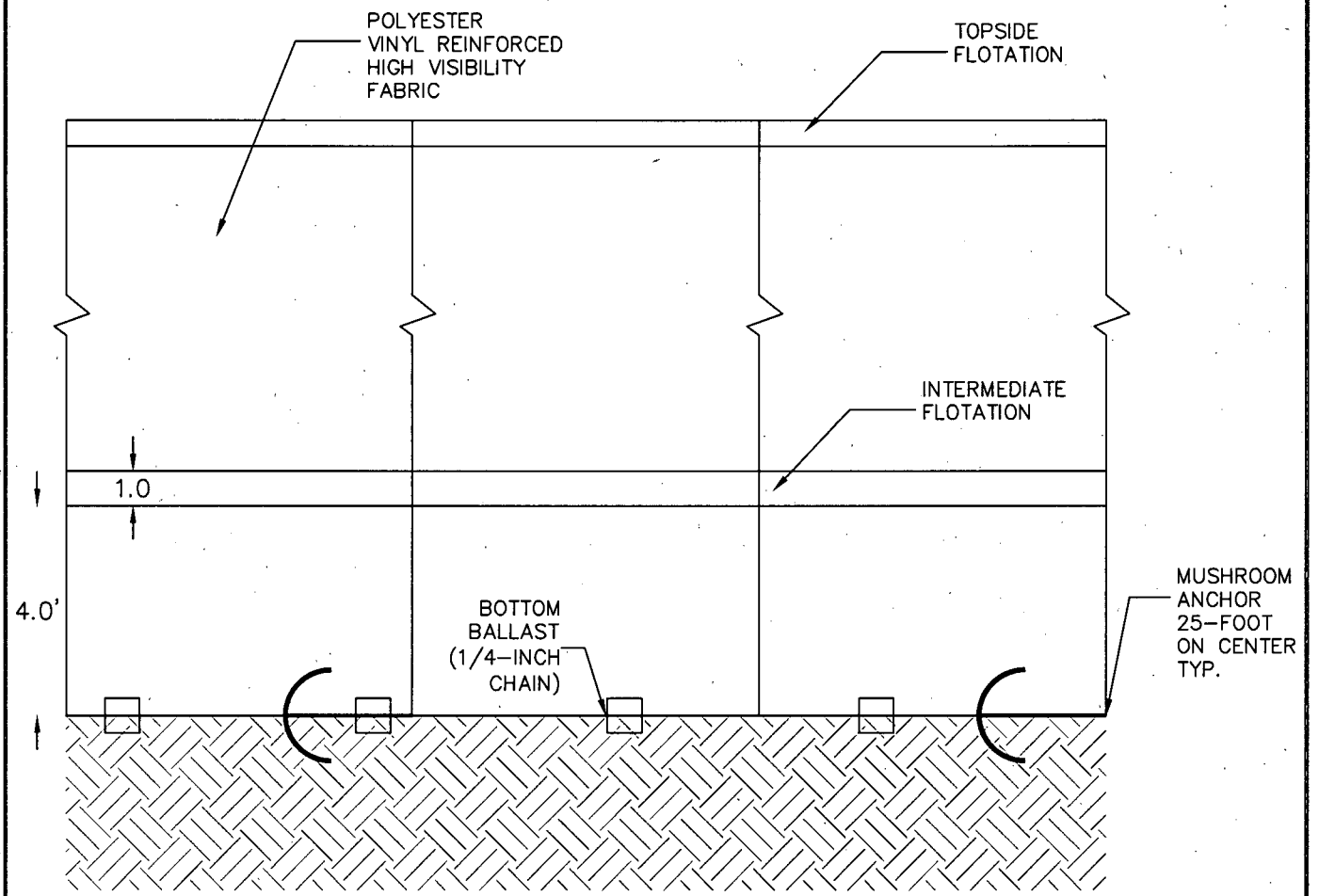
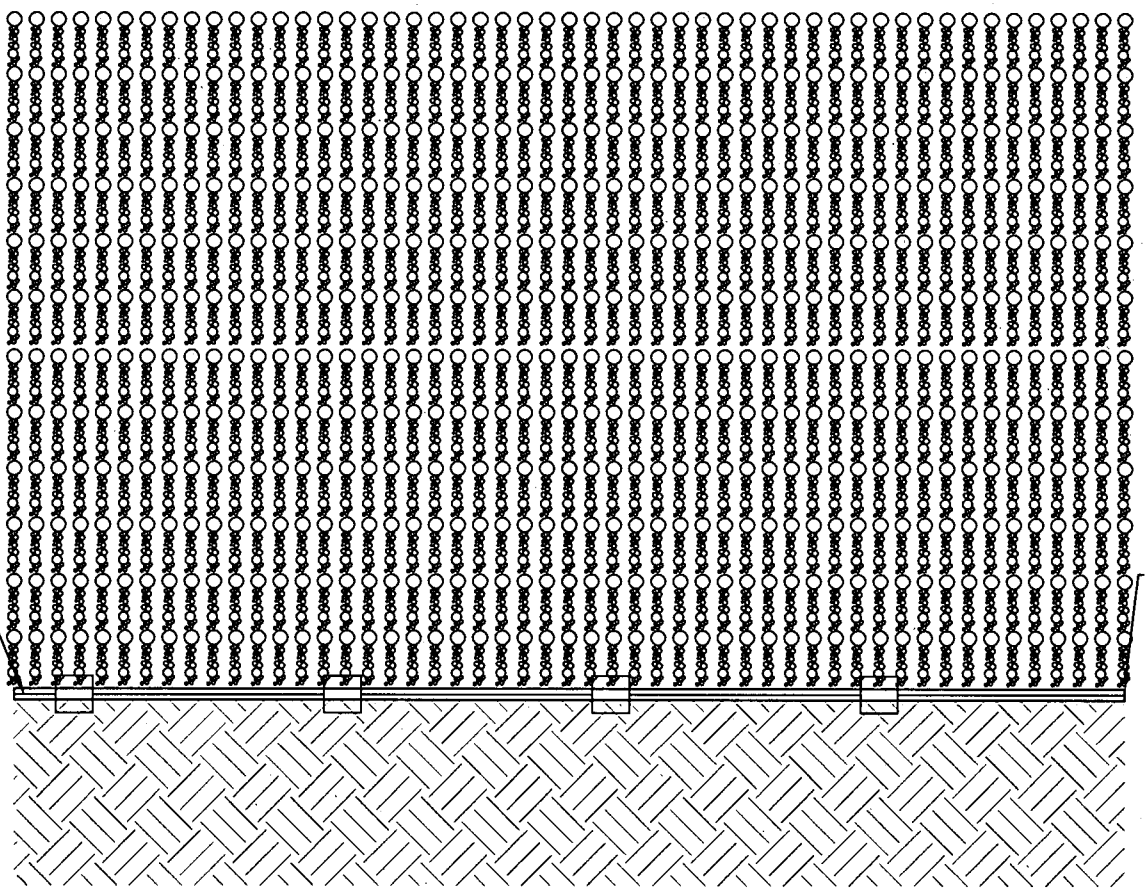
SPECIFICATIONS
- FABRIC – POLYESTER REINFORCED VINYL HIGH VISIBILITY YELLOW
- CONNECTOR – SECTIONS ARE LACED TOGETHER THROUGH GROMMETS AND LOAD LINES ARE BOLTED TOGETHER.
- FLOTATION – 6" EXPANDED POLYSTYRENE OVER 9 LBS./FT. BUOYANCY.
- BALLAST – 1/4" GALVANIZED CHAIN (.7 LBS/FT)



NOTE: ALL DIMENSIONS ARE APPROXIMATE

P:\Jobs\6690 NSH_ Phase IV\PLANS\Silt_&_BUBBLE_CURTAIN.dwg

FIGURE 4: SILT CURTAIN DETAILS	FISH PROTECTION PLAN NEW BEDFORD MARINE COMMERCE TERMINAL	APEX 184 High Street, Suite 502 Boston, Massachusetts Phone: (617) 728–0070



NOTE: ALL DIMENSIONS ARE APPROXIMATE

FIGURE 5: BUBBLE CURTAIN DETAILS	FISH PROTECTION PLAN NEW BEDFORD MARINE COMMERCE TERMINAL	APEX 184 High Street, Suite 502 Boston, Massachusetts Phone: (617) 728-0070

P:\Jobs\6690_NBH_Phase_IV\PLANS\SILT_&_BUBBLE_CURTAIN.dwg

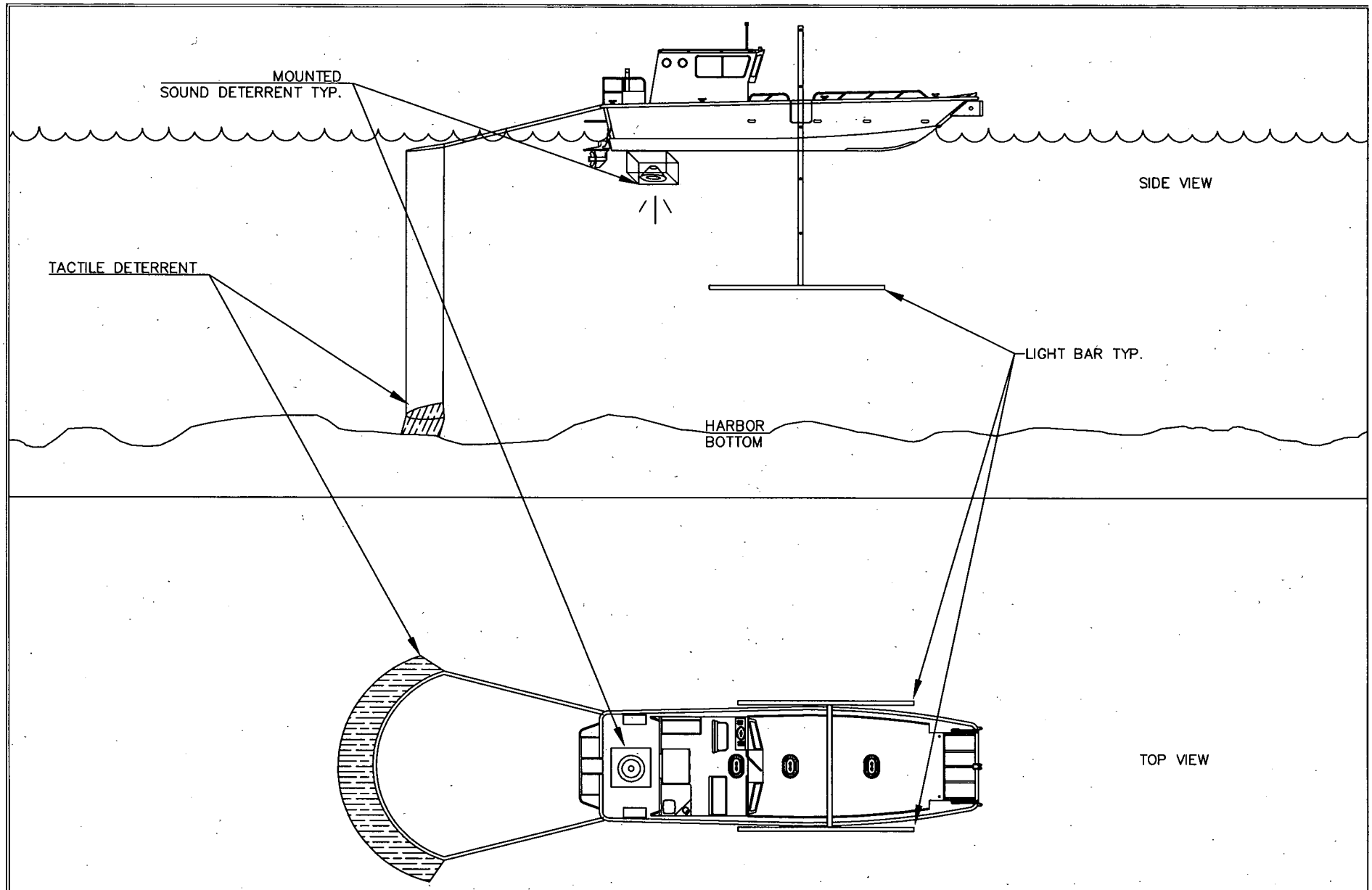


FIGURE 6:
FISH STARTLE SYSTEM

NEW BEDFORD MARINE
COMMERCE TERMINAL

APEX
125 Broad Street, Fifth Floor
Boston, Massachusetts 02110
Phone: (617) 728-0070

P:\Jobs\6690 NBH_ Phase IV\Acoustic Fish Studies\Fish Deterrent Schematic.dwg

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 South Terminal Project upland work. The means and methods shall be designed and implemented in a manner that minimizes airborne PCBs, particulates, lead, and asbestos, if present, to the maximum degree practicable. The Plan will detail the means and methods to be used to maintain airborne contaminant levels at the performance standards specified in Item 4, below. The Plan will be in effect continuously until completion of the work.

    b. A description of how the Commonwealth 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. The Commonwealth must first propose, and EPA must approve, the method for the comparative analysis prior to its implementation.

3. The Commonwealth shall use best management practices to comply at all times during performance of the work, with air quality performance standards. Except for the transportation corridors, a fence shall be constructed along the contiguous upland parcel boundaries during all work activities and the point of compliance for air quality performance standards shall be the fence line. Except for the transportation corridors, on the non-contiguous parcels a fence shall be constructed along the property boundary during all work activities and the point of compliance for air quality performance standards shall be the fence line.

4. PM_{10} results are used to provide information about the effectiveness of emission controls and thus when kept under control, emissions from other contaminants, such as PCBs and asbestos, will also be controlled. In order to better control conditions during the Project, tiered action levels based on real time PM_{10} results shall be taken. The Commonwealth shall initiate dust controls at levels lower than the 100 $\mu g/m^3$ 10-hour TWA, and shall apply these action levels to shorter time periods as specified below. At no time during the performance of the remedial work shall levels exceed the following standards:

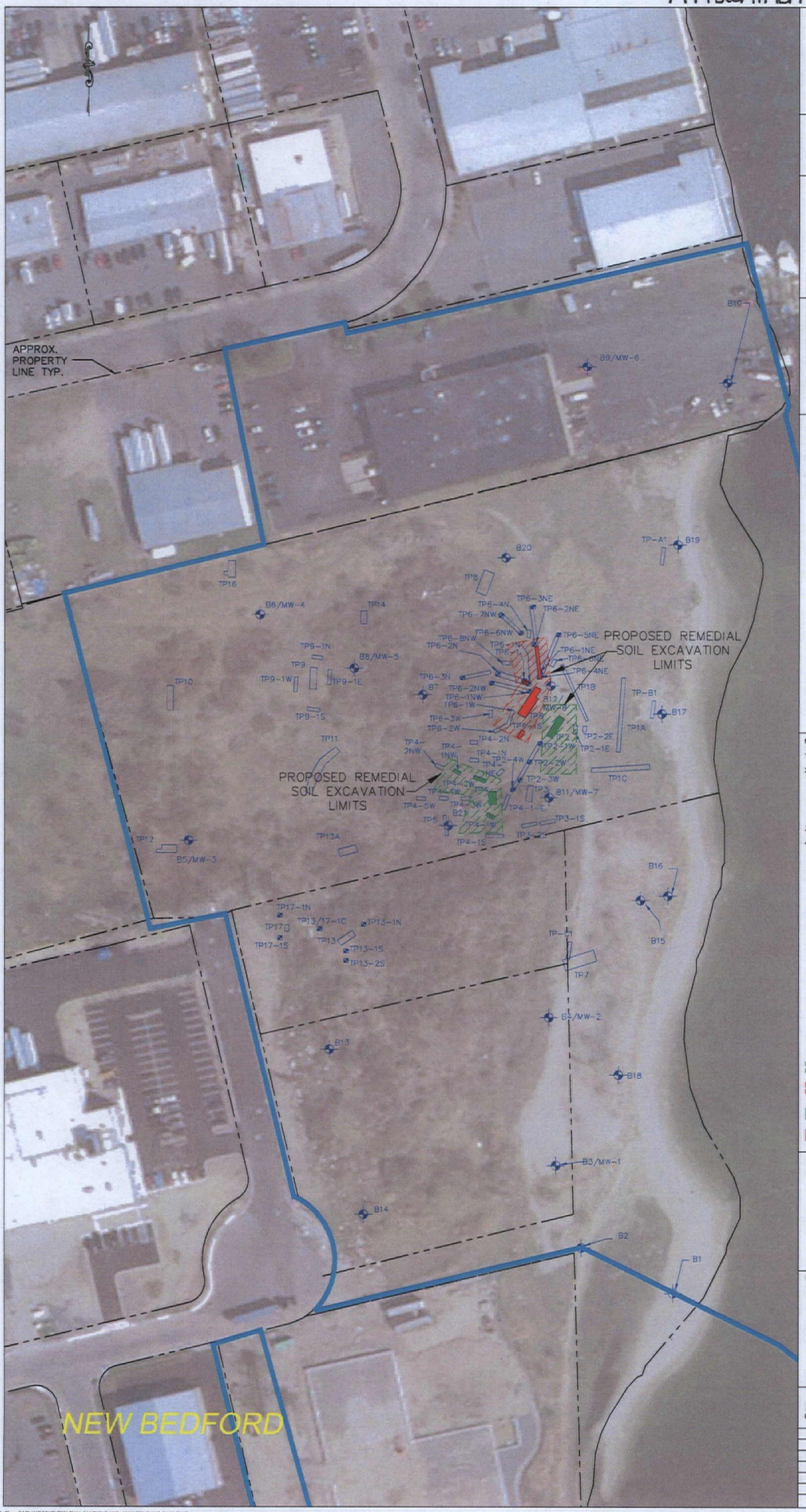
CONTAMINANT	MEASURED LEVEL	ACTION
Airborne Particulates (PM_{10})	Any visible dust emissions from Project activities	Implement corrective measures to control dust (e.g., water sprays)
Airborne Particulates [(a)] (PM_{10})	> 75 $\mu g/m^3$	Increase application rate of dust controls
Airborne Particulates [(a)] (PM_{10})	> 150 $\mu g/m^3$	Continue wetting of source area. Suspend Project activities and notify EPA
Airborne Particulates [(b)] (PM_{10})	> 100 $\mu g/m^3$	Continue wetting of source area. Suspend Project activities and notify EPA
Airborne PCBs [(b)]	> 0.10 $\mu g/m^3$	Suspend Project activities and notify EPA
Airborne asbestos	> 0.1 fiber/cc	Suspend Project activities and notify EPA
Airborne Lead	> 50 $\mu g/m^3$	Suspend Project activities and notify EPA

[(a)] Based on 5-minute average TEOM® data or equivalent
[(b)] Based on a 10-hour Time Weighted Average (TWA)

5. The Commonwealth may propose an alternate airborne PCB standard (Not To Exceed 0.260 $\mu g/m^3$) for properties along the fence line where no residential property exists within 200 feet of said fence line.

6. In the event of an exceedance and work stoppage is required, the Commonwealth shall submit a proposed corrective action plan to address the exceedance. Work shall resume only with EPA's approval and upon implementation of the corrective action plan.

Attachment 8.



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

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-UB-B13 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

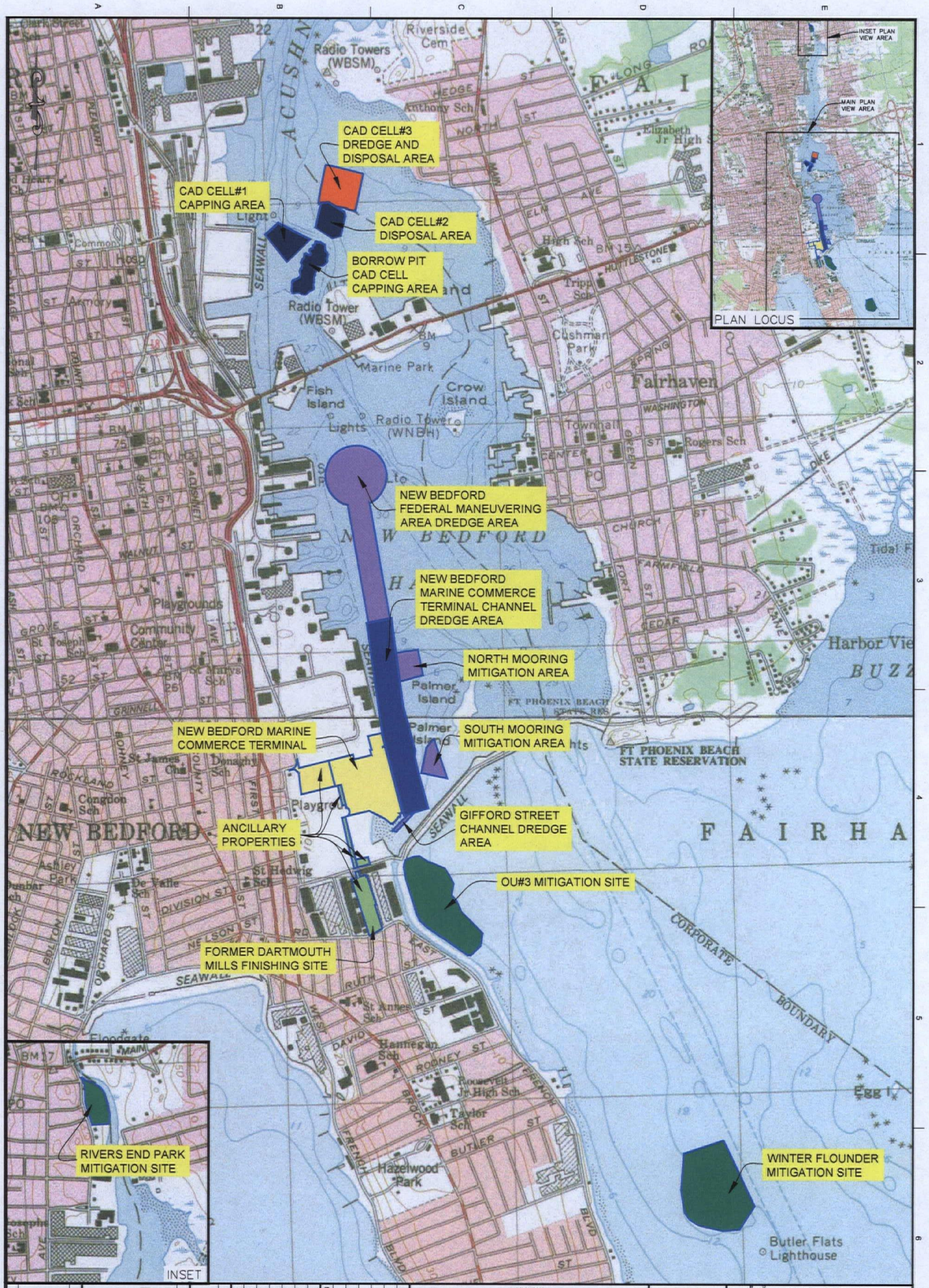
Date	10/28/10
Proj. Mgr.	
Design	CWM
Check	JAB
Drawn	GAD
Job. No.	6690
Last Rev.	11/22/10

Drawing No.

FIG. 1

P:\Jobs\6690 NBH_Phase IV\PLANS\SOUTHTERMINAL_SAMPLING_AND_ANALYSES_PLAN3-28-11.DWG

Attachment 9.



NEW BEDFORD MARINE COMMERCE TERMINAL GENERAL SITE PLAN	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 HIGH STREET, SUITE 502, BOSTON, MA 02210; 261 CONNECTICUT AVENUE, SOUTH WINDSOR, CT

NO.	DATE	DESCRIPTION	BY
1.	10/30/12	PROP. UPDATE	

PROJECT NO. 6990 | CADD FILE: SITE FIGURE | DESIGNED BY: GCD | DRAWN BY: GCD | CHECKED BY: | DATE: 5/9/2012 | DRAWING SCALE: 1 INCH = 600 FEET | GRAPHIC SCALE: SCALE: 1"=600' (0, 300, 600, 1200)

SHEET TITLE | DRAWING NO. 1 | 1 OF 1

EPA Final Determination for the South Terminal Project
New Bedford State Enhanced Remedy

Appendix J(2)
Second Modification to the November 12, 2008
TSCA 40 C.F.R. § 761.61(c) Determination, as amended
on June 18, 2012

Second Modification to November 12, 2008 TSCA § 761.61(c) Determination

Based on prior manufacturing operations in New Bedford and at the South Terminal Project area, PCB-contaminated sediment and soils likely meet the definition of a *PCB remediation waste* as defined under 40 CFR Section 761.3 and thus are regulated for cleanup and disposal under 40 CFR Part 761.

In its November 12, 2008 TSCA Determination (TSCA 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 TSCA 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 TSCA 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 that certain conditions were met, including but not limited to compliance with all conditions contained in the November 12, 2008 TSCA Determination (see **Attachments 1 and 2**).

This Second Modification to the TSCA Determination is included in EPA's Final Determination in which EPA determined that inclusion of a 28.45 acre marine terminal consisting of 6.91 acres of filled waters (referred to as "the confined disposal facility" or the "CDF") and approximately 21.54 acres of upland area, (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 ("CAD cells") (collectively, the "Project" or the "South Terminal Project") into the New Bedford Harbor State Enhanced Remedy ("SER") is protective and meets all substantive federal and state requirements. CDF construction will include dredging of sediments within the CDF footprint that will be disposed of into a newly designed CAD cell #3 which disposal will be subject to a separate TSCA Determination. Construction of the CAD cell #3 will require removal of PCB-contaminated sediments which will be disposed of within existing CAD cell #2 which disposal is the subject of this TSCA Determination.

In accordance with the requirements under the Toxic Substances Control Act (TSCA) and 40 CFR Section 761.61(c), and based on information provided in the Administrative Record, I have determined that disposal of the CAD cell #3 sediments 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 3** to this TSCA Determination is maintained, at a minimum. (Attachment 3 may also be found at Appendix C to EPA's Final Determination);

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, as modified; 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 Second 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 Second Modification to the TSCA Determination or issue a new TSCA determination based on the proposed change(s).

James T. Owens, III
Director, Office of Site Remediation & Restoration

11/19/12
Date

Attachment 1: November 12, 2008 TSCA Determination
Attachment 2: June 18, 2012 Modification to November 12, 2008 TSCA Determination
Attachment 3: State Enhanced Remedy – Water Quality and Turbidity Performance Standards

Attachment 1.

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

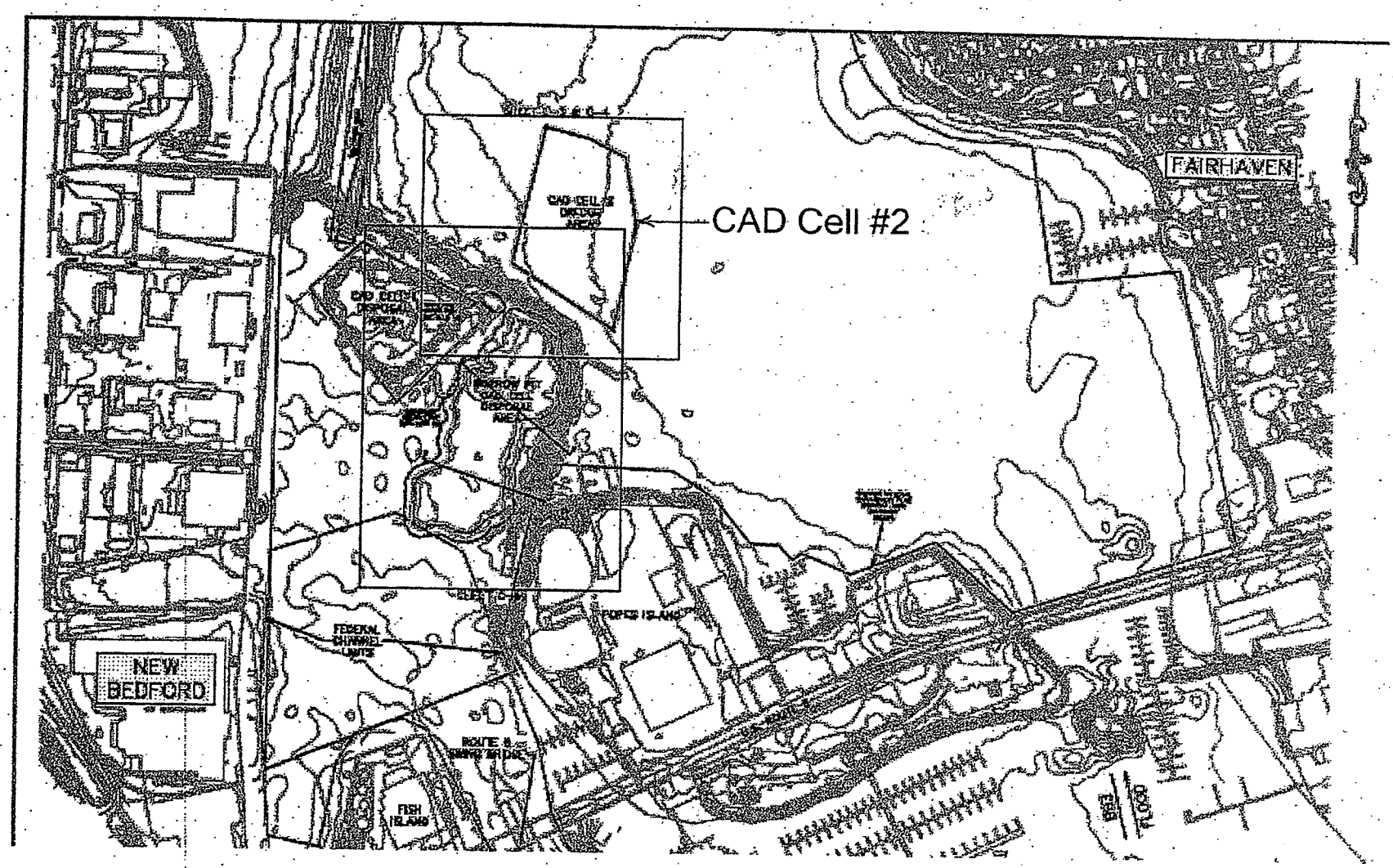


Figure 1: CAD #2 Location

Attachment 2.

Modification to 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 Contact Specifications for the New Bedford Harbor navigational dredging.

The Massachusetts Department of Environmental Protection (MassDEP) has submitted a request for a modification to the Determination to include disposal of approximately 6,000 cubic yards of PCB-contaminated sediment that will be generated by AGM Marine, Inc. from its property located at 7 Fish Island into CAD Cell #2. A map of the proposed area to be dredged is attached as Attachment A to this Modification. PCB concentrations in this sediment range from 6.8 ppm to 23.3 ppm. Documents dated July 24, 2008; December 9, 2008; June 22, 2009; May 2, 2012; and, May 16, 2012 were provided in support of this Modification. A Dredge Material Dewatering and Handling Procedures plan dated May 25, 2012 was also provided. See Attachment B for a list of these documents.

Consistent with Section 761.61(c) of the Toxic Substances Control Act (TSCA) I have reviewed these documents regarding the proposed work and have determined that disposal of this < 50 ppm PCB-contaminated sediment into CAD Cell #2 will not pose an unreasonable risk to human health or the environment provided the following conditions are met.

1. Compliance with the May 25, 2012 Dredge Material Dewatering and Handling Procedures plan and specified water quality monitoring and turbidity performance standards is maintained during all disposal operations.

2. Water quality and turbidity monitoring shall be conducted during disposal operations at the following frequencies:

    a. Turbidity shall be measured at both the reference location and the disposal location (CAD Cell #2), prior to the start of each disposal event and within 30 minutes following completion of each disposal event.

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.

4. Continuing compliance with all conditions contained in the November 12, 2008 TSCA Determination.

This Modification to the November 12, 2008 TSCA Determination is based on the information contained in the July 24, 2008; December 9, 2008; June 22, 2009; May 2, 2012; and, May 16, 2012 and May 25, 2012 submittals. 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).

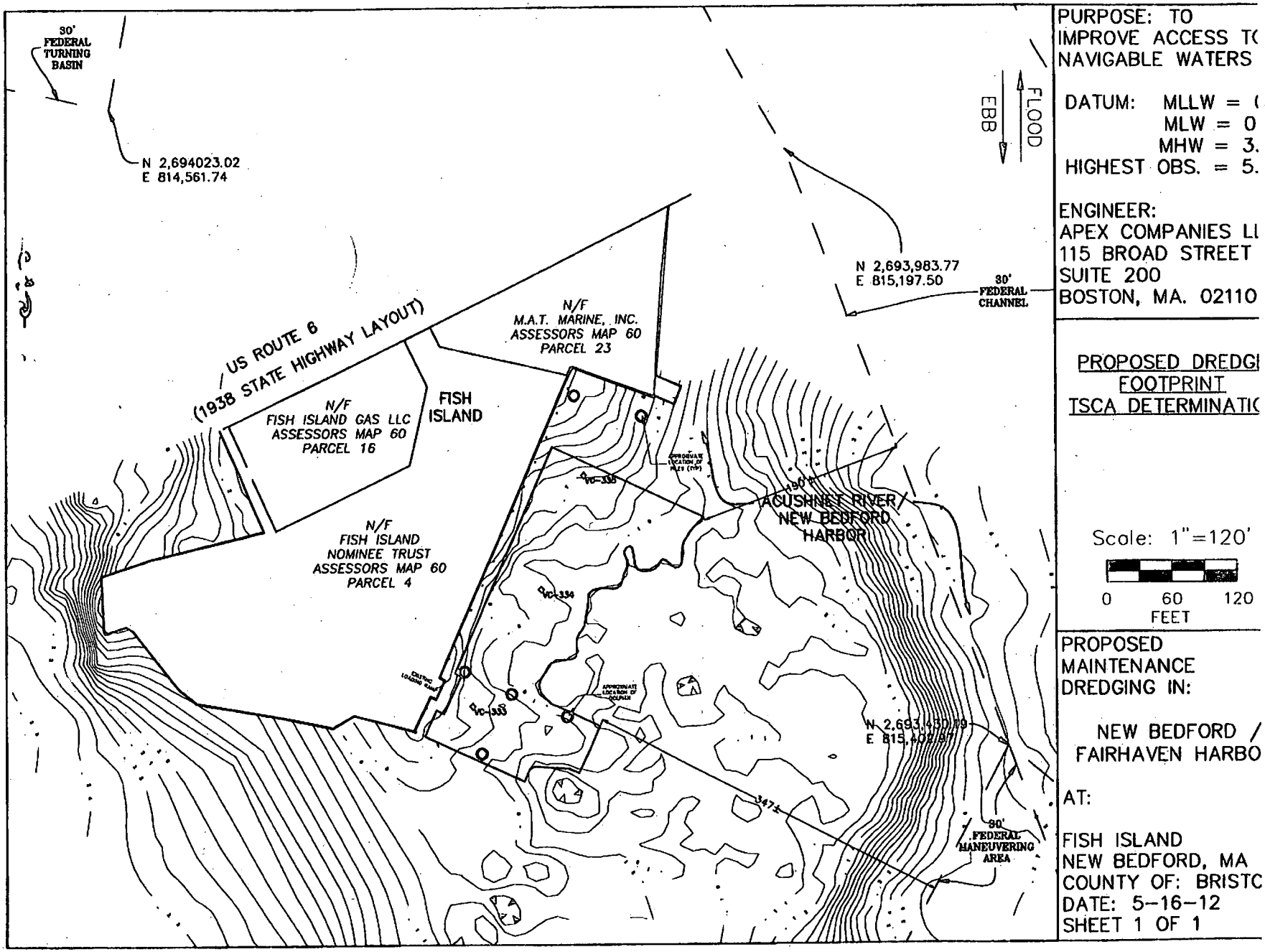
James T. Owens, III
Director, Office of Site Remediation & Restoration

6/18/12
Date

Attachment A: Map of AGM Proposed Dredging Area

Attachment B: List of Documents

Attachment A to Modification of November 12, 2008 TSCA Determination
– Map of AGM Proposed Dredging Area



PURPOSE: TO
IMPROVE ACCESS TO
NAVIGABLE WATERS

DATUM: MLLW = (
MLW = 0
MHW = 3.
HIGHEST OBS. = 5.

ENGINEER:
APEX COMPANIES LL
115 BROAD STREET
SUITE 200
BOSTON, MA. 02110

PROPOSED DREDGI
FOOTPRINT
TSCA DETERMINATIC

Scale: 1"=120'

0 60 120
FEET

PROPOSED
MAINTENANCE
DREDGING IN:

NEW BEDFORD /
FAIRHAVEN HARBO

AT:

FISH ISLAND
NEW BEDFORD, MA
COUNTY OF: BRISTC
DATE: 5-16-12
SHEET 1 OF 1

Attachment B to Modification of November 12, 2008 TSCA Determination – List of Documents Reviewed

1. July 24, 2008 Letter and attachments to David Dickerson, EPA from Chet Myers, Apex, regarding TSCA Determination, AGM Marine, Inc., New Bedford, Massachusetts

2. December 9, 2008 Order of Conditions – MassDEP Bureau of Resource Protection – Wetlands including General and Special Conditions of City of New Bedford.

3. June 22, 2009 Clean Water Act Section 401 Water Quality Certification letter from Glenn Hass, Acting Assistant Commissioner, Bureau Resource Protection to John Mikutowicz, AGM Marine Contractors, Inc.

4. May 2, 2012 Letter and attachments from Paul Craffey, MassDEP to Kimberly Tisa, EPA regarding TSCA Determination Modification – AGM Marine, Inc.

5. May 16, 2012 Letter and attachments from Paul Craffey, MassDEP to Kimberly Tisa, EPA regarding TSCA Determination Modification Update – AGM Marine, Inc.

6. May 25, 2012 Letter from Jonah Mikutowicz, AGM Marine Contractors, Inc. to Paul Craffey, MassDEP transmitting Dredge Material Dewatering and Handling Procedures Plan.

Water Quality Performance Standards

I. Introduction

1. These Water Quality Performance Standards ("Performance Standards") shall apply to the South Terminal Project as defined by EPA's Final Determination for the South Terminal Project issued on November 19, 2012.

2. The Commonwealth of Massachusetts is the lead agency for the State Enhanced Remedy work, and has a designated State Enhanced Remedy Project Manager ("SER PM").

3. Pursuant to the Memorandum of Agreement entered into between EPA and the Commonwealth in 2005 relative to the New Bedford Harbor State Enhanced Remedy, the SER PM shall continue to coordinate with the Regulatory Agencies for this South Terminal Project. In addition, to ensure consistency with EPA's Final Determination for the South Terminal Project, EPA shall have review and approval authority as described in these Water Quality Performance Standards.

4. No modifications may be made to these Water Quality Performance Standards without prior written agreement of EPA.

5. In the event of a conflict between these Performance Standards and the Final Mitigation Plan included in EPA's Final Determination, the Final Mitigation Plan shall prevail.

II MADEP 401 Water Quality Program Standards:

1. Anti-degradation provisions of the Massachusetts Surface Water Quality Standards protect all waters, including wetlands. The Commonwealth shall ensure that all necessary steps are taken to assure that the proposed activities will be conducted in a manner, which will avoid violations of said standards.

2. Environmental Monitor. The Commonwealth shall ensure that the contractor shall employ an "Environmental Monitor" (EM) and that the contract requires the EM to report directly to the SER PM and EPA. 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 SER PM and the Regulatory Agencies 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 SER PM and EPA directly for any matter involving wetland protection. The EM shall submit bi-weekly reports to the SER PM and EPA, following the commencement of construction and continuing until completion of the work in resource areas. The bi-weekly reports shall summarized, 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.

3. All in-water work shall meet EPA's Final Determination conditions to protect aquatic life, including winter flounder spawning & the alewife fish run that passes through the harbor to the Acushnet Sawmill Pond spawning area.

4. A Storm Water Pollution Prevention Plan (SWPPP) for the entire project as required by EPA's Final Determination, 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 SER PM for prior review and written approval prior to commencement of construction. 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 EPA's NPDES Construction Stormwater 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 specific measures to be taken to adjust the pH to acceptable limits [for example, carbon dioxide (CO2) bubbling when concrete pouring is also occurring].

5. The Commonwealth shall ensure that the contractor shall implement the use of silt curtains and absorbent booms, and/or the Fish Deterrent Program as outlined below:

   a. **CDF Filling**: At all times of year, when filling below Mean High Water occurs in association with construction of the CDF, the area being filled shall either be completely encircled with steel sheet piling, or completely encircled with a combination of steel sheet piling and silt curtains, or completely encircled with silt curtains.

      1. Monitoring: Turbidity monitoring must be conducted outside of and within 15 feet from the silt curtain and at a reference site located 200 feet from the silt curtain. Turbidity standards outlined in Section II.9 must be satisfied.

b. **Compensatory Mitigation**: At any depth and at all times of year, all areas where there is filling and capping associated with compensatory mitigation (i.e. winter flounder mitigation creation and intertidal and subtidal mitigation capping) will be completely encircled by silt curtains and absorbent booms for the duration of the filling and capping activity.

1. Monitoring: Turbidity monitoring must be conducted outside of and within 15 feet from the silt curtain and at a reference site located 200 feet from the silt curtain. Turbidity standards outlined in Section II.9 must be satisfied.

c. **Dredging, Filling Capping, and Rock Removal at Depths Shallower Than -5 Meters MLLW**: In all areas where dredging, filling (except for filling below Mean High Water associated with construction of the CDF, addressed in Section II.5.a, and compensatory mitigation activities, addressed in Section II.5.b.), capping, and other activities such as rock removal will occur, the following is required:

1. *From January 15 through June 15 of any year*, the Fish Deterrent Program (see Section II.8 and Attachment 1) must be implemented. This Program requires that absorbent booms, silt curtains, bubble curtains and fish weirs be erected around the work area to prevent fish, particularly winter flounder, from entering the work area. [Note: other Fish Deterrent Program requirements as specified in Section II.8 must also be employed.]

A. Monitoring: Inside the silt curtain (except for areas below Mean High Water to be filled in association with construction of the CDF), turbidity monitoring is required at a reference location established approximately 200-feet up-current from the dredge and at a monitoring location established 200-feet down-current from the dredge, unless dredging is conducted within 200 feet of the silt curtain, in which case turbidity monitoring must be conducted outside of and within 15 feet from the silt curtain and at a reference site located 200 feet from the silt curtain. Turbidity standards outlined in Section II.9 must be satisfied.

2. *From June 16 through January 14 of any year*, work may proceed without silt curtains unless necessary to ensure compliance with turbidity standards.

A. Monitoring: Turbidity monitoring is required at a reference location established approximately 200-feet up-current from the dredge and at a monitoring location established 200-feet down-current from the dredge. Turbidity standards outlined in Section 9 must be satisfied.

B. If silt curtains are deployed to ensure compliance with turbidity standards, turbidity monitoring must be conducted outside of and within 15 feet from the silt curtain and at a reference site located 200 feet from the silt curtain. Turbidity standards outlined in Section II.9 must be satisfied.

d. **Filling and Capping At Depths Equal To or Greater Than -5 Meters MLLW**: In all areas (except for filling associated with construction of the CDF (addressed in Section II.5.a,) that are not already enclosed, and compensatory mitigation activities (addressed in Section II.5.b), where filling (including CAD cell capping) will occur, the following is required:

1. *From January 15 through June 15 of any year*, CAD cells (including the borrow pit) that are being filled or capped shall be completely encircled by silt curtains and absorbent booms for the duration of the filling activity.

A. Monitoring: Turbidity monitoring must be conducted outside of and within 15 feet from the outside edge of silt curtain and at a reference site located 200 feet from the silt curtain. Turbidity standards outlined in Section II.9 must be satisfied.

2. *From June 16 through January 14 of any year*, CAD cell filling and capping may proceed without silt curtains unless necessary to ensure compliance with turbidity standards.

A. Monitoring: Turbidity monitoring is required at a reference location established approximately 200-feet up-current from the dredge and at a monitoring location established 200-feet down-current from the dredge. Turbidity standards outlined in Section II.9 must be satisfied.

B. If silt curtains are deployed to ensure compliance with turbidity standards, turbidity monitoring must be conducted outside of and within 15 feet from the outside edge of silt curtain and at a reference site located 200 feet from the silt curtain. Turbidity standards outlined in Section II.9 must be satisfied.

e. **Dredging At Depths Equal to or Greater than -5 Meters MLLW**: In all areas where dredging and associated activities such as rock removal will occur in depths equal to or greater than -5 meters MLLW:

1. *From January 15 through June 15 of any year*, silt-curtains and absorbent booms shall be deployed to enclose all areas being dredged.

A. Monitoring: Inside the silt curtain, turbidity monitoring is required at a reference location established approximately 200-feet up-current from the dredge and at a monitoring location established 200-feet down-current from the dredge, unless dredging is conducted within 200 feet of the silt curtain, in which case turbidity monitoring must be conducted outside of and within 15 feet from the silt curtain and at a reference site located 200 feet from the silt curtain. Turbidity standards outlined in Section II.9 (below) must be satisfied.

2. *From June 16 through January 14 of any year*, work may proceed without silt curtains unless necessary to ensure compliance with turbidity standards.

A. Monitoring: Turbidity monitoring is required at a reference location established approximately 200-feet up-current from the dredge and at a monitoring location established 200-feet down-current from the dredge. Turbidity standards outlined in Section II.9 must be satisfied.

B. If silt curtains are deployed to ensure compliance with turbidity standards, turbidity monitoring must be conducted outside of and within 15 feet from the silt curtain and at a reference site located 200 feet from the silt curtain. Turbidity standards outlined in Section II.9 must be satisfied.

6. The Commonwealth shall ensure that the contractor shall, prior to the start of any in-water work, submit a plan for deployment of silt curtains, absorbent booms, fish weirs and bubble curtains in accordance with Section II.5 to SER PM and to EPA for review and approval.

7. The Commonwealth shall ensure that the contractor shall, prior to the start of any in-water work, submit to the SER PM and to EPA for review and approval, a Contingency Plan, outlining the steps that the contractor will take, should dredging, filling, capping or rock removal activities cause an exceedance of the Water Quality Monitoring criteria outlined within these Performance Standards (see Section II.9). At a minimum, the Contingency Plan shall include measures that may be undertaken by the contractor to reduce turbidity such as reduction of the rate of operations, use of silt curtains and absorbent booms, alternate dredging and capping methodologies, and the total halt of operations. The Contingency Plan shall also include a provision that if the deployment of silt-curtains and absorbent booms cannot be implemented in accordance with Section II.5

during the period of time from January 15 to June 15 of any year, work in the area may not begin until June 16 of that year and the SER PM and EPA shall be notified.

8. *Fish Deterrent Program* – A Fish Deterrent Program in accordance with the Fish Deterrent Plan in Attachment 1 shall be implemented for any work conducted within waters shallower than -5 Mean Lower Low Water between January 15th and June 15th of any year. If the Fish Deterrent Program is not implemented in an area shallower than -5 Mean Lower Low Water prior to January 15th of any year, work in the area may not begin until June 16th of that year. Proposed modifications to the Fish Deterrent Plan must be submitted to the SER PM and to EPA for review.

9. Water Quality Monitoring Schedule and Methods

   a. *When in-water work is contained within a silt-curtained area* in accordance with Section II.5, the following water-quality monitoring program shall be carried out daily for the first three days of activities commencing and once a week thereafter and during those times when dewatering activities are ongoing from the CDF filling operation:

      1. 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.

      2. Turbidity shall be measured at both the monitoring and reference site prior to the start of dredging, and once every two hours during dredging.

      3. 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 Over Reference
<10	20 NTUs
11-20	15 NTUs
>21	30% of reference

      4. 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, total and dissolved PCBs, and total metals for 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 Commonwealth shall ensure that its contractor takes operational action(s) designed to limit such exceedances (as outlined within the approved Contractor's Contingency Plan, see Section II.7), 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 II.9.a until compliance is reestablished.

5. If compliance cannot be reestablished within 48 hours, in-water work shall cease and the SER PM and EPA, in consultation with the Environmental Monitor and the Commonwealth's 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. EPA, in consultation with the SER PM and the Environmental Monitor, shall have final authority to determine the requirements for additional mitigation, if any.

6. In the event the exceedence occurs during an activity and in an area in which silt curtains are required from January 15 through June 15 in accordance with Section II.5, if all additional mitigation measures exercised in accordance with Section II.7, and compliance cannot be reestablished within 48 hours of the implementation of the additional mitigation measures, the work shall stop and may not resume again until June 16, unless the Commonwealth can demonstrate to the satisfaction of EPA that it has instituted measures sufficient to reestablish compliance and EPA concurs that work may proceed with such measures.

b. *When in-water work is not conducted within a silt curtain area* in accordance with Section II.5 the following water-quality monitoring program shall be carried out daily for the first three days of activities commencing and twice a week thereafter and during those times when dewatering activities are ongoing from the CDF filling operation:

1. 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.

2. Turbidity shall be measured at both the reference location and the monitoring site (see Section II.5) prior to the start of dredging, and once every two hours of dredging.

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

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

4. If, in two consecutive monitoring events, the average turbidity at the monitoring site 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 site and the monitoring site shall be collected and submitted for analysis of Total Suspended Solids, total and dissolved PCBs, and total metals for 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 Commonwealth shall ensure that its contractor takes operational action(s) designed to limit such exceedences (as outlined within the approved Contractor's Contingency Plan, see Section II.7), such as increasing the dredge cycle time, deployment of silt curtains, 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 II.9.b.iii, until compliance is reestablished.

5. If compliance cannot be reestablished within 48 hours, in-water work shall cease and the SER PM and EPA, in consultation with the Commonwealth's 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. EPA, in consultation with the SER PM, shall have final approval to determine the requirements for additional mitigation, if any.

10. 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 piling/debris

removal shall be minimized to the greatest extent practicable. Should dredging with the environmental bucket become infeasible or unsuccessful, such dredging must halt and the SER PM and EPA must be notified. EPA, in consultation with the SER PM, must approve any contaminated sediment dredging not using the environmental bucket before such dredging may recommence. The contractor must continue to meet the project Water Quality Standard Performance Standards when an alternate dredging method is used.

11. Water discharged from the barge shall be appreciably free of suspended sediment and meet the water quality criteria established in Section II.9. 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 SER PM) prior to discharge.

12. The SER PM and EM shall be responsible for anticipating the need for and installation of additional erosion/sediment/turbidity controls and shall have the authority, subject to EPA review and approval, 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. Within 30 days of the completion of all dredging, all bathymetric surveys of the dredge footprint shall be sent to the SER PM and EPA.

III MADEP Chapter 91 Waterways Standards

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

2. Within 90 days after completion of the authorized South Terminal Project work, the Commonwealth shall require its contractors to furnish to the SER PM a suitable plan showing the depths at mean low water over all filled (except areas filled above Mean High Tide) and dredged areas. Dredging 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 Commonwealth shall at its expense, remove the shoal areas. The Commonwealth shall pay all costs of supervision, and if at any time the SER PM deems necessary a survey or surveys of the filled and dredged areas, the Commonwealth shall pay all costs associated with such work.

3. The Commonwealth shall ensure that its contractor shall, at least three business days prior to the commencement of any dredging and filling in tide water, give written notice to the SER PM and EPA of the time, location, and amount of the proposed work.

IV Special Waterways Conditions

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

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

3. The Commonwealth 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 Commonwealth shall maintain vehicular access to water-dependent users throughout construction activities. As part of the final design plan, the Commonwealth shall ensure it 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 Commonwealth 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, fish weirs, bubble curtains, and siltation curtains.

FISH DETERRENT PLAN

Project Summary

The New Bedford Marine Commerce Terminal (NBMCT) (see **Figure 1** for a site location plan) in New Bedford Harbor has been promulgated in order to develop a multi-purpose marine terminal, a primary purpose of which will be to provide critical infrastructure to serve offshore renewable energy facilities and accommodate international shipping at the new facility. The proposed facility will also be capable of supporting other industries within New Bedford, and will beneficially re-use sand from navigational dredging or the construction of confined aquatic disposal facilities to the extent approved by US EPA.

An assessment of the potential locations for supporting offshore renewable energy facilities and international shipping completed within the document entitled "State Enhanced Remedy in New Bedford, South Terminal", promulgated by the Commonwealth on January 18, 2012 has resulted in the conclusion that South Terminal in New Bedford, Massachusetts is the only practicable location due to a number of constraints, including: horizontal clearance, jack-up barge access, overhead clearance, total wharf and yard upland area, berthing space, site control/availability, and proximity. Due to the lack of other practicable alternatives, and the avoidance and minimization of impacts to resource areas to the maximum extent practicable, the South Terminal CDF is the Least Environmentally Damaging Practicable Alternative that will meet the primary Project Purpose.

During construction of the NBMCT, many activities (including dredging) may have a temporary detrimental effect to the fish that may be present within New Bedford Harbor. A Fish Monitoring Workgroup (including members from NMFS, EPA and MassDMF) was convened to prepare a Fish Deterrent Plan that could be utilized to reduce the impact to fish by excluding them from a proposed area. The input from the Fish Monitoring Workgroup has been incorporated into this Fish Deterrent Plan. This Fish Deterrent Plan (FDP) will include all measures to be taken that will decrease the chance of mortality to marine species of concern and their spawning activities (where applicable), including: Atlantic sturgeon, Winter and Windowpane Floudners, Scup, and Anadromous fish species as directed by the National Marine Fisheries Service (NMFS).

Objectives

The objective of this FDP is to construct the NBMCT without restricting access to daily fishing traffic and have the "least environmentally damaging as practicable alternative" in place to deter fish species from the NBMCT construction area, so that none are harmed or inadvertently "taken." The system is also intended to prevent spawning within the area of work, such that the eggs of the species in question will not be present when work commences, and therefore will not be damaged or destroyed. The fish species in question are as noted in the "NMFS comments on the Draft Determination for South Terminal in New Bedford, MA" dated August 21, 2012 and included below:

- Atlantic Sturgeon;
- Winter Flounder;
- Windowpane Flounder;
- Scup;
- Black Sea Bass.

Methods

Engineered Barriers

A series of engineered barriers will be in place to exclude fish from entering the areas where dredging and other marine construction are to take place. The barriers will re-direct, but not otherwise limit vessel traffic in the area of work. The three types of barriers to be erected are a fish weir, silt curtain, and bubble barrier. Coupled with an extensive monitoring program, the system is intended to exclude fish from using the area while work is taking place. The layout of the engineered barriers is depicted on **Figure 2.**

Fish Weir

A fish weir is a net which is placed in the water column and extends approximately 4 feet off the bottom. It is designed to channel ground fish away from the area where work is to take place. The weir will be placed on the outside of all the engineered barriers in close proximity to the bubble curtain and silt curtain. A detail of the fish weir is depicted on **Figure 3.**

Silt Curtains

Turbidity Barriers, also known as turbidity curtains, silt barriers, and silt curtains in the industry are designed specifically to contain and control the dispersion of floating turbidity and silt in a water body related to marine construction, pile driving, site work, and dredging activities. Silt curtains or silt protectors minimize these impacts by improving settling times and settling suspended solids in a defined area well away from natural resources.

For the NBMCT project, a modified silt curtain will be used both for turbidity control and also as a fish barrier. Traditional silt curtains may or may not touch the harbor bottom. In the past silt curtains which do not touch the bottom have been utilized in the Harbor during disposal activities at CAD Cell #2, and during dredging activities during the posted time of year (TOY) restriction when water depth is greater than 4 feet. The water depth is critical as when there is a tidal exchange the bottom of the curtain creates turbidity as it moves up and down in the mud. The Commonwealth proposes to create a solid barrier extending silt curtains to the harbor bottom; however the curtain will be modified so that the curtain does not create turbidity. Two sections will be at the site of the proposed New Bedford Marine Commerce Terminal and the third section will be at the proposed CAD Cell #3. The silt curtain will utilize a tidal flux pocket, the tidal flux pocket consists of a continuous line of floatation running the length of the silt curtain that is 4 feet from the harbor bottom, ensuring that the portion of the silt curtain nearest the bottom is always held taut and vertical preventing the contact which often is the cause of increased turbidity common in traditional silt curtain installations. This floatation accounts for the tidal range of New Bedford Harbor, which is ± 5 feet. When the tide is high, the silt curtain will be extended and will be stretched to its full length. When the tide falls, the floats at the 4 foot level will hold the bottom portion of the silt curtain off of the harbor floor, while the upper portion of the silt curtain will be supported on one side by the lower floats and on the other side by the surface floats. This modified silt curtain design will eliminate potential turbidity generation by the silt curtain, while allowing the silt curtain to extend from the water surface to the harbor floor. (**See cross section Figure 4**).

Bubble Barrier

The bubble barrier is a fairly recent addition to the mitigation techniques used in marine construction. Bubble barriers are, in their simplest form, a perforated pipeline running along the bottom of a waterway. Compressed air is pushed through the pipeline creating an array of bubbles along the northern limits of proposed construction site. This barrier carries three significant functions. First, fish species see the bubble array as a solid barrier, in effect a wall of air bubbles. Second, the air bubbles dampen sounds created by construction activities. Third, because the bubble barrier is a non-physical barrier, vessels may still use the existing South Terminal and Gifford Street channels during construction.

For the NBMCT project, one bubble barrier will be incorporated into the fish barrier. The bubble barrier will be placed on the northern end of the channel leading from the Gifford Street Boat Ramp. The bubble barriers and silt curtain will be overlapped to eliminate the potential for fish swimming around the barriers. A cross section of the barrier is attached as **Figure 5**. The combination of fish barrier silt curtain and bubble barrier for a fish barrier system.

Fish Monitoring

After the fish exclusion efforts are installed, a weekly monitoring procedure will be carried out. This procedure will be first implemented one day after the initial fish exclusion efforts are undertaken and once a week thereafter. The survey will be done with a sonar fish finder and a towed video system. The perimeter of the area will be surveyed twice: first to verify the silt curtain and bubble curtains are in place and second to verify the weir leader net is in place). Then the dredge area will be surveyed to determine if fish are present using the following procedure:

- Run transects parallel to shore or depth contours with a randomly selected start point for each survey.
- The survey area is approximately 1200 feet in length and runs parallel to shore. Survey will be run at approximately 1 nautical mile per hour.
- Transects will be spaced 100' on center and will begin 50' from the eastern boundary of the Silt Curtain.
- Two methods for detecting fish will be utilized: a fish finder used for identifying pelagic fish schools, and a video surveillance system used to identify flat fish.
- The video method is most appropriate for detecting flat fish. In order to ensure that visibility is acceptable for the survey, a laser scaling method will be used at each transect to visually confirm the seafloor.
- If a transect fails the visibility test, the monitoring them can select up to 5 additional grids to transect.
- If more than 5 transects fail the visibility test, then divers will complete the survey. Since the camera survey will image at a maximum 3% of the dredge area, the conservative measure of a single fish being imaged will be used as the threshold for implementing additional fish exclusion efforts.

The following decision tree will be used for the implementation of fish exclusion efforts:

VIDEO

If no flatfish are encountered → the area will be considered free of fish.

If 1 or more flatfish are encountered → fish removal procedure will be initiated.

SONAR

If <5 pelagic schools are encountered on sonar → the area will be considered free of fish.

If >=5 pelagic school are encountered on sonar → fish removal procedure will be initiated.

Reporting

A video monitoring report will be provided to the Fish Monitoring Workgroup weekly within 4 days of the monitoring. For every video monitoring event the report will describe:

1. The condition of the engineered barriers (silt curtain, bubble curtains, and weir leader net);
2. The prevalence of flatfish and other fish at the base of the fish exclusion devices;
3. Any actions taken to improve the conditions of the fish exclusion devices;
4. The total count of grid/transects completed;
5. The total count of grid transects skipped due to visibility – if grid survey method used;
6. Description of any survey alterations due to lack of visibility;
7. Total count of flatfish encountered;
8. Total count of other fish encountered;
9. Total count of schools on the sonar record;
10. Description of any actions taken to remove fish from the area;
11. Any turbidity monitoring exceedances;
12. Recommendations to improve the survey methodology, the fish exclusion devices, or the fish removal tactics;
13. Field notes from video and sonar survey (note that the video and sonar data will be observed in the field but will not be recorded).

Fish Exclusion Efforts

In the event that fish are found to be present during the monitoring surveys (the first video survey), measures will be taken to use a "fish startle system" to move fish outside the aforementioned barriers. The bubble barrier will be turned off and fish exclusion techniques will the deployed. The three different types of systems that will be mounted to the survey vessel to startle fish species are:

- Light
- Sound
- Tactile

All three systems will be used during all fish startling activities. The light system will include strobe lights mounted on either side of the helm with extendable poles. The lights range in size

from four to eight feet in length. Range of the color of light projected will vary, as will the intensity of light emitted. Bright lights have been shown to startle fish in many studies. The extendable poles will allow the lights to startle fish farther down in the water column than if the system was mounted to the helm. The sound emitting part of the startle system will be an underwater speaker capable of sound ranges from 100-1200 hertz. The speaker will hang on a tether into the water column. The tactile fish deterrent will be made of a fish net with light chain hanging to the harbor bottom. The net will be large enough gauge line that the fish will see it but will have large openings so they are not caught. The system will progress through the deterrence area at 2-4 knots on a calm day. During the fish startle activities the bubble barrier will not be active to allow fish to pass through these areas unimpeded (see **Figure 7** for schematic of fish startle boat mount set up). The bubble curtain will then be turned on.

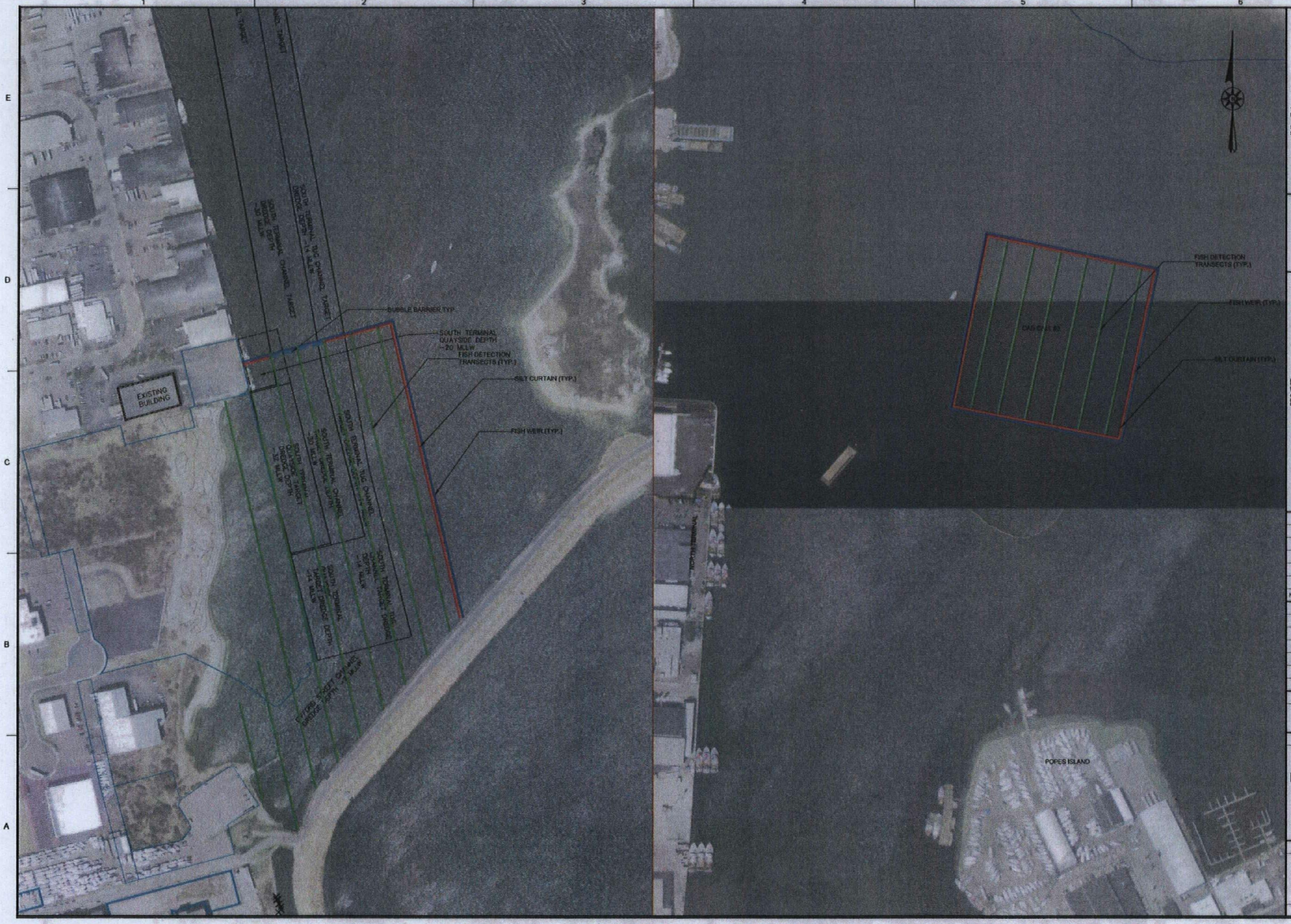
The video survey will be repeated (second video survey). If fish are found again, time permitting a second attempt at removing the fish will be attempted and the video survey will be repeated again. If fish are still found in the work area during the third video survey, the Commonwealth will re-inspect the integrity of the fish exclusion methodology. If there is a breach or other issue with implementation of the fish exclusion methodology, it will be repaired and monitoring will begin again.

If, after one month of deployment, the fish exclusion methodology does not appear to be meeting all of the goals of the fish exclusion program, the Commonwealth will meet with the Fish Monitoring Workgroup (FMW), the Commonwealth's monitoring team, and others with relevant expertise, to discuss issues and potential mitigation measures. The procedures implemented will be reviewed with the FMW, and potential alternate methods for monitoring and/or silt curtain maintenance, mitigation, or additional fish exclusion methods will be discussed.

Once a breach, issue, or problem, or once a potential alteration/mitigation measure is implemented, the monitoring will begin again to determine its effectiveness. Should fish be found in three consecutive video surveys after implementation of the mitigation measure, the Commonwealth will first re-inspect the integrity of the fish exclusion methodology. If there is a breach or otherwise issue with implementation of the fish exclusion methodology, it will be repaired and monitoring will begin again. Otherwise, either a subsequent alteration/mitigation measure will be implemented, or a meeting with the FMW will be scheduled to discuss whether or not modifications to the engineering controls could be made.

Figure 1: SITE LOCUS SCALE 1"=2400'	NEW BEDFORD MARINE COMMERCE TERMINAL FIN FISH EXCLUSION PLAN NEW BEDFORD, MA	APEX 184 High Street, Suite 502 Boston, Massachusetts Phone: (617) 728-0070

P:\Jobs\6690 NBTF Phase IV\PLANS\PERMITTING\LOCUS.dwg



APEX

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

184 HIGH STREET, SUITE 502
BOSTON, MA 02210

56H CONNECTICUT AVENUE
SOUTH WINDSOR, CT

PROJECT
NEW BEDFORD
MARINE COMMERCE
TERMINAL

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

NO.	DATE	DESCRIPTION	BY

PROJECT NO.	6690
CADD FILE	GIFFORD_ST
DESIGNED BY	JER
DRAWN BY	JER
CHECKED BY	CHM
DATE	9-27-12
DRAWING SCALE	1"=150'

GRAPHIC SCALE
SCALE: 1"=150'
0 75 150 300

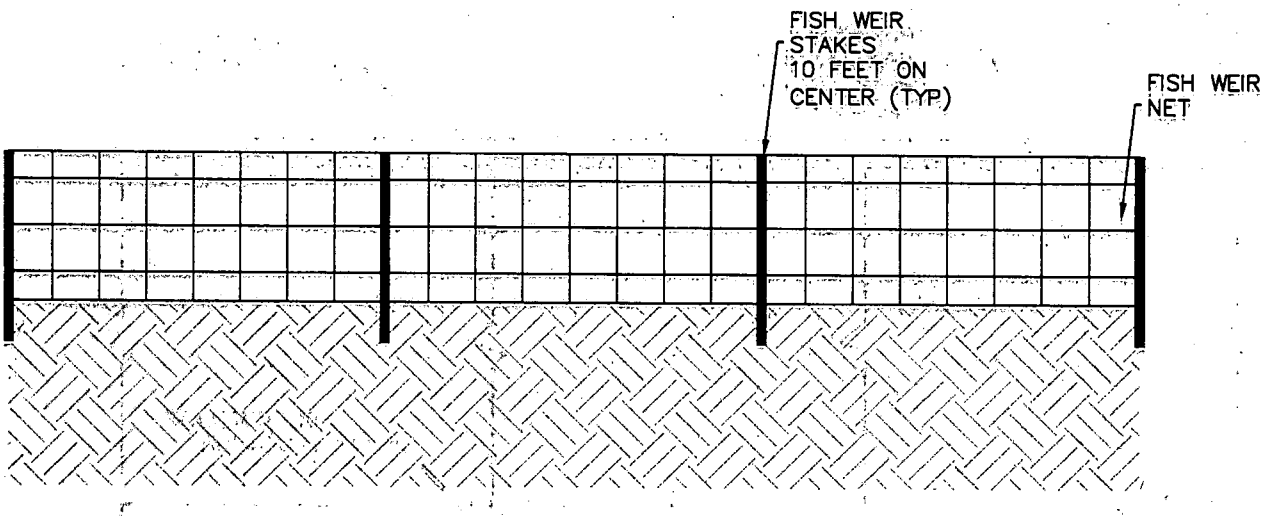
SHEET TITLE

NEW BEDFORD
MARINE COMMERCE
TERMINAL
FISH BARRIER

DRAWING NO.

FIGURE 2

1 OF 1



NOTE: ALL DIMENSIONS ARE APPROXIMATE

FIGURE 3: FISH WEIR DETAILS

FISH PROTECTION PLAN
NEW BEDFORD MARINE COMMERCE TERMINAL

APEX
184 High Street, Suite 502
Boston, Massachusetts
Phone: (617) 728-0070

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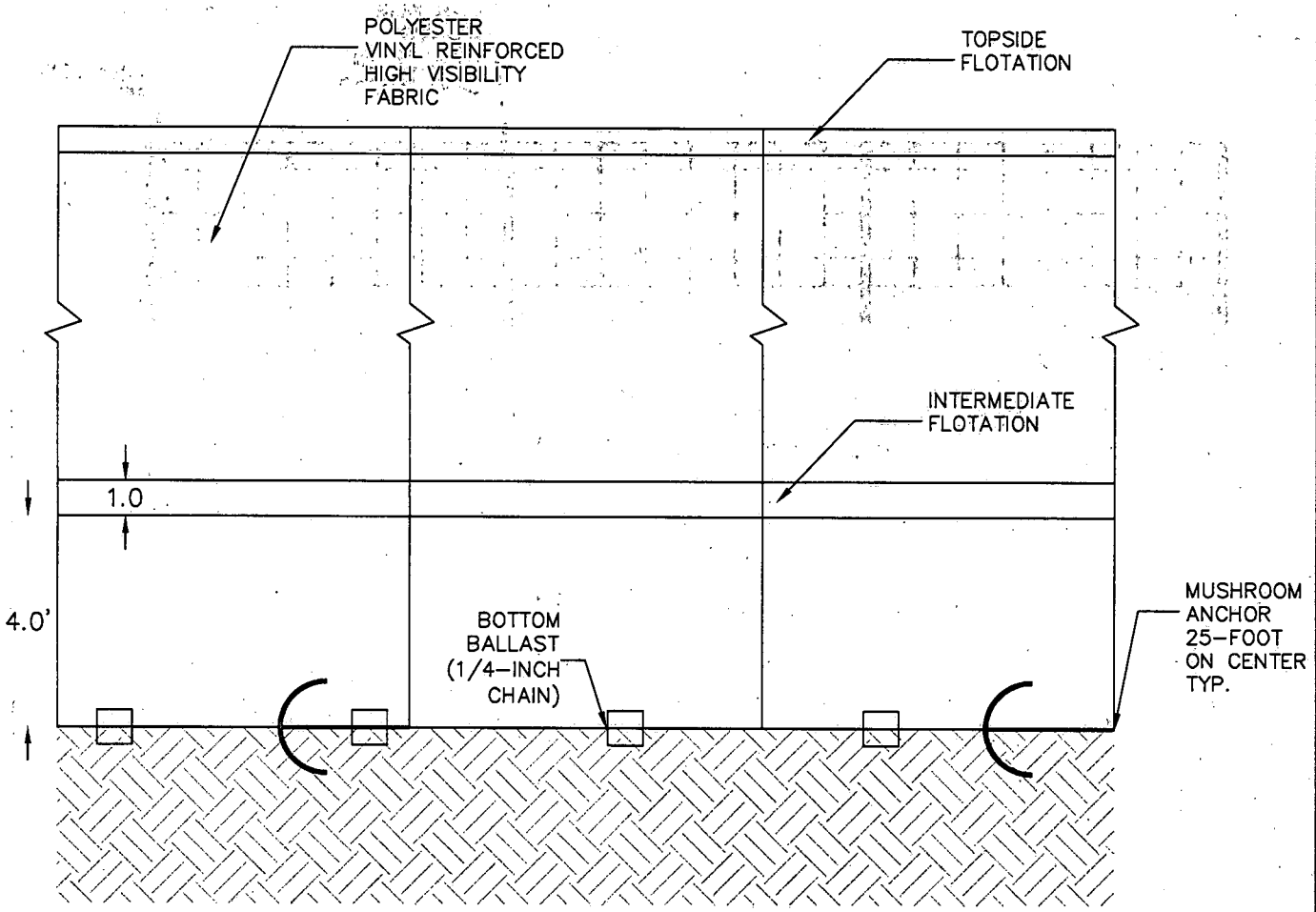
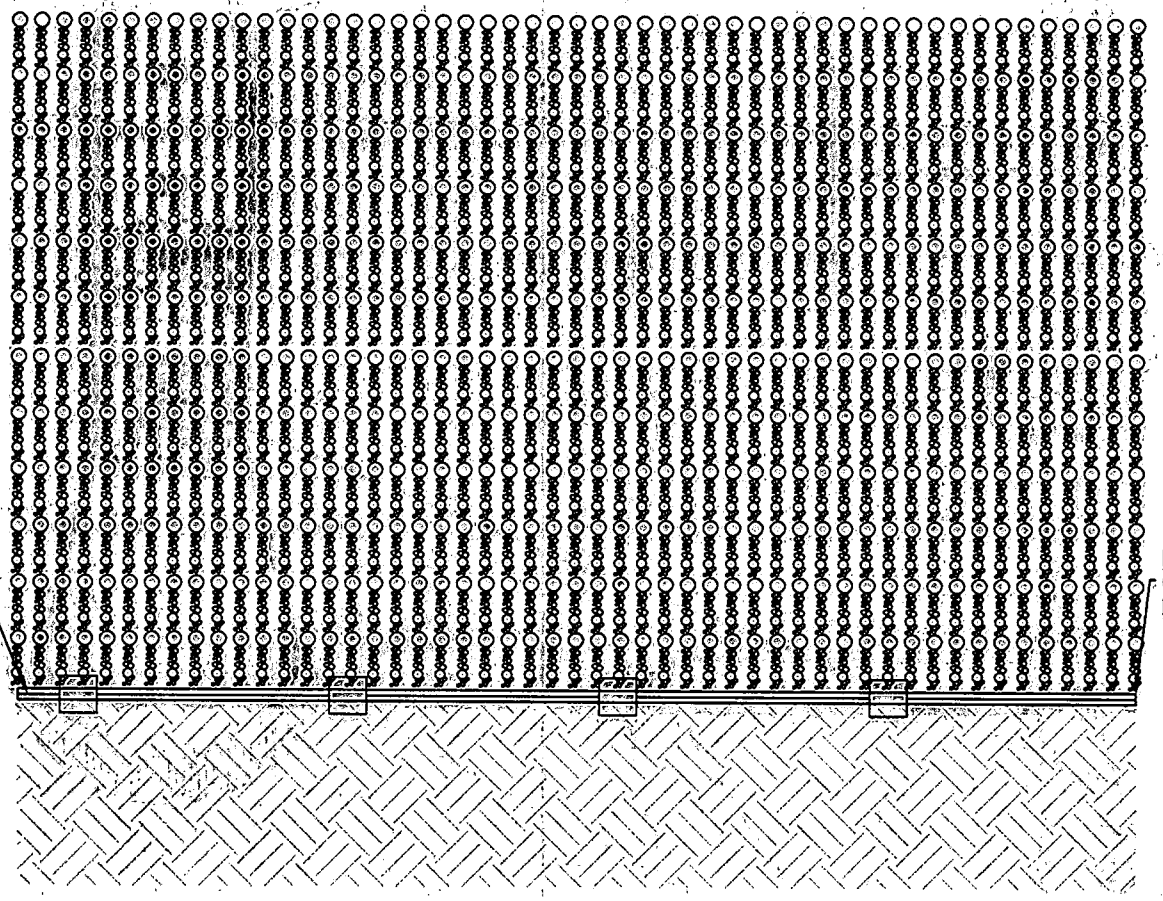
SPECIFICATIONS
• FABRIC – POLYESTER REINFORCED VINYL HIGH VISIBILITY YELLOW
• CONNECTOR – SECTIONS ARE LACED TOGETHER THROUGH GROMMETS AND LOAD LINES ARE BOLTED TOGETHER.
• FLOTATION – 6" EXPANDED POLYSTYRENE OVER 9 LBS./FT. BUOYANCY.
• BALLAST – 1/4" GALVANIZED CHAIN (.7 LBS/FT)



NOTE: ALL DIMENSIONS ARE APPROXIMATE

FIGURE 4: SILT CURTAIN DETAILS	FISH PROTECTION PLAN NEW BEDFORD MARINE COMMERCE TERMINAL	APEX 184 High Street, Suite 502 Boston, Massachusetts Phone: (617) 728-0070



NOTE: ALL DIMENSIONS ARE APPROXIMATE

FIGURE 5:
BUBBLE CURTAIN
DETAILS

FISH PROTECTION
PLAN
NEW BEDFORD MARINE
COMMERCE TERMINAL

APEX
184 High Street, Suite 502
Boston, Massachusetts
Phone: (617) 728-0070

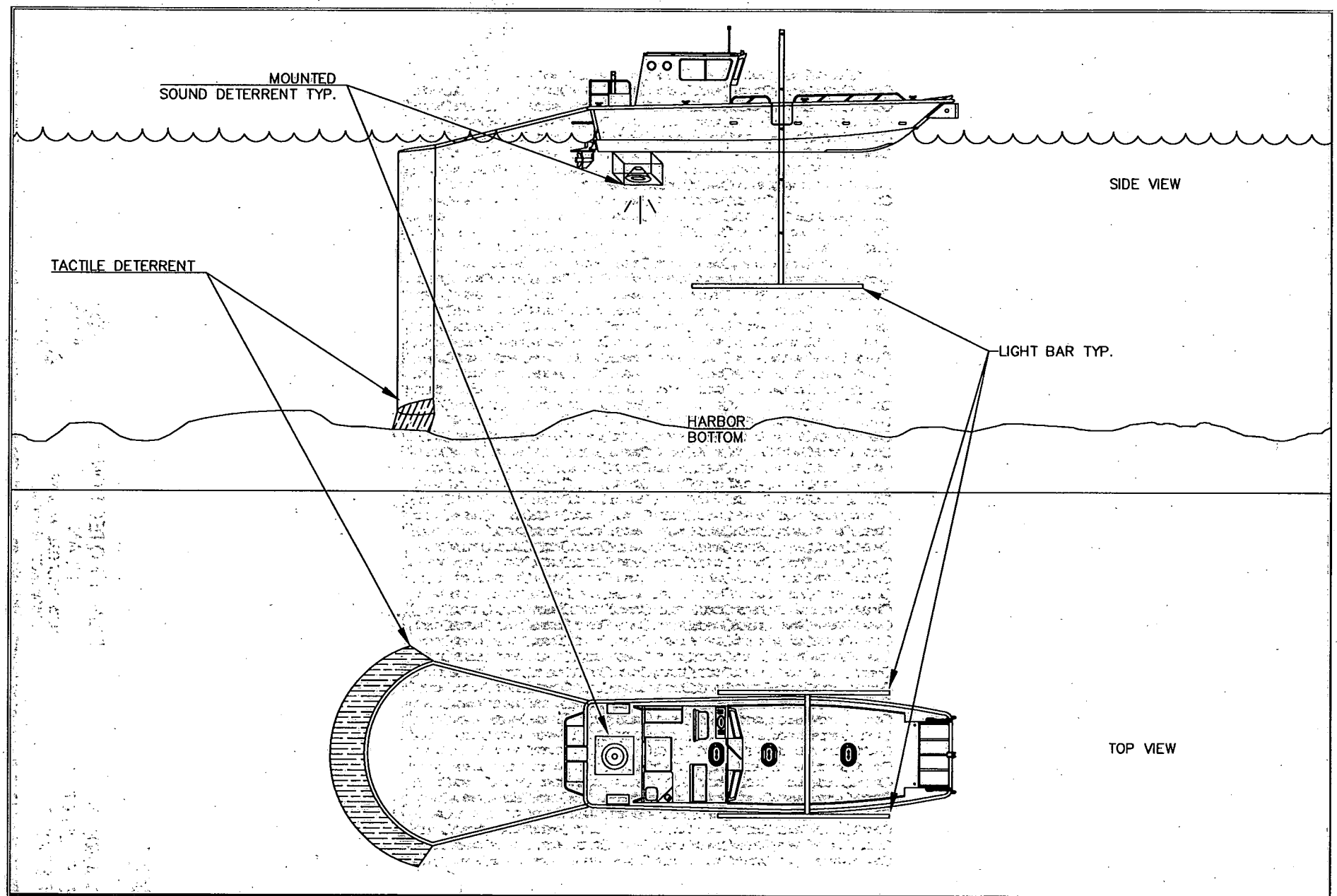


FIGURE 6:
FISH STARTLE SYSTEM

NEW BEDFORD MARINE
COMMERCE TERMINAL

APEX
125 Broad Street, Fifth Floor
Boston, Massachusetts 02110
Phone: (617) 728-0070

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EPA Final Determination for the South Terminal Project
New Bedford State Enhanced Remedy

Appendix K1
Final Biological Assessment for the Roseate Tern
New Bedford Harbor – South Terminal Project,
New Bedford, Massachusetts
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

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 ($\geq$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)

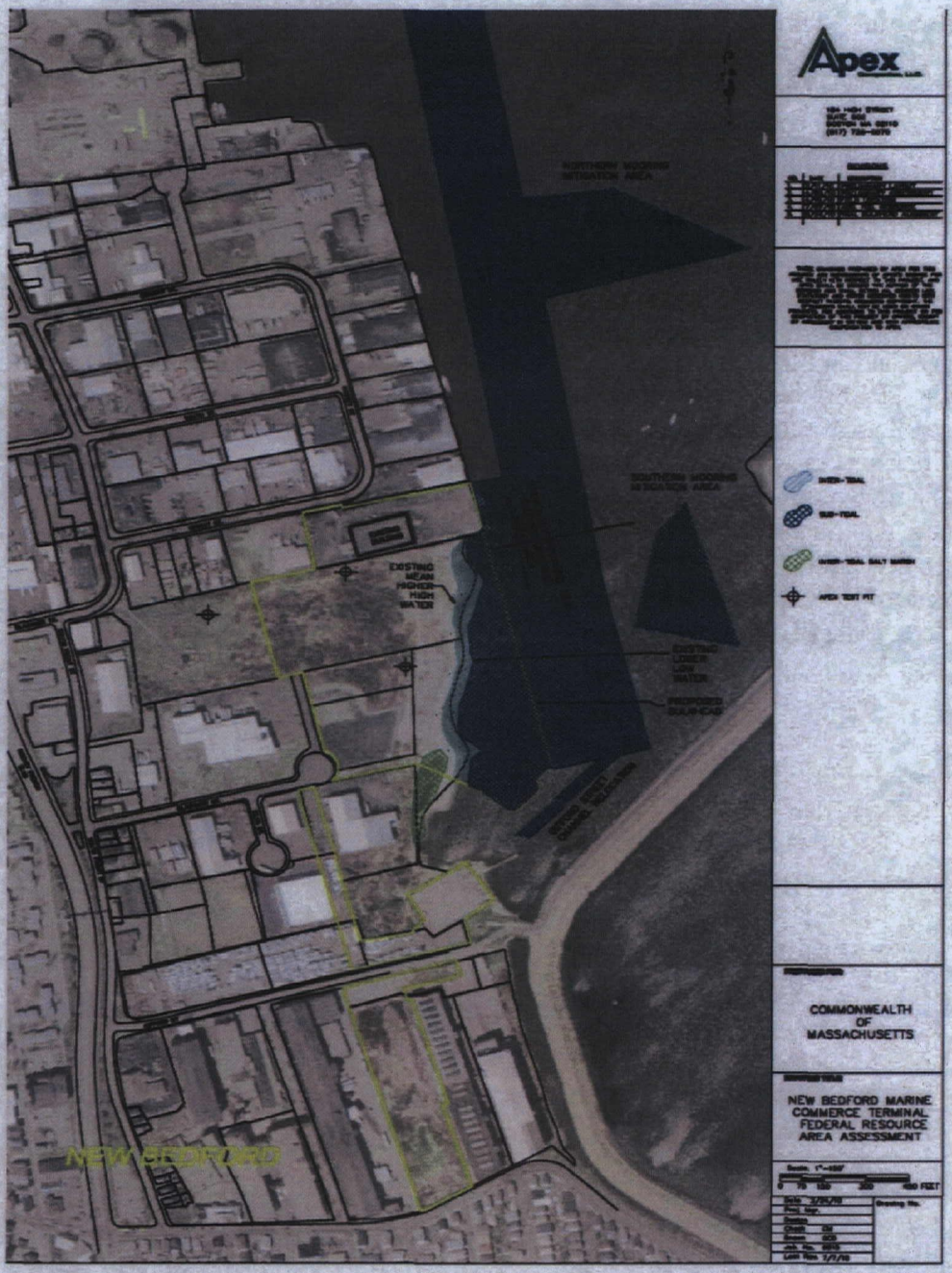

Figure 2 – Salt Marsh, Intertidal and Subtidal Resources (MassDEP,2012)

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.

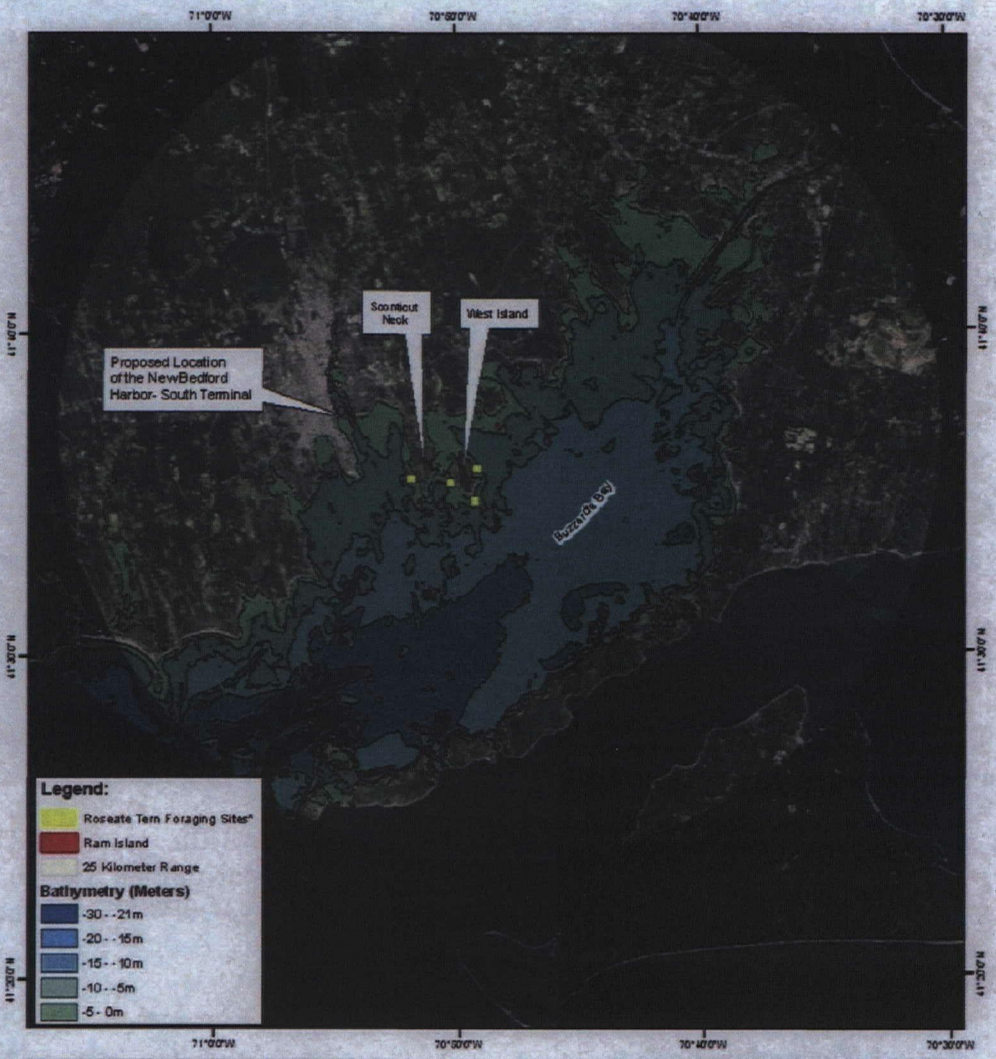

FIGURE 3: ROSEATE TERN FORAGING HABITAT WITHIN 25 KM RANGE RAM ISLAND, BUZZARD'S BAY, MA

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
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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

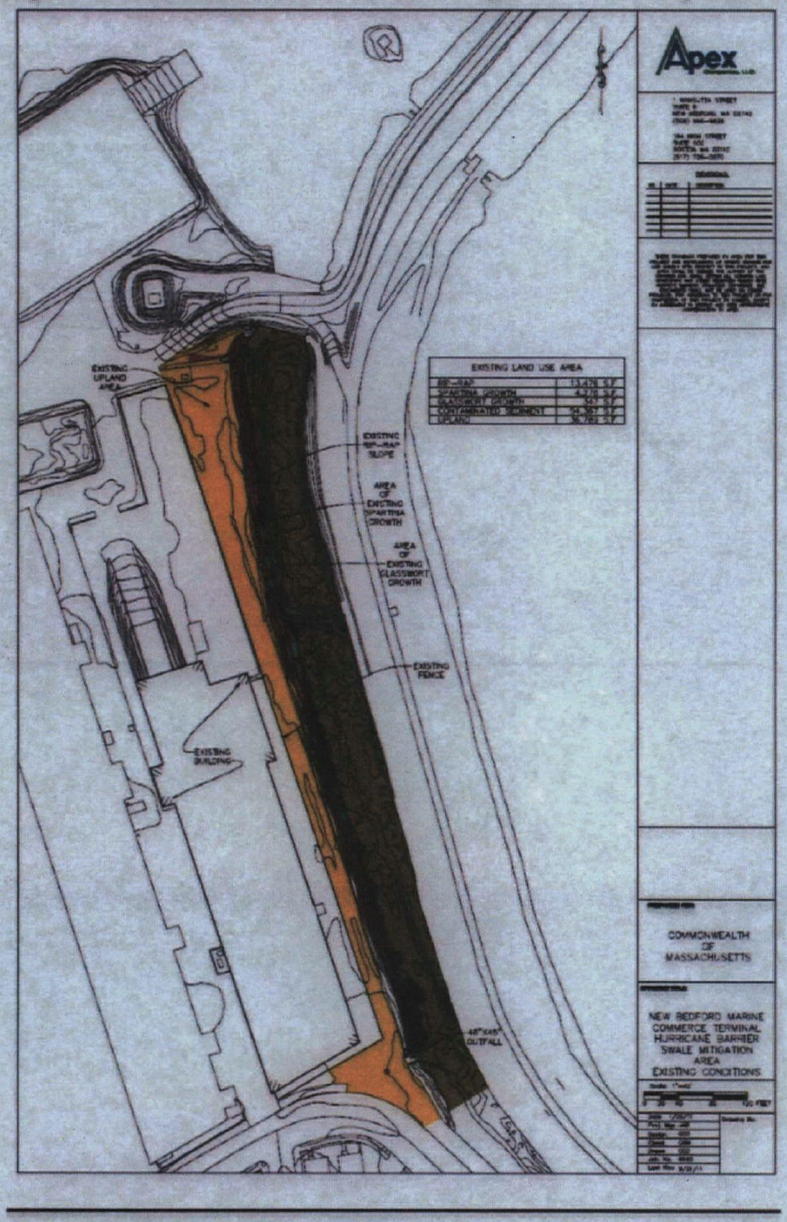
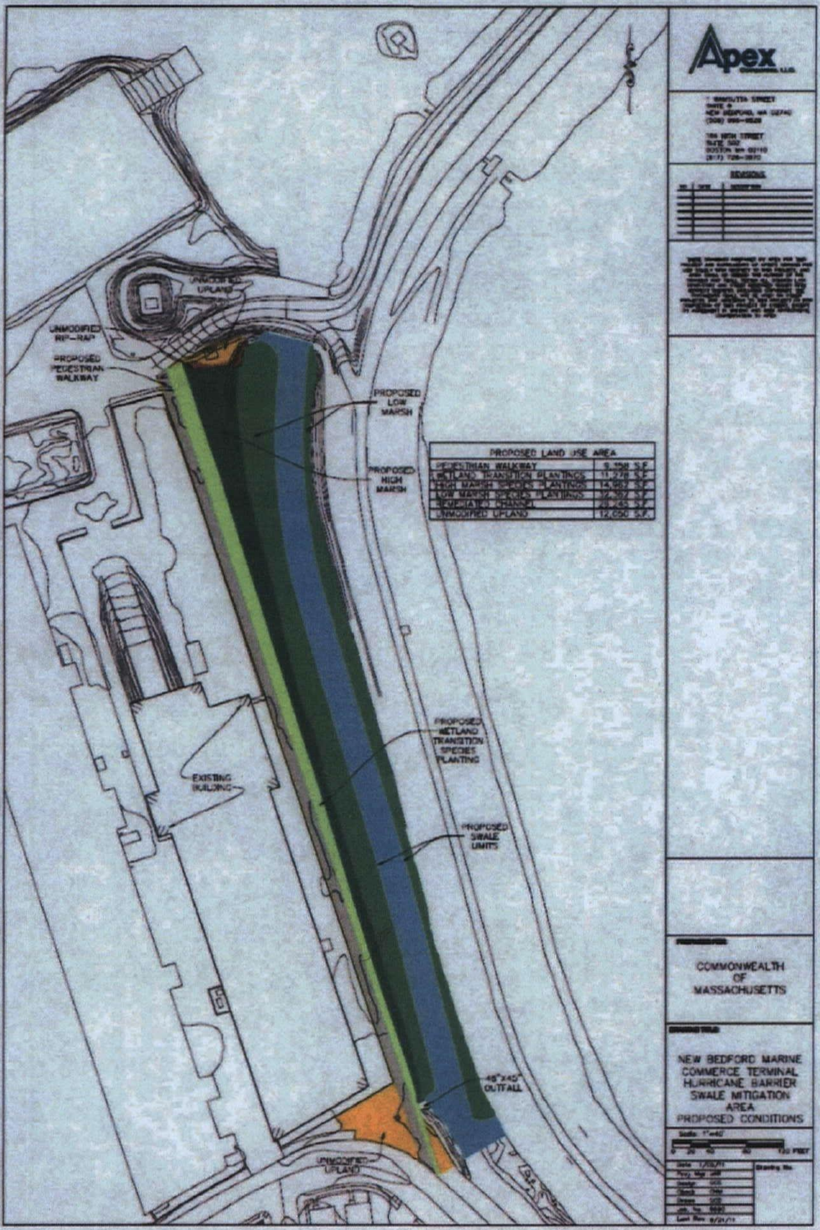


Figure 5 Hurricane Barrier Swale Mitigation Area Proposed Conditions


Apex
UNMODIFIED UPLAND
UNMODIFIED RIP-RAP
PROPOSED PEDESTRIAN WALKWAY
PROPOSED LOW MARSH
PROPOSED HIGH MARSH
PROPOSED LAND USE AREA
PEDESTRIAN WALKWAY
UNMODIFIED UPLAND
12,050 S.F.
EXISTING BUILDING
PROPOSED WETLAND TRANSITION SPECIES PLANTING
PROPOSED SWALE LIMITS
48"x45" OUTFALL
UNMODIFIED UPLAND
COMMONWEALTH OF MASSACHUSETTS
NEW BEDFORD MARINE COMMERCE TERMINAL HURRICANE BARRIER SWALE MITIGATION AREA PROPOSED CONDITIONS

EPA Final Determination for the South Terminal Project
New Bedford State Enhanced Remedy

Appendix K2
Final Biological Assessment for the Atlantic Sturgeon
New Bedford Harbor – South Terminal Project,
New Bedford, Massachusetts
October 2012

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
FIVE POST OFFICE SQUARE – SUITE 100
BOSTON, MASSACHUSETTS 02109-3912

October 31, 2012

Christine Vaccaro
Section 7 Coordinator
National Marine Fisheries Service
Northeast Regional Office
Protected Resources Division
55 Great Republic Drive
Gloucester, MA 01930-2276

Re: New Bedford Harbor-South Terminal Project

Dear Ms. Vaccaro:

EPA will be issuing a Final Determination on the Commonwealth of Massachusetts' Request to include construction of the proposed marine South Terminal Project in New Bedford Harbor as part of the State Enhanced Remedy. Based on discussions with staff from the Protected Resources Division, we understand that Atlantic Sturgeon may be present in the project area. Thus, EPA's issuance of the Final Determination constitutes a federal action that may affect a listed species under the Endangered Species Act. The intent of this letter is to initiate consultation under Section 7 of the Endangered Species Act of 1973, as amended, and provide our biological assessment and conclusions regarding potential effects of the project on the Atlantic Sturgeon.

Proposed Project

The Commonwealth proposes to construct a 28 acre marine terminal in New Bedford Harbor to support marine commerce and as a staging area for the construction of offshore wind turbines. The construction of this facility will also require extensive dredging and the construction of a Confined Aquatic Disposal (CAD) cell for the isolation/disposal of contaminated sediments (Figure 1).

Atlantic Sturgeon

There have been no recorded sightings of Atlantic Sturgeon in New Bedford Harbor. Atlantic sturgeon have been known to utilize the nearby Taunton River for spawning. It is our understanding from discussions with NMFS that sturgeon eggs, larvae and juveniles are not expected to occur within New Bedford Harbor, but sub-adult and adult

sturgeon could use the area for foraging. If sturgeon did use New Bedford Harbor, it would most likely be from March to November.

In-Water Activities that Could Impact Atlantic Sturgeon

There are 3 distinct in-water activities that have the potential to impact Atlantic sturgeon. These activities are blasting, dredging and pile driving. Each activity is described below with all mitigative measures.

Blasting

EPA will not approve the use of blasting to remove rock in the Final Determination for this project. If the Commonwealth ultimately determines that blasting is absolutely required, it will need to seek modification of EPA's Determination, and EPA will reinitiate consultation with NMFS.

Dredging

The proposed project will result in the immediate dredging of approximately 45 acres (and a potential for an additional 10 acres of dredging) of the seafloor (Figure 1). Dredging is proposed to begin in January and continue for approximately 7 months. Thus, dredging will occur during the time of year when Atlantic sturgeon could be present.

To mitigate potential impacts to Atlantic sturgeon and other fishery resources, EPA will require the following measures:

1. The use of an environmental bucket for dredging of fine grained materials;
2. The implementation of turbidity monitoring with action levels, which may trigger the use of silt curtains or other engineering controls;
3. The use of a series of barriers that will form the basis of a fish exclusion system around the project area. The Commonwealth will erect silt barriers that will be anchored to the bottom and build a bubble curtain to encircle the project area. In addition, weir nets will be deployed outside of these barriers to provide a second obstacle to benthic fish movement. These fish exclusion devices will be deployed prior to construction begins in January and will remain in place until June 15th to protect winter flounder spawning.; and
4. A fish monitoring program will be instituted for the project area during the period of time when the fish exclusion devices are in place. On a weekly basis, the Commonwealth will monitor for the presence of fish in the project area. If fish are present, multiple fish startle systems will be deployed in an attempt to get the fish to move out of the project area.

Pile Driving

The construction of this facility calls for the installation of a 1,000 linear foot coffer dam, followed by the installation of 175 z-shaped steel sheet piles and 181 pipe piles. To construct the coffer dam, 3,034 thin flat steel sheets approximately 19" long and 0.5" thick will be installed. The z-shaped pile sheets are 30" long and 3/8" thick. Sixty five of the pipe piles are 24" diameter and have a 5/8" wall thickness. One hundred and sixteen of the pipe piles are 30" in diameter and have a wall thickness of ¾". Construction of this facility will occur during the time of year when Atlantic sturgeon could be present in the project area.

To mitigate potential impacts to Atlantic sturgeon primarily from noise impacts associated with pile driving, EPA will require the following measures:

1. To eliminate the need to pound piles into bedrock, a "rock socket" installation method will be used for 87 of the piles. This technique involves drilling a "rock socket" in place, placing the piling in the hole and then grouting it in place. This technique is consistent with the "drill and pin to ledge" criteria that NMFS has previously suggested.
2. Limiting the installation methods to the use of vibratory hammers for the installation of piles.

On October 22, 2012, the Commonwealth submitted to EPA its Biological Assessment for the Atlantic Sturgeon, which is included as an attachment to this letter. EPA has not had sufficient time or opportunity to review the details of the acoustic model used to generate results for this assessment. In addition, we do not concur with the assessment's premise that Atlantic sturgeon could only occur within a handful of narrowly defined habitat areas within New Bedford Harbor. However, some useful conclusions can still be drawn from this assessment:

1. Potential acoustic impacts would be primarily limited to behavioral (avoidance) effects.
2. Potential acoustic impacts seem to be limited to an area surrounding the project site that represent less than approximately 1/3 of the cross-sectional area of the river. This leaves ample room for fish passage.
3. From the initiation of construction in January through June 15, a large percentage of the zone of potential acoustic impact will already be blocked off with fish exclusion devices (silt curtains, bubble curtains and fish weirs) designed to keep benthic fish out of the project zone. During that period of time, sturgeon will be physically shielded from a large part of the area that could cause them harm.
4. Bubble curtains can be employed as an effective means of minimizing the potential area of impact.

Conclusion

EPA has based its final conclusion on discussions with NMFS and information provided by the Commonwealth. EPA concludes that, although the proposed NBH-South Terminal project has the potential to affect the Atlantic sturgeon, due in large part to the limited presence of the sturgeon in the area and the mitigative measures that will be employed, the project is unlikely to adversely affect the species. If you have any questions on this letter, please contact me at (617) 918-1506.

Sincerely,

Phil Colarusso

Phil Colarusso, Marine Biologist
Coastal and Ocean Protection Section

cc: Gary Davis, Mass EOEA
Paul Diodati, Mass DMF
Kathryn Ford, Mass DMF

Biological Assessment for the Atlantic Sturgeon, *Acipenser oxyrinchus oxyrinchus*

New Bedford Marine Commerce Terminal
New Bedford, Massachusetts

Prepared By:

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Date: October 22, 2012

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1 Introduction

Section 7 of the Endangered Species Act (ESA,16 USC 1531 et seq.) mandates that all federal agencies consider the potential effects of their actions on species listed as threatened or endangered. If the federal agency determines that an action may adversely affect a federally listed species, consultation with National Marine Fisheries Service (NMFS) is required to ensure that the action will not jeopardize the species' continued existence or result in the destruction or adverse modification of critical habitat. If it is determined that a proposed federal action is likely to result in the "take" of a listed species, then NMFS may describe those conditions which must be met in order for an activity to proceed. "Take" includes harming or harassing a species in ways which interfere with its normal breeding, feeding, or sheltering behaviors.

This Biological Assessment (BA) was prepared to comply with Section 7 of the ESA, as outlined above, to assess potential impacts of construction and long-term operation of the proposed New Bedford Harbor (NBH) South Terminal Project in New Bedford, MA., on Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*). Atlantic sturgeon are divided into five distinct population segments (DPSs), which were federally listed as endangered (New York Bight DPS, Chesapeake Bay DPS, Carolina DPS, South Atlantic DPS) or threatened (Gulf of Maine DPS) on February 6, 2012. Although New Bedford Harbor is not designated as critical habitat for any federally species listed under the ESA, the project area may provide potential forage habitat for juvenile and adult Atlantic sturgeon from any of the five DPSs (NMFS letter, June 19, 2012).

2 Description of Project and Action Area

The following sections provide a description of the project and the portion of New Bedford Harbor where the project is proposed (i.e. action area).

2.1 Project Description

The Commonwealth of Massachusetts (hereafter Commonwealth) proposes to construct an approximately 28-acre marine commerce terminal (South Terminal) within the Designated Port Area of New Bedford Harbor at a site north of the harbor's hurricane barrier (Figure 1). The purpose of the terminal is to provide critical infrastructure to serve offshore renewable energy facilities, and to accommodate domestic and international shipping. The project is described in detail in the State Enhanced Remedy in New Bedford, South Terminal (MassDEP, 2012a), submitted January 18, 2012, and the Response to USEPA Comments on the January 18, 2012 Submission by the Commonwealth of Massachusetts for the New Bedford Marine Commerce Terminal (MassDEP, 2012b0, submitted June 18, 2012.

In summary, the project includes the following construction activities in waters of the United States (U.S.):

- Dredging to create a channel, from the existing Federal navigation channel to the facility, to accommodate vessel travel to the new terminal;
- Dredging to relocate two existing vessel mooring areas and the Gifford Street boat channel;
- Construction of a confined aquatic disposal (CAD) cell for disposal of contaminated sediments below the ocean floor;
- Construction of a confined disposal facility (CDF) for disposal of sediments above the ocean floor to create the upland terminal structure;

- Construction of approximately 1,000 linear feet of bulkhead, and utilization of 200-feet of existing South Terminal bulkhead (for a total facility bulkhead length of 1,200 feet), to contain the CDF and new terminal.

The project is proposed under the State Enhanced Remedy provision of the US Environmental Protection Agency (EPA) Superfund program (CERCLA). CERCLA regulations allow for a state to petition the EPA to expand its remedial action to include additional activities as an enhancement of the remedy; for this project this includes navigational dredging and disposal of contaminated sediments in CAD cells and construction of a CDF.

Figure 1. NBH South Terminal site location map (MassDEP, 2012a).

Dredging and construction of the South Terminal project will permanently impact 22.39 acres of intertidal, near-shore subtidal, and salt marsh resource areas. Project construction will temporarily impact 36.48 acres of near-shore subtidal resources. Please refer to Section 3 below for a discussion of resources to be impacted by the South Terminal project.

2.2 Action Area

New Bedford Harbor is located on the northern shore of Buzzards Bay, and is bounded on the east by Fairhaven and the west by New Bedford. The Acushet River flows into the bay from the north, and is the most significant freshwater input for the harbor (Figure 1).

New Bedford Harbor is classified into three regions: (1) Upper, north of Cogshell Street Bridge, (2) Lower (or Inner), between Cogshell Street Bridge and New Bedford Hurricane Barrier, and (3) Outer, south of New Bedford Hurricane Barrier. The South Terminal and CDF, CAD cell, and dredging areas are within the Lower (Inner) Harbor, which is bounded on the north by the Acushet River and the south by the hurricane barrier.

Currently, the inner harbor is characterized by a commercial fishing fleet, recreational vessel fleet, fish processing and cold storage facilities, commercial shipping facilities, a ferry and cruise ship terminal, vessel maintenance and repair facilities, several marinas, and historical attractions. Land use along the shoreline is a mixture of industrial, commercial, and residential uses (MassDEP, 2012a).

Historically, New Bedford Harbor was characterized by industrial and commercial uses, including textile mills and electronics industries that resulted in the contamination of harbor sediments with polychlorinated biphenyls (PCBs) and heavy metals. Contamination extends from the upper Acushet River to Buzzards Bay to varying degrees. Bioaccumulation of PCBs within the aquatic food web has resulted in closure of the harbor to fishing and shellfishing. PCB contamination has also led to restrictions in recreational activities and development within the harbor. In 1983, EPA added New Bedford Harbor to the National Priorities List as a designated Superfund Site (USEPA, 2012). Remediation of New Bedford Harbor by the EPA through dredging to remove and containment to sequester contaminated sediments began in 2004, and to date has removed or contained approximately 200,000 cubic yards of contaminated sediments (USEPA, 2012).

3 Environmental Setting

The following sections provide a description of the environmental setting in which the New Bedford Marine Commerce Terminal project shall take place, inclusive of subtidal biological resources and physical characteristics of the Harbor.

3.1 Subtidal Biological Resources

New Bedford Harbor functions as an ocean embayment and estuary, and supports a variety of benthic invertebrates, shellfish, and finfish resources (USEPA, 2012). However, contamination of harbor sediments with PCBs and heavy metals has resulted in the closure of the Upper Harbor, Lower Harbor, and portions of the Outer Harbor to fishing and shellfishing (USEPA, 2012). Bioaccumulation of PCBs and other contaminants in shellfish and finfish is monitored through the Annual Seafood Monitoring program (http://www.epa.gov/nbh/data.html#OtherRelevantDocs).

3.1.1 Benthic Fauna

New Bedford Harbor features a diverse assemblage of benthic invertebrates, which may exhibit important variations across seasons and sites. These invertebrates provide a food source for many predatory finfish, including Atlantic sturgeon (see Section 4).

As part of the New Bedford Harbor Long Term Monitoring Program, twenty-nine (29) sampling stations are located throughout the Lower Harbor, at a range of depth, habitat, and substrate types. In 2010, 10,226 organisms from 136 species were sampled (Woods Hole Group, Inc., 2010). *Streblospio benedicti*, a polychaete worm, was the dominant species, followed by the polychaetes *Tharyx acutus* and *Leitoscoloplos* sp. Please refer to Appendix K of the 2010 Long Term Monitoring Report V for a complete species list for

New Bedford Harbor, which includes sampling data from 1993 through 2009 (Woods Hole Group, Inc., 2010).

In 2005, 14,547 organisms from 85 species were sampled (Batelle, 2005). 2005 sampling was dominated by *Mulinia lateralis*, the dwarf surf clam, followed by *S. benedictii* and oligochaete worms. The complete species list for the 2005 Long Term Monitoring Report IV can be found in Appendix 9 of that report (Batelle, 2005).

3.1.2 Shellfish Resources

Shellfish resources in New Bedford Harbor are dominated by quahog or hard clam, *Mercenaria mercenaria* (MassDEP, 2012a). Other species found within the Lower Harbor include common or eastern oyster (*Crassostrea virginica*), bay scallop (*Argopecten irradians*), soft shell clam (*Mya arenaria*), blue mussel (*Mytilus edulis*), and ribbed mussel (*Geukensia demissa*).

The project is expected to result in the mortality of approximately 9.8 million quahog and other shellfish species. A mitigation plan has been developed that includes seeding of approximately 24.5 million quahog and oysters over a 10-15 year period (NMFS letter, August 21, 2012 and Commonwealth response dated October 4, 2012).

3.1.3 Finfish Resources

Finfish resources within New Bedford Harbor are presented in detail in Section 6.4.5, Essential Fish Habitat Assessment, of the State Enhanced Remedy in New Bedford, South Terminal (MassDEP 2012a). Essential Fish Habitat (EFH) is designated for twenty (20) species within the 10 minute x 10 minute square for Atlantic Ocean waters that encompass New Bedford Harbor. Essential Fish Habitat is designated for fifteen (15) species within the Buzzards Bay Estuary/Bay/River (Table 1).

Table 1. Species for which New Bedford Harbor is designated Essential Fish Habitat by NMFS.

Species	Eggs	Larvae	Juveniles	Adults	Spawning Adults[1]
Atlantic cod (*Gadus morhua*)	X	X	X	X	
Haddock (*Melanogrammus aeglefinus*)	X	X			
Red hake (*Urophysis chuss*)		X	X	X	X
Winter flounder (*Pseudopleuronectes americanus*)	X	X	X	X	X
Windowpane flounder (*Scopthalmus aquosus*)	X	X	X	X	X
American plaice (*Hippoglossoides platessoides*)			X	X	
Atlantic sea herring (*Clupea harengus*)			X	X	
Bluefish (*Pomatomus saltatrix*)			X	X	
Long finned squid (*Loligo pealeii*)[2]	n/a	n/a	X	X	
Atlantic butterfish (*Peprilus triacanthus*)	X	X	X	X	
Atlantic mackerel (*Gadus morhua*)	X	X[2]	X[2]	X	
Summer flounder (*Paralicthys dentatus*)	X[2]	X	X	X	
Scup (*Stenotomus chrysops*)	X	X	X	X	
Black sea bass (*Centropristus striata*)	X[3]	X	X	X	
Surf clam (*Spissula solidissima*)[2]	n/a	n/a	X	X	
King mackerel (*Scomberomorus cavalla*)	X	X	X	X	
Spanish mackerel (*Scomberomorus maculates*)	X	X	X	X	
Cobia (*Rachycentron canadum*)	X	X	X	X	
Sandbar shark (*Carcharhinus plumbeus*)[2]				X	
Bluefin tuna (*Thunnus thynnus*)[2]			X		

[1] Spawning adult designation for Buzzards Bay Estuary/Bay/River only. [2] Designated within Atlantic Ocean quadrant only.
[3] Designated within Buzzards Bay Estuary/Bay/River only.

Finfish resources were also characterized by Normandeau Associates using survey data collected monthly over a one-year period (Normandeau Associates, 1999). Seine (0-1 m depth) and trawl (2-10 m depth) methods were utilized to survey the harbor for finfish resources from June 1998 through May 1999. In the Lower Harbor, one seine (NS3) and two trawls (NT4, NT5) characterized the finfish resources. Species captured through survey efforts in the Lower Harbor are listed in Table 2.

Table 2. Finfish resources captured in lower New Bedford Harbor by Normandeau Associates (1999).

Species	Seine (S) or Trawl (T)
Alewife (*Alosa psuedoharengus*)	T
American eel (*Anguilla rostrata*)	T
Atlantic herring (*Clupea harengus*)	T
Atlantic menhaden (*Brevoortia tyrannus*)	S, T
Atlantic silverside (*Menidia menidia*)	S, T
Atlantic tomcod (*Microgadus tomcod*)	S
Banded rudderfish (*Seriola zonata*)	T
Bay anchovy (*Anchoa mitchilli*)	T
Black sea bass (*Centropristus striata*)	S
Bluefish (*Pomatomus saltatrix*)	S
Crevalle jack (*Caranx hippos*)	T
Cunner (*Tautogolabrus adspersus*)	S
Fourspine stickleback (*Apelites quadracus*)	S
Fundulus sp.	S
Grubby (*Myoxocephalus aenaeus*)	S
Gulf stream flounder (*Citharichthys arctifrons*)	T
Hake sp. (*Urophycis* sp.)	S
Mummichog (*Fundulus heteroclitus*)	S
Northern kingfish (*Menticirrhus saxatilis*)	S
Northern pipefish (*Syngnathus fuscus*)	S
Northern puffer (*Sphoeroides maculates*)	S
Oyster toadfish (*Opsanus tau*)	T
Pollock (*Pollachius virens*)	T
Rainbow smelt (*Osmerus mordax*)	T
Red hake (*Urophysis chuss*)	T
Scup (*Stenotomus chrysops*)	S
Seaboard goby (*Gobiosoma ginsburgi*)	S
Sheepshead minnow (*Cypinodon variegates*)	S
Short bigeye (*Pristigenys alta*)	T
Skate sp. (*Raja* sp.)	T
Smooth flounder (*Pleuronectes putnami*)	S
Spotted hake (*Urophycis regia*)	S
Striped bass (*Morone saxatilis*)	T
Striped killifish (*Fundulus majalis*)	S
Striped searobin (*Prionotus evolans*)	S
Summer flounder (*Paralicthys dentatus*)	T
Tautog (*Tautoga onitis*)	T
Tidewater silverside (*Menidia peninsulae*)	S
Weakfish (*Cynoscion regalis*)	T
White perch (*Morone americana*)	T
Windowpane flounder (*Scopthalmus aquosus*)	T
Winter flounder (*Psuedopleuronectes americanus*)	S, T

3.2 Physical Characteristics

New Bedford Harbor is a shallow coastal embayment characterized by open water, rocky shores, beaches, tidal creeks and marshes, and other coastal habitats. The harbor has been altered by dredging and other anthropogenic uses, including establishment and maintenance of a Federal navigation channel that extends from the hurricane barrier north to the Acushet River; development of industrial, commercial, and recreational uses that line the harbor; and construction of the hurricane barrier. Decades of industrial activity within and along the banks of the Harbor has resulted in the contamination of Harbor sediments with PCBs and heavy metal constituents to the degree that the Harbor has been declared a Superfund Site.

New Bedford Harbor has mean tidal range of approximately 3.7 ft (1.1 m) and spring tidal range of 4.6 ft (1.4 m). Water temperature in New Bedford Harbor ranges from 1.1°C (Jan/Feb) to 25.8°C (Jul/Aug) [NOAA NODC, 2012]. Salinity ranges from 19 ppt to 37 ppt, and dissolved oxygen ranges from 4.0 mg/L to 13.5 mg/L (USEPA, 2010; The Coalition for Buzzards Bay, 2012).

The Lower (Inner) Harbor is generally shallow, with depths ranging from 0 – 50 feet below mean lower low water (MLLW) [USACE, 1998]. The terminal site is characterized by shallow water (≤ 8' below MLLW) and coastal wetland habitats. Shallow water and various coastal habitats are present from the terminal site to Palmer Island and the western edge of the federal navigation channel. The federal navigation channel enters the Lower Harbor at the hurricane barrier, where it splits into two channels. The New Bedford Reach, authorized to a depth of -30 feet MLLW, runs through the center of the Lower Harbor and terminates with a turning basin between the western harbor shoreline and Pope's Island. A maneuvering area lies adjacent to the west side of the New Bedford Reach, also authorized to a depth of -30 feet MLLW. The Fairhaven Reach, authorized to a depth of -15 feet MLLW to Old South Wharf and then to a depth of -10 feet MLLW for the remainder of the channel, provides access to the eastern shore of the Lower Harbor and extends northeasterly to between Crow Island and the eastern shore. Adjacent to the Fairhaven Reach is an anchorage area, authorized to a depth of -25 feet MLLW (Maguire Group, Inc., 2002).

Long-term sediment and toxicity monitoring has been conducted in New Bedford Harbor as part of the Superfund monitoring program. PCB levels within the Lower Harbor range from non-detectible to 190 ppm. Higher PCB concentrations occur in shallower depths outside of the Federal navigation channel, and north of Popes Island (NBHTC, 2001). EPA Monitor Station 253 lies within the proposed South Terminal dredge area, and has been monitored since 1993. Sediment characteristics for this station include PCB concentrations that average 5.7 ppm and an average silt/clay content of 46.9% (MassDEP & MassDMF, 2010). Sampling conducted as part of the South Terminal project indicates that sediments within the footprint the project facility contain PCBs up to approximately 20 ppm. Note that the US Food and Drug Administration (FDA) criterion for PCB concentrations in commercial seafood is 2.0 ppm.

Harbor circulation conditions are influenced primarily by tidal currents. Currents in the Lower Harbor are weak, typically less than 0.4 knots (0.18 m/s). Bottom friction in the Lower Harbor results in small-scale eddies that create a vertically well-mixed boundary layer in deeper waters, causing sediments to remain suspended in the water column (NBHTC, 2001). The exceptions to weak Lower Harbor currents are the entrance to the hurricane barrier, where currents have been measured at 2.4 knots (122 m/s) during the flood tide, and the Coggshell Street Bridge, where currents have been measured at 3.5 knots (1.8 m/s).

4 Biology of Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*)

The following sections provide a description of the Biology of the Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*, including its life history, habitat and feeding preferences, and geographical distribution.

4.1 Life History

The Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) is a long-lived, late maturing, estuarine dependent, anadromous finfish species. Atlantic sturgeon spawn in freshwater river systems, but otherwise spend the majority of their adult life in marine ecosystems (Dunton et al., 2010; ASSRT, 2007; Beamesderfer & Farr, 1997; Gilbert, 1989).

Spawning takes place from April – May in mid-Atlantic systems and May – July in Canadian systems. Atlantic sturgeon return to their natal river to spawn every 1-5 years (male) and 2-5 years (female). Females migrate back out to coastal waters immediately after spawning, while males remain in spawning ground through the season. Sturgeon spawn in flowing water between the salt front and fall line of large rivers, where flows are high due to spring runoff. Eggs are highly adhesive and are deposited on the bottom on hard substrates such as cobble (ASSRT, 2007; Beamesderfer & Farr, 1997). Hatching occurs 94-140 hours after eggs are deposited (ASSRT, 2007; Gilbert, 1989).

The yolksac larval stage, from hatching to 31.5 mm total length (TL), is completed in 8-12 days, during which time the larvae migrate downstream to rearing grounds. Larval migration is limited to night during the first half of this migration downstream, and daylight is spent using benthic structure, such as gravel or cobble, as refuge. As larvae develop, migration expands to daylight hours (ASSRT, 2007). Young-of-the-year (YOY) sturgeon, 31.5 mm – 41 cm TL are also dependent on bottom substrate for refuge from predators.

Juvenile sturgeon continue the downstream migration into brackish and then estuarine waters, where they become residents for months to years. At approximately 76-92 cm TL, juvenile or sub-adult sturgeon move to coastal waters and may undertake long-range migrations throughout sub-adult and adult life stages. Data suggests that Atlantic sturgeon migrate south along the coast to North Carolina to Virginia during winter months, with return migration to northern waters in the spring prior to spawning season (Dunton, et al., 2010; Fox & Breece, 2010; Gilbert, 1989).

Age at maturity for Atlantic sturgeon varies, with faster growth and earlier age at maturation for southern populations. Average age at maturity for females is 15 years or 197 cm TL (ASSRT, 2007).

4.2 Habitat and Feeding Preferences

New Bedford Harbor has been identified as possible habitat for sub-adult and adult life stages of Atlantic sturgeon (NMFS letter, August 21 2012). This assessment shall therefore focus on the habitat parameters for these life stages. Juvenile and sub-adult terminology is often interchanged in the literature concerning Atlantic sturgeon. For this report, sub-adult shall be defined as any juvenile or sub-adult sturgeon that is not considered a YOY (≤ 41 cm TL) or mature adult (ASSRT, 2007).

4.2.1 Depth

Sub-adult and adult Atlantic sturgeon occupy shallow coastal waters adjacent to estuaries. Capture of sub-adult and adult Atlantic sturgeon typically occurs at depths of 10-50 m dominated by gravel and sand substrates (ASSRT, 2007; Dunton, et al., 2010; Laney, et al., 2007; NRDC, 2009; Stein et al., 2004).

Dunton et al. (2010) analyzed abundance and distribution of Atlantic sturgeon using fishery-independent survey data from 1973 – 2007, and concluded that depth is the primary parameter defining distribution of Atlantic sturgeon. Analysis revealed that the majority of Atlantic sturgeon captured in trawl surveys from Maine to North Carolina were sub-adults aggregating around the mouths of estuaries and along a narrow migration corridor in waters less than 20 m deep from Cape Hatteras (NC) to the south shore of Long Island (NY).

Laney et al. (2007) synthesized data from winter tagging cruises from 1988 – 2006 off the coasts of Virginia and North Carolina, and found that sturgeon were captured at depths ranging from 9.1 – 21.3 m (30 – 70 ft). Stein et al. (2004) used fishery data from 1989 – 2000 to categorize habitat for Atlantic sturgeon as depths of 10-50 m dominated by gravel and sand substrates.

Higher concentrations of Atlantic sturgeon are associated with coastal features such as inlets and the mouths of bays (Dunton, et al., 2010; Fox & Breece, 2010, Stein et al., 2004). Coastal features identified as areas where Atlantic sturgeon aggregate include Bay of Fundy, Kennebec River, Massachusetts Bay, Rhode Island, Hudson River-NY Bight, New Jersey, Delaware Bay, Chesapeake Bay, Cape Hattaras (Dunton, et al., 2010; Fox & Breece, 2010, Stein et al., 2004). The reason for higher concentration of sturgeon in these areas is not known, but it is theorized that abundance of preferred prey in these areas is a key factor. Tidal outflow plumes have physical and biological characteristics that appear to influence distribution of sturgeon in these areas, including increased prey base (Stein et al., 2004).

4.2.2 Water Quality

Atlantic sturgeon sub-adults inhabit waters with temperatures of 13.2 – 28 °C, moving to deeper, cooler waters during summer months (Musick, 2005). Studies have shown that Atlantic sturgeon sub-adults will avoid temperatures greater than 28°C (Niklitschek & Secor, 2005). Atlantic sturgeon adults occupy coastal waters with temperatures typically ranging from 13 – 24 °C (Dunton, et al., 2010).

Sub-adult sturgeon inhabit waters with salinities ranging from brackish (5-25 ppt) to marine (≥ 25 ppt), while adults mainly inhabit marine waters except during spawning season. Both sub-adults and adults avoid regions of hypoxia, where dissolved oxygen is < 4.0 mg/L.

4.2.3 Feeding Habits

Atlantic sturgeon are benthic omnivores, feeding on a variety of invertebrates and small fish by rooting along the bottom, sucking in large quantities of mud and prey. They compete for prey with other benthic predators, including suckers (*Moxotoma* sp.), winter flounder (*Pseudopleuronectes americanus*), tautog (*Tautoga onitis*), cunner (*Tautagolabrus adspersus*), porgies (Sparidae), croakers (Sciaenidae) and stingrays (*Dasyatis* sp.) [ASSRT, 2007].

Sub-adults feed mainly on aquatic insects and invertebrates; adults expand their diets to include mollusks, gastropods, amphipods, isopods and small fish, especially sand lances (*Ammodytes* sp.) [ASSRT, 2007; Murawski & Pacheco, 1977; NRDC, 2009; Smith, 1985]. Distribution of sub-adult and adult sturgeon is correlated with prey base. Sturgeon will often forage at or near mudflats with areas of submerged aquatic vegetation (SAV) or shellfish resources. Although no SAV beds are present in the project area, the presence of benthic invertebrates and shellfish resources in the Lower Harbor has led resource scientists to suggest that the area should be evaluated as foraging habitat for sub-adult and adult sturgeon.

4.3 Geographical Distribution

Atlantic sturgeon are distributed from Hamilton Inlet on the coast of Labrador to the Saint Johns River in Florida (ASSRT, 2007; Dunton, et al., 2010; Stein et al., 2004). Records confirm that spawning historically occurred in 35 rivers of the U.S., from St. Croix, ME to Saint Johns River, FL. Closest to New Bedford Harbor, historic spawning populations of Atlantic sturgeon existed in the Taunton River (RI and MA) until the early 20th century, but only a handful of non-natal sub-adults and adults have been recorded since (ASSRT, 2007). Currently, Atlantic sturgeon spawn in an estimated 20 U.S. rivers. The closest confirmed spawning river to the New Bedford Harbor project area is the Hudson River in New York (NRDC, 2009). For this reason, the New Bedford Harbor project area is not considered habitat for spawning adults and early life stages of Atlantic sturgeon.

Given the habitat preferences and migration patterns outlined above for Atlantic sturgeon, NMFS has asserted the possibility that sub-adult or adult sturgeon from any of the five ESA listed distinct population segments (DPSs) of Atlantic sturgeon may forage in New Bedford Harbor from April – October (NMFS letter, August 21 2012). To assess the potential impacts of this project on sub-adult and adult Atlantic sturgeon, a literature and data review of surveys and abundance estimates for New Bedford Harbor and Buzzards Bay, located to the south of New Bedford Harbor, was performed.

The only finfish resource survey conducted in New Bedford Harbor was performed by Normandeau Associates (1999) from June 1998 to May 1999. Surveys were conducted monthly using seine (0-1 m depth) and trawl (2-10 m depth) methods. No Atlantic sturgeon were recorded.

Massachusetts Division of Marine Fisheries (DMF) was consulted regarding known occurrences of Atlantic sturgeon in New Bedford Harbor based on other data sources. Massachusetts DMF stated that Atlantic sturgeon have never been recorded in New Bedford Harbor, and that the Harbor is not considered habitat by their sturgeon experts (Kathryn Ford, MassDMF New Bedford Office, via telephone call October 9, 2012).

Massachusetts DMF (King et al., 2010) synthesized data from trawl surveys conducted throughout waters of Massachusetts from 1978 – 2007 to develop a comprehensive list of species recorded by region. New Bedford Harbor and Buzzards Bay are within Region 1 of the DMF trawl surveys. Trawl surveys were conducted in Region 1 in May and September at depths of ≤ 30 ft, 30-60 ft, 60-90 ft, and 90-120 ft. Atlantic sturgeon were not recorded in any Region 1 trawl survey.

Camisa & Wilbur (2002) conducted trawl surveys in Buzzards Bay for the Buzzards Bay Dredge Material Management Plan (DMMP) Draft Environmental Impact Report (DEIR). Surveys were conducted using an otter trawl in March 2001, twice monthly from April – October 2001, and once monthly from November 2001 – March 2002. Atlantic sturgeon were not captured in any trawl.

Stone et al. (1994) synthesized literature and data to assess distribution and abundance of fishes and invertebrates in mid-Atlantic estuaries, inclusive of Atlantic sturgeon. Spatial distribution, temporal distribution, and relative abundance was estimated for Atlantic sturgeon in Buzzards Bay. Atlantic sturgeon sub-adults and adults are listed rare in Buzzards Bay throughout the year. Rare is defined as "species is definitely present by not frequently encountered." In addition to assessing each species, the reliability of the conclusions was determined. For Atlantic sturgeon in Buzzards Bay, the data reliability is listed as "reasonable inference", defined as "little or no data available. Information on distribution, ecology, and preferred habitats documented in similar estuaries."

Finally, the FishBase (Froaese & Pauly, 2011) database for occurrences of Atlantic sturgeon was also reviewed. No Atlantic sturgeon have been recorded in New Bedford Harbor or Buzzards Bay from 1878 – present.

In summary, based on all available data, Atlantic sturgeon have never been recorded in New Bedford Harbor. Atlantic sturgeon have also never been recorded in Buzzards Bay, where they would be more likely to occur as the bay is proximal to known coastal foraging and migratory habitat. Therefore, New Bedford Harbor should not be considered as migratory or foraging habitat that is utilized by sub-adult or adult Atlantic sturgeon.

5 Analysis of Potential Effects of the Proposed Action

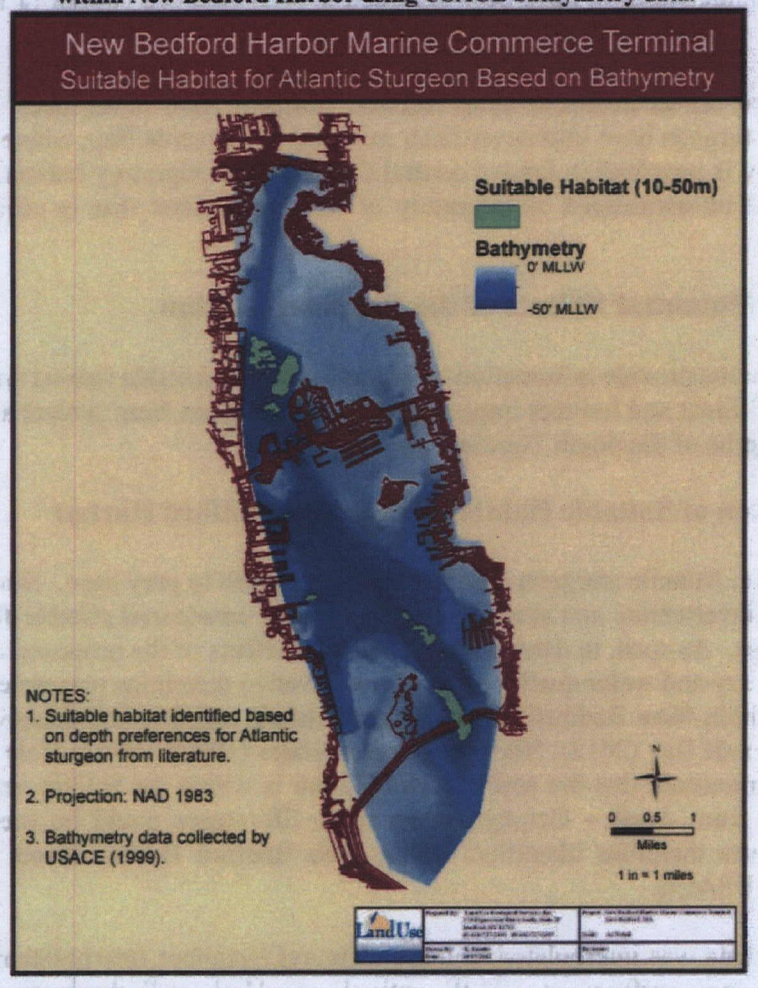
The following sections provide information on identification of suitable habitat within New Bedford Harbor, and assessment of direct and indirect impacts to Atlantic sturgeon from project activities, and discussion of the ecological benefits of the South Terminal project.

5.1 Identification of Suitable Habitat within New Bedford Harbor

As discussed above, Atlantic sturgeon distribution is correlated to prey base. New Bedford Harbor contains sufficient benthic invertebrate and shellfish resources to be considered suitable forage habitat for sub-adult and adult life stages. As such, to determine the potential effects of the proposed action on Atlantic sturgeon resources, bathymetry and water quality data was reviewed to determine parameters to be utilized to identify suitable habitat within New Bedford Harbor. Temperature, salinity, and dissolved oxygen data from The Coalition for Buzzards Bay (2012), Normandeau Associates (1999), Woods Hole Group (2010), and NOAA NODC (2012) demonstrate that the entire Lower Harbor is within the habitat range for sub-adult and adult Atlantic sturgeon from April – October, when these life stages could be present according to NMFS. Suitable habitat was therefore identified within New Bedford Harbor based on 1998 bathymetry data obtained from the USACE.

Bathymetry point data was interpolated using the Natural Neighbor Interpolation Tool (Spatial Analyst) in ArcMap 10 to develop a surface raster for the entire Lower Harbor. Bathymetry in the Lower Harbor ranges from -50.7 feet – 0 feet MLLW (-15.5 – 0 m MLLW). Based on habitat parameters identified in NRDC (2009), ASSRT (2007), and Stein et al. (2004), areas with water deeper than -32.8 feet (10m) MLLW were extrapolated to identify suitable habitat for Atlantic sturgeon sub-adults and adults within New Bedford Harbor (Figure 2). As depicted in Figure 2, there are only small pockets, all within the federal navigation channel and maneuvering area north of Pope's Island, wherein suitable depths exist for Atlantic sturgeon in the lower New Bedford Harbor project area. Suitable habitat identified represents less than 2% of the harbor area.

Figure 2. Suitable habitat areas for Atlantic sturgeon sub-adults and adults within New Bedford Harbor using USACE bathymetry data.



Although small areas of suitable habitat have been identified within the New Bedford Harbor Federal navigation channel, based on bathymetry and depth preferences for sub-adult and adult Atlantic sturgeon, it is highly unlikely that Atlantic sturgeon sub-adults or adults migrate to waters within the Lower Harbor, as sturgeon would need to cross large stretches of unsuitable habitat to reach these areas. As discussed in Section 4 above, sub-adult and adult sturgeon typically inhabit shallow coastal waters, conducting long-distance migrations along the coast within a depth corridor of 10 – 50 m. Higher concentrations of these life stages are associated with open bays and coastal areas, such as Massachusetts Bay (open bay) and coastal Rhode Island. Inland migration only occurs during spawning runs into large freshwater rivers, and the Acushet River is not spawning habitat for Atlantic sturgeon. Therefore, although New Bedford Harbor has small areas of adequate depth within the Federal navigation channel, and prey base to support foraging sub-adult and adult Atlantic sturgeon, it should not be considered as habitat that is utilized by this species.

5.2 Direct Impacts

The following sections summarize potential direct impacts to Atlantic sturgeon, including the potential for physical impacts and acoustic impacts, from the proposed South Terminal project.

5.2.1 Physical Impacts

Atlantic sturgeon are susceptible to entrainment in dredge drag-arms, impeller pumps, hydraulic pipelines, and bucket-and-barge dredge operations (ASSRT, 2007). Studies have shown, however, that sub-adult and adult sturgeon avoid dredge project areas during construction (ASSRT, 2007).

Dredging associated with the South Terminal project is not expected to impact Atlantic sturgeon, as dredging is proposed outside of the areas identified in Section 5.1 as suitable habitat (Figure 1). Placement of dredge spoil in the CAD cells north of Pope's Island will overlap small areas identified as suitable habitat. However, as stated above, New Bedford Harbor should not be considered habitat utilized by Atlantic sturgeon due to its generally shallow depths and distance from the coastal migratory corridor. Furthermore, sturgeon would need to cross large stretches of unsuitable habitat to reach these areas. Finally, Atlantic sturgeon have never been recorded or observed in New Bedford Harbor. Therefore, no direct, physical impacts to Atlantic sturgeon are expected from the South Terminal project.

5.2.2 Acoustic Impacts

In-water construction activities, such as the pile driving, dredging and use of non-explosive rock removal methods, and (potential) use of explosives proposed for the South Terminal project, generate sound that has the potential for negative effects on Atlantic sturgeon. Several studies have documented the effects of in-water construction activities such as pile driving and use of explosives on various species of finfish. Effects range from behavioral (startle response, avoidance), to physiological (stress, temporary or permanent hearing loss, structural and cellular damage of auditory and non-auditory tissues), to lethal (Normandeau Associates, 2012; Caltrans, 2009; Popper & Hasting, 2009; Hastings & Popper, 2005; Yelverton et al., 1975).

NMFS utilizes two sets of criteria to assess potential impacts of in-water sound producing activities on fish, one for non-explosive sound and one for use of explosives. Criteria for injury to fish from pile driving activities were established by the Fisheries Hydroacoustic Working Group (FHWG, 2008). NMFS Northeast Region has adopted these criteria, summarized in Table 3 below.

Table 3. Criteria for assessment of impacts on Atlantic sturgeon from pile driving and non-explosive rock removal.

Threshold	Level
Onset of Injury: Peak	206 dB re 1 µPa
Onset of Injury: Cumulative	187 dB re 1 $\mu Pa^2 \cdot s$
Behavioral Effects	150 dB_{RMS}

For blasting activities, NMFS does not have formal acoustic guidelines or protective criteria for fish. NMFS provided the Commonwealth with the guidelines summarized in Table 4 for use in this acoustic modeling exercise, based on a study performed by Moser (1999) to assess acoustic impacts on juvenile shortnose sturgeon (*Acipenser brevirostrum*) and striped bass (*Morone saxatilis*).

Table 4. Criteria for assessment of impacts on Atlantic sturgeon from use of explosives.

Threshold	Level
Onset of Injury: Peak Pressure Level	75.6 psi
Onset of Injury: Peak Impulse Level	18.4 psi•msec

To determine potential effects of the South Terminal project in-water construction activities on Atlantic sturgeon, JASCO Applied Sciences (Dartmouth, Nova Scotia) conducted an acoustic modeling study of the

project site to determine sound levels in New Bedford Harbor that may result from pile-driving, non-explosive rock removal, and use of explosives for rock removal. Site location for each model scenario was based on a worst-case scenario, i.e. the location where sound propagation would extend farthest from the source.

Interpretation of the modeling results to assess potential impacts to Atlantic sturgeon is provided in the following sections.

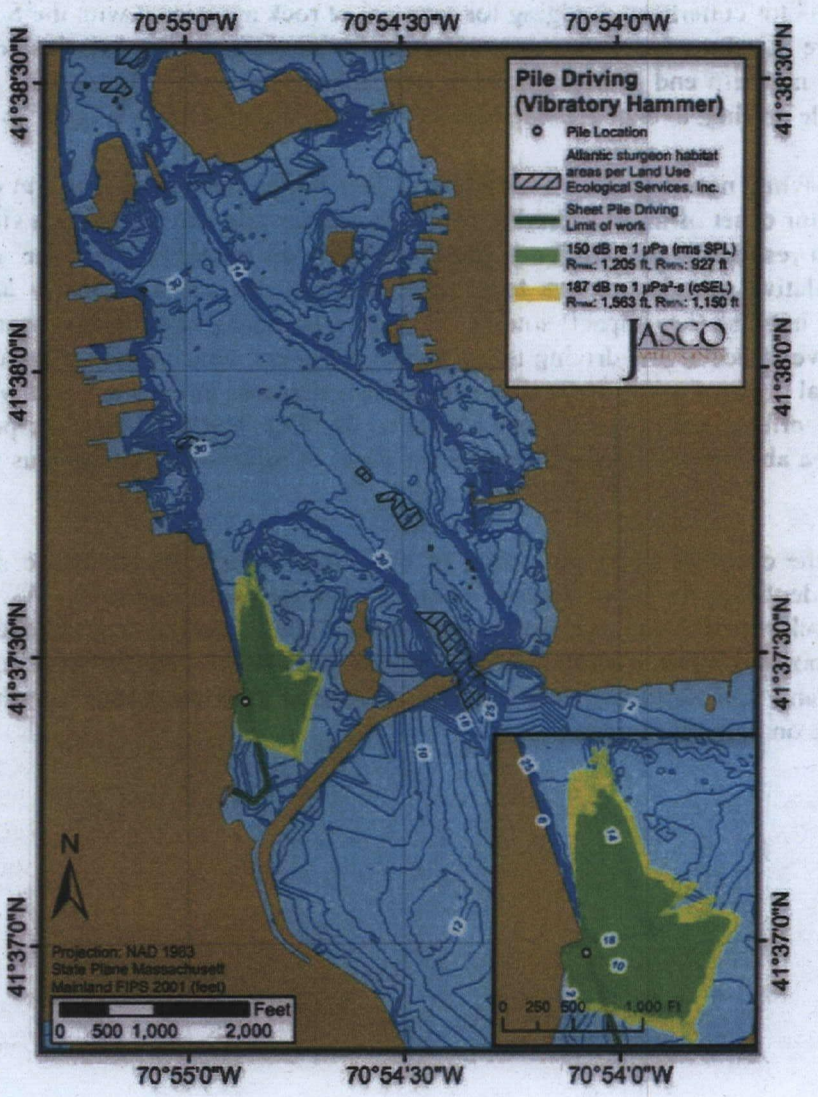
5.2.2.1 Vibratory Pile Driving

Pile-driving for the South Terminal project will be performed using a vibratory hammer. Vibratory pile driving produces a continuous sound with peak pressures lower than impact pile driving. Sound signals are typically a low fundamental frequency characterized by the speed of rotation of the vibratory hammer, and its higher harmonics (Normandeau Associates, 2012).

Acoustic modeling results for pile driving with a vibratory hammer are depicted in Figure 3. As shown in Figure 3, pile driving using a vibratory hammer does not produce a peak sound pressure level (SPL) above the 206 dB re 1 µPa threshold for onset of injury. Cumulative sound exposure level (cSEL) results for onset of injury are based on a threshold established for impulse (i.e. impact) sounds. Pile driving using vibratory hammers produces a continuous sound that does not have the same cumulative effect as pile driving using impact hammers, which produce impulses. It is therefore likely that the area of potential onset of injury is smaller than what is depicted in Figure 3, and would be contained within the behavioral effects area (Marie-Noel Matthew, JASCO Applied Sciences, personal communication). However, in the absence of threshold criteria for onset of injury from continuous sound, the impulse threshold value must be used.

Model results depicting areas for onset of injury and onset of behavioral effects do not overlap suitable habitat areas identified for New Bedford Harbor (Figure 3). Therefore, acoustic modeling demonstrates that pile driving using a vibratory hammer associated with the South Terminal project will have no acoustic effects on Atlantic sturgeon.

Figure 3. Acoustic modeling results for pile driving activities in New Bedford Harbor.



5.2.2.2 Dredging and Use of Non-Explosive Rock Removal Techniques

Noise produced by dredging is dependent on the type of dredge used and the sediment being dredged. Mechanical dredging, using a bucket, grab, or backhoe dredge, produces a repetitive sequence of sounds generated by winches, bucket impact with substrate, bucket closing, and bucket emptying. In addition, operation of mechanical parts of grab and backhoe dredges produces sharp transient sounds. Suction dredging, using a hopper or cutterhead dredge, produces a combination of sounds from relatively continuous sources that include the dredge engine and propeller, operation of pumps, and drag head movement along the substrate (Normandeau Associates, 2012). Substrate properties affect the production of sound with dredging activities. Dredging of sandy substrates creates less noise than dredging of rocky substrates.

A comparison of prospective sound data found in the literature indicates that the highest level of acoustic and vibrational sound (and thus the highest potential for acoustic impacts on the resource) is most likely to come from cutterhead dredge activities (Marie-Noel Matthews, JASCO Applied Sciences, personal communication). Accordingly, as the activity to have the most likely highest resource impact, the

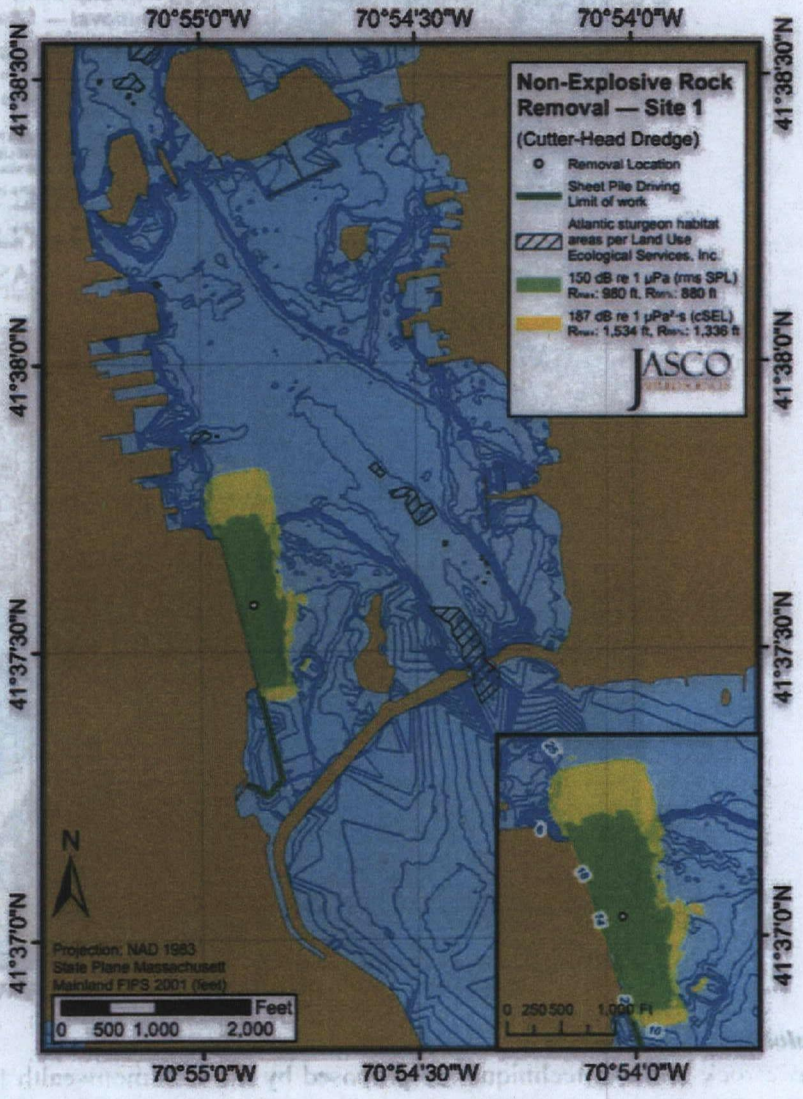
cutterhead dredge activity for the breakup of rock is the activity that was modeled for this section. Acoustic modeling results for cutterhead dredging for removal of rock associated with the South Terminal project are depicted Figure 4. Two locations were selected for modeling. Site 1 is located within the navigation channel, at the northern end of potential rock removal activities (Figure 4a). Site 2 is the same location as modeled for pile driving, to enable comparison of the two sound sources (Figure 4b).

As with pile driving, non-explosive rock removal does not produce peak levels at or above the 206 dB re 1 µPa threshold for onset of injury. Similar to the results for pile driving using a vibratory hammer (Section 5.2.2.1), model results for cumulative impacts are likely an overestimate of the actual extent for onset of injury. Cumulative sound exposure level (cSEL) results for onset of injury are based on a threshold established for impulse (i.e. impact) sounds. Dredging produces a continuous sound that does not have the same cumulative effect as pile driving using impact hammers, which produce impulses. It is likely that the area of potential onset of injury is smaller than what is depicted in Figure 4, and would be contained within the behavioral effects area (Marie-Noel Matthew, JASCO Applied Sciences, personal communication). However, in the absence of threshold criteria for onset of injury from continuous sound, the impulse value must be used.

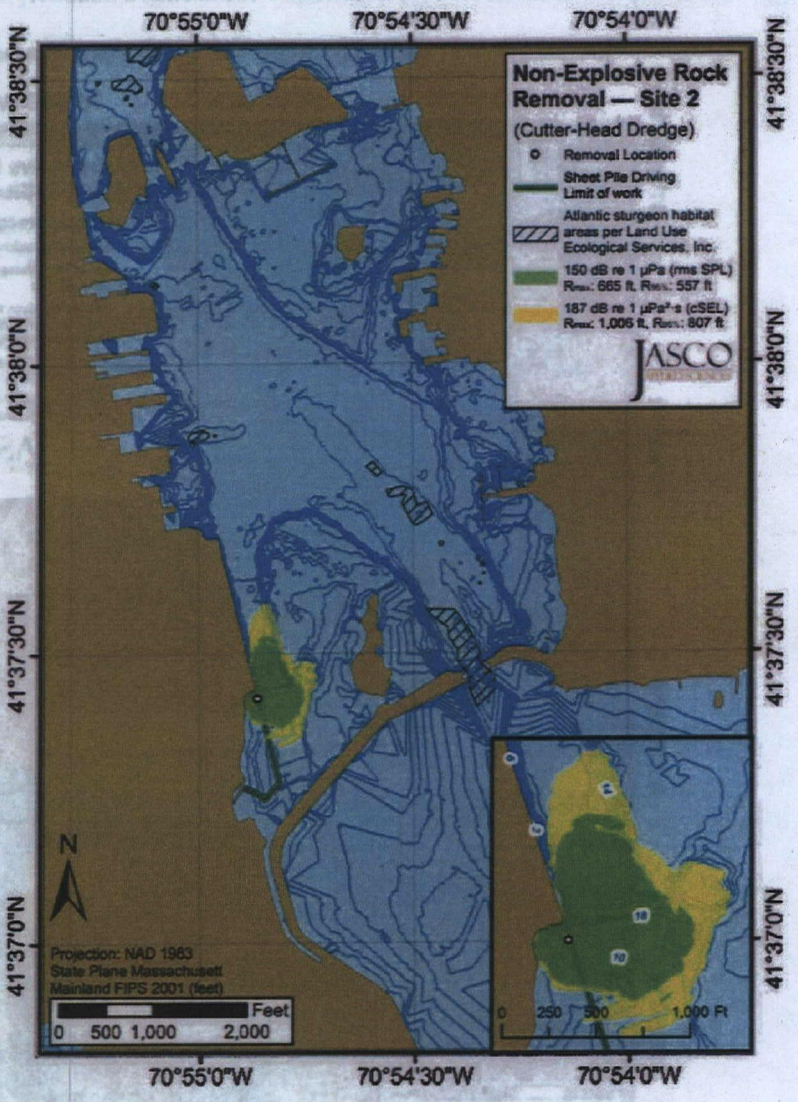
Areas within the onset of injury and onset of behavioral effects thresholds do not overlap with suitable habitat areas identified for New Bedford Harbor, as depicted in Figure 4. As stated above, cutterhead dredging for rock removal was modeled as it produces highest level of acoustic and vibrational sound of the dredging and non-explosive rock removal techniques proposed. Modeling results therefore demonstrate that dredging and non-explosive rock removal associated with the South Terminal project will have no acoustic effects on Atlantic sturgeon.

Figure 4. Acoustic modeling results for non-explosive rock removal activities in New Bedford Harbor. (a) Location #1, within the deeper navigation channel area (b) Location #2, the northern boundary of the South Terminal.

4(a) Location #1, within the deeper navigation channel area.



4(b) Location #2, the northern boundary of the South Terminal.



5.2.2.3 Explosives

Explosives as a rock removal technique are proposed by the Commonwealth for the New Bedford Harbor South Terminal project as a last resort for removal of rock if non-explosive techniques prove ineffective. If explosives are required to remove rock within the proposed navigation channel, they will be placed in a drilled shot hole beneath the floor of the Harbor and covered, which will act to attenuate the sound and acoustic energy in the water column. Additionally, separate engineering modeling of potential vibrational impacts of blasting on the New Bedford Hurricane Barrier (requested by the USACE) has also been conducted; results indicate that the size of blast charges should be limited to ≤ 50 lbs to ensure that potential blasting for the South Terminal project will not impact the hurricane barrier, which is located to the south of the project site (Figure 1). As such, the Commonwealth will be requiring that the selected contractor limit the size of blast charges to ≤ 50 lbs. In keeping with this requirement, acoustic modeling conducted for resources impacts utilized charge sizes from 10 – 50 lbs.

Underwater explosions produce a spherical shock wave with a large oscillating gas bubble that radiates sound. Pressure from underwater explosions consists of a primary pulse (shock) characterized by a rapid

rise time and exponential decay, followed by a series of bubble pulses (Normandeau Associates, 2012). Type and size of explosive charge contribute to the pressure produced by an explosive.

Acoustic modeling of explosives was performed for charge sizes of 10 – 50 lbs buried at depth as described above. Results of the model are depicted in Figures 5 and 6. Figure 5 depicts peak pressure threshold (Figure 5a) and impulse level threshold (Figure 5b) for use of explosives without mitigation. Figure 6 depicts peak pressure threshold (Figure 6a) and impulse level threshold (Figure 6b) for use of explosives coupled with use of bubble curtain(s) to mitigate potential impacts.

Figure 5. Acoustic modeling results of the use of explosives of various charge sizes for rock removal. (a) Peak pressure level threshold (left). (b) Impulse level threshold (right).

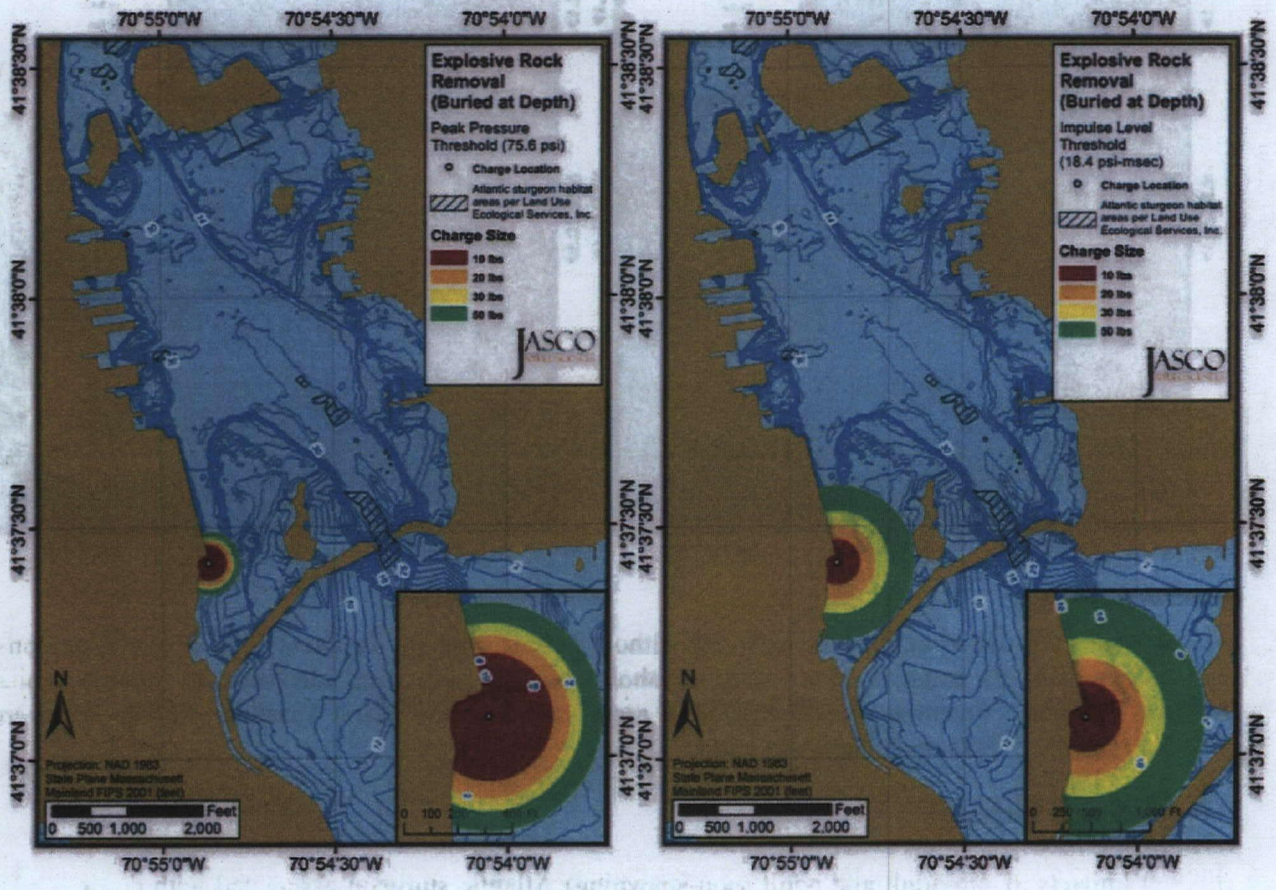
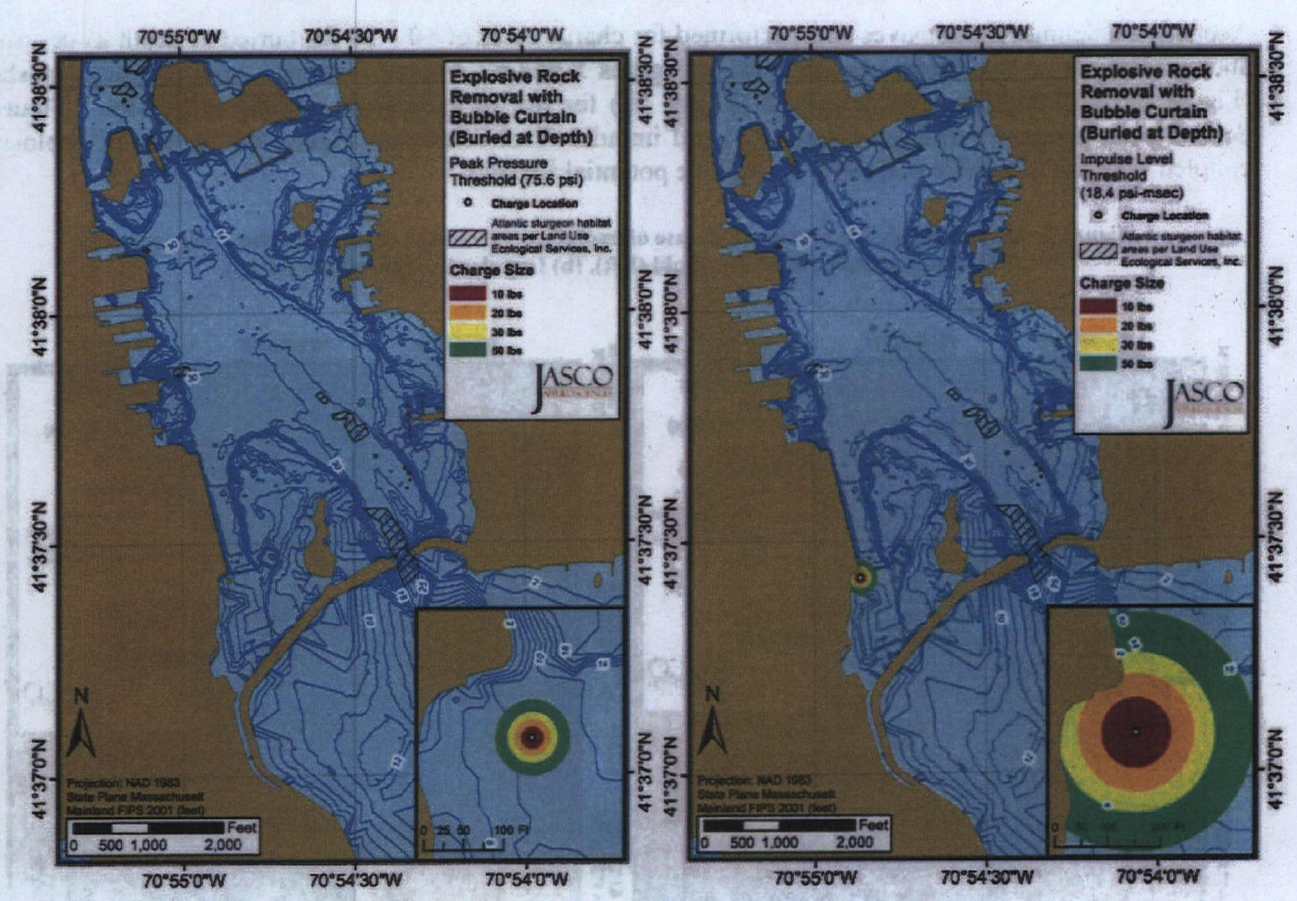


Figure 6. Acoustic modeling results of the use of explosives for rock removal with bubble curtain mitigation. (a) Peak pressure level threshold (left). (b) Impulse level threshold (right).



Model results for use of explosives with and without bubble curtains for attenuation of sound demonstrate that neither peak nor impulse level injury thresholds overlap with areas identified as suitable habitat for Atlantic sturgeon. Potential use of explosives associated with the South Terminal project will therefore have no acoustic effects on Atlantic sturgeon.

5.3 Indirect Impacts

Indirect impacts to sub-adult and adult (non-spawning) Atlantic sturgeon associated with dredging and in-water construction activities include impacts to water quality and benthic prey assemblages. Dredging and in-water construction disturbs bottom sediments, resulting in increases in turbidity during construction activities. Dredging and in-water construction also results in the destruction of benthic feeding areas of Atlantic sturgeon.

Although the benthic community will be impacted by dredging and in-water construction, New Bedford Harbor is not suitable habitat utilized by Atlantic sturgeon due to its generally shallow depths and distance from the coastal migratory corridor. As noted in Sections 4 and 5 above, Atlantic sturgeon have never been recorded or observed in New Bedford Harbor. Therefore, indirect impacts to Atlantic sturgeon are not expected from the South Terminal project.

5.4 Ecological Benefits of the Proposed Project

New Bedford Harbor is contaminated with PCBs and metals (ref. to Section 2.2). PCB contamination in finfish causes reproductive and developmental effects, including reproductive failure and mortality. Exposure to PCBs has also been shown to cause fin erosion, epidermal lesions, blood anemia, and altered immune response in finfish (ASSRT, 2007). Toxic metals may cause death or sub-lethal effects to finfish, and chronic toxicity of some metals may lead to loss of reproductive capabilities, body malformation, inability to avoid predation, and susceptibility to infectious organisms (ASSRT, 2007).

Dredging associated with the South Terminal project will reduce the levels of PCBs and metals in sediments within the areas to be dredged. Contaminated sediments will be disposed of/confined in a CAD cell as outlined in Section 2.2. Removal of contaminated sediments and disposal or confinement will reduce the future potential for finfish and benthic organisms to be exposed to these contaminants. Monitoring as part of EPA's Superfund cleanup has shown measureable decreases in PCB concentrations, and corresponding increases in benthic community conditions, for New Bedford Harbor.

6 Determination of Effects on Atlantic Sturgeon

Based on the analysis presented above, the proposed New Bedford Harbor Marine Commerce Terminal (or South Terminal) project is unlikely to adversely affect the Atlantic sturgeon, *Acipenser oxyrinchus oxyrinchus*. New Bedford Harbor and the Acushnet River are not considered spawning habitat for this species, and therefore, the project will have no direct impacts on Atlantic sturgeon spawning or early life stages. In addition, the project is sufficiently distant from the closest extant spawning river for Atlantic sturgeon, the Hudson River in New York, and will therefore have no indirect impacts to spawning or nursery habitat.

The South Terminal site and associated locations of dredging and sediment placement are located in areas that are not suitable habitat for migratory sub-adult and adult Atlantic sturgeon due to shallow water depths and distance from the known coastal habitat and migratory corridor. Based on the existing literature and survey data, Atlantic sturgeon have never been observed in New Bedford Harbor, nor have they been recorded in Buzzards Bay, where they would be more likely to occur as the bay is proximal to known coastal foraging and migratory habitat. Furthermore, sub-adult and adult sturgeon avoid dredging and in-water construction activities, and so, in the unlikely event that a transient sturgeon traveled through the hurricane barrier into lower New Bedford Harbor, dredging and in-water construction activities would drive it out of the project area. Therefore, the project will have no direct effects on sub-adult or adult Atlantic sturgeon. Moreover, as New Bedford Harbor is not considered foraging habitat for Atlantic sturgeon due to shallow depths, the project will have no indirect effects on sturgeon foraging success.

7 Conclusions

The proposed New Bedford Harbor Marine Commerce Terminal project is not expected to affect the Atlantic sturgeon, *Acipenser oxyrinchus oxyrinchus*.

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EPA Final Determination for the South Terminal Project
New Bedford 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

FINAL 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). EPA received additional details about the Project in September and October 2012, none of which affect this finding of compliance with the Floodplain Management Executive Order. See Final Determination listing of additional significant deliverables received from the Commonwealth which have all been incorporated into the Administrative Record for this Project.

The project's components include:

1. Installation of a 1000 linear foot bulkhead in the Harbor adjacent to an existing 200 foot bulkhead to form a 1200 linear foot bulkhead, and placement of approximately 134,000 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 21.54 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, and 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's") Final Determination regarding Executive Order 11988 as applied to the State Enhanced Remedy and finds that the Executive Order 11988, as applied to remedial decisions under CERCLA, is satisfied subject to the conditions included herein. This Final 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 thereunder, 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 release 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....

As the Determination notes, 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.

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.

2.4: Publication 9280.0-03 EPA A540/R-94/019 Considering Wetlands at CERCLA Sites (May 1994)

This EPA Guidance document 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**. [emphasis added]

3.0: TBC Policy Determination: 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 that its substantive requirements 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.

In section 4.4 of Appendix E to the Final Determination, EPA evaluated a number of alternatives to locating the SER in the South Terminal area. It concluded that those alternative sites were either impracticable or not less environmentally damaging than the proposed SER site. That analysis satisfies this prong on Executive Order 11988.

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, in its analysis of compliance with Section 404 of the Clean Water Act, EPA concluded that among the alternatives considered, the SER site was the least damaging practicable alternative that was consistent with Section 404 of the Clean Water Act. This determination satisfies the first half of this prong of Executive Order 11988. To satisfy the second half, 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 Appendix E to EPA's Final Determination of Compliance with Sections 404 and 10.

As part of its proposal, MassDEP anticipates filling approximately 0.11 acres of salt marsh, 2.07 acres of intertidal habitat, and 4.06 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 a concrete blanket 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

[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.**" **[Emphasis added]**

storage loss due to filling within the footprint of the facility. The effects of this loss would be experienced most significantly 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 and an analysis of the impact 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 within one year of completion of the CDF. A fact sheet issued by the New Bedford Harbor Trustee Council in June 2012 states that the Marsh Island restoration is anticipated to begin in late 2013. The Commonwealth has stated that as long as the Marsh Island restoration and the SER proceed on schedule, then the flood storage mitigation work will occur on a schedule that will, to the extent practicable, parallel the loss of flood storage capacity from construction of the SER project.[3] 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 for 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 Final Determination of Compliance with Sections 404 and 10.

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[2] In its "Response to USEPA Questions of October 12, 2012", MassDEP indicates that the Commonwealth is unaware of any other project in New Bedford Harbor for which the Marsh Island project is anticipated to be identified as mitigation for lost flood capacity. [The Commonwealth states that "it is certain that if such a project existed, the Commonwealth would be aware of it."]

[3] Id.

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. Issuing this document in draft and providing the opportunity to comment on it meets the early public review opportunity requirement.

EPA Final Determination for the South Terminal Project
New Bedford 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.

MassDEP has prepared a Construction Management Plan (CMP) to provide the public with details about the steps to be taken to minimize construction-related impacts. EPA has not conducted a full review and approval of the CMP as part of this Final Determination but will do so after issuance of the Final Determination to ensure the CMP is consistent with EPA's Determination. However, the CMP appears to 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. For example, the CMP:

- Includes a section on Public Involvement and Information that describes a process for informing the public about progress of construction and upcoming construction-related activities and to provide opportunities for public involvement.
- Identifies a point of contact for each of the relevant agencies associated with the work.
- Defines measures to minimize air quality impacts. Measures include the application of dust suppression water.

The CMP also appears to encourage contractors to use diesel oxidation catalyst retro-fitted vehicles and equipment and to require an air monitoring program that will be conducted throughout the construction process with air monitoring stations established to obtain daily measurements of airborne particulate matter. The CMP also appears to require that information will be made available to the surrounding community in an easily understandable format and that a sound management plan is proposed that minimizes offsite impacts from equipment that emit sounds.

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.

EPA continues to recommend that the requirements of the Massachusetts Executive Office of Environmental Affairs environmental justice policy 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).

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

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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 to:

> 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 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. The Commonwealth will implement an Invasive Species Management Plan ("ISMP") which includes a requirement to conduct annual monitoring on 1/3 of the pilings at the facility using divers. See MassDEP 2012r, "*New Bedford Marine Commerce Terminal Invasive Species Monitoring Plan – Facility, Bulkhead and Pilings.*" Thus, every 3 years, all of the pilings will be inspected for the presence of aquatic invasive species. If the survey identifies an invasive species not previously identified in New England, the Commonwealth will work with the Massachusetts Office of Coastal Zone Management, Aquatic Invasive Species Program to assess the ecological risk posed by the new invasive species and to develop and implement an invasive species control plan for the new species.

In addition, there is a potential for invasive species to colonize the terminal site and the salt marsh creation and restoration mitigation project that the Commonwealth will construct at River's End Park. EPA has reviewed the ISMPs for these areas (Id., and MassDEP 2012r, Appendix 12), and believes that the revised ISMPs, in conjunction with the requirements of the Final Mitigation Plan (MassDEP 2012r), will be adequate to control the spread of invasive plant populations at the facility and within the proposed wetland mitigation area at River's End Park.

In accordance with the Executive Order, EPA is requiring implementation of the various ISMPs as a condition of approval for the South Terminal Project.

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New Bedford 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.

EPA consulted with both FWS and NMFS pursuant to its obligations under FWCA. FWS did not provide comments on the South Terminal Project related to its interests under FWCA. NMFS did provide a recommendation on August 21, 2012 in its consultation role pursuant to FWCA. NMFS recommended that, in order to avoid adverse impacts to migrating anadromous fish, blasting activity should not occur between April 1 and June 30 of any year, and it noted that attenuation devices such as bubble curtains or cofferdams may reduce the noise level exposure to surrounding fish species and thus reduce impacts and mortality from blasting.

As discussed in Appendix H and Appendix I of EPA's Final Determination, EPA is not approving any blasting at this time. The Commonwealth has identified alternative rock removal techniques that are expected to result in acoustical impacts that would be substantially lower than those predicted for blasting. As a condition of the Final Determination, EPA is requiring that rock removal activities may not proceed until EPA evaluates the acoustic modeling study that the Commonwealth submitted on November 16, 2012 and determines the acceptability of the modeling methods and results, to ensure that the noise impacts will not adversely affect the anadromous and other fish species, including the Atlantic sturgeon.

For reasons discussed in sections 5, 6, and 7 of Appendix E (Compliance with Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act) of EPA's Final Determination, EPA has concluded that the South Terminal Project, if constructed consistent with approved plans, best management practices and mitigation measures, will ensure the conservation of fish and wildlife resources and will not cause significant adverse effects.

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Appendix P
Determination of Compliance – Consultation and Coordination with Indian Tribal Governments
Executive Order 13175

Executive Order 13175: Consultation and Coordination with Indian Tribal Governments

In accordance with the *EPA Policy for the Administration of Environmental Programs on Indian Reservations* (November 1984) and *Executive Order 13175: Consultation and Coordination with Indian Tribal Governments* (November 2009), tribal consultation involving the New Bedford South Terminal State Enhanced Remedy project has been ongoing since the start of the project.[1]

Since this State-Enhanced Remedy project has the potential to affect tribal interests, EPA Region I initiated consultation that established coordination and communication among EPA, the Commonwealth of Massachusetts, the Wampanoag Tribe of Gay Head (Aquinnah) and the Mashpee Wampanoag Tribe. Both tribes claim cultural affiliation with the project area.

Tribal environmental and historic preservation representatives participated in the consultation and communication activities that have been ongoing from December 2010 through October 2012. These consultation and communication activities included conference calls, on-site visits and other face-to-face meetings in the vicinity of the project or at the National Oceanographic and Atmospheric Administration campus in Woods Hole, Massachusetts, which was a mutually agreeable and convenient meeting location for both consulted tribes. A chronology of the consultation activities is included in the administrative record for this project.

During these meetings, the Commonwealth would describe progress in project planning and investigation activities, and EPA facilitated dialog with the tribes to ensure that tribal comments and concerns were expressed, understood, and acknowledged by all parties. The tribes received copies of reports, findings, and drawings associated with the project, and were provided with opportunities to comment and discuss any issues during the consultation meetings.

The consultation discussions with the tribes and the Commonwealth included substantive dialog on historical and environmental aspects of the project. Consultation under the authority of section 106 of the National Historic Preservation Act that has transpired is described in greater detail in Appendix G of EPA's Final Determination for the project. These discussions largely centered on the discovery and preservation of archaeological features (paleosols) that were identified as culturally significant to the tribes. The project design was altered to completely avoid these features, and a determination EPA issued in September 2012 found that the project will not affect historic properties.

During the course of the consultations, the Commonwealth discussed the project component that involved wetlands mitigation planning with the Tribes in August 2012,

[1] Consultations with potentially affected Indian tribes commenced prior to the effective date of the *EPA Policy on Consultation and Coordination with Indian Tribes* (May 2011). Nevertheless, EPA has conducted the consultations with these tribes in a manner generally consistent with that policy.

and both tribes requested that the Commonwealth consider bulrush and cattail plantings as part of the wetlands mitigation plan. The tribes identified these species as culturally significant. EPA and the Commonwealth then informed the tribes that the proposed wetlands mitigation scope involved saltwater marsh restoration, and that freshwater plant species such as cattail and bulrush would not be compatible with the proposed saltwater marsh wetlands mitigation plan.

The tribes were sent the Commonwealth's draft final mitigation plan on 11 October 2012 and were sent the Commonwealth's final mitigation plan on or around 23 October 2012. The Wampanoag Tribe of Gay Head (Aquinnah) relayed to EPA on 26 October 2012 that the Tribe has an interest in further discussion of the mitigation plan.

While EPA acknowledges the desire of the tribes to have culturally significant species included in the wetlands mitigation plan, the project does not involve impacts to any viable freshwater wetlands containing these plant species, and therefore there exists no impacted "traditional cultural property" comprised of these plant species that could be considered as a historic property under Section 106 of NHPA. For this reason, there is no federal obligation to take any action to mitigate under section 106 of NHPA. Since EPA received no objections from either tribe relative to historic properties within thirty days of the 28 September 2012 finding that the proposed project will not affect historic properties, EPA has fulfilled its responsibilities under Section 106 of the NHPA.

Additionally, the EPA has fulfilled its responsibilities under the authority Executive Order 13175 for conducting government-to-government consultation with the tribes regarding this final decision concerning the Commonwealth of Massachusetts South Terminal Project application. EPA has understood and considered the tribes' request that the Commonwealth include these freshwater species in the wetlands mitigation plan. EPA has concluded that doing so would not be practical because the mitigation will be focused on saltwater wetlands.

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Appendix Q
Responsiveness Summary

EPA Final Determination for the South Terminal Project
New Bedford Harbor State Enhanced Remedy
Responsiveness Summary

Table of Contents.

I. Introduction

EPA received comments from 58 separate stakeholders on its Draft Determination for the Proposed South Terminal project during the public comment period held from July 16, 2012 through August 21, 2012. See Attachment A for a list of those who submitted comments.

A. Summary of Comments

The comments reflect nearly unanimous support for the Proposed South Terminal Project. Comments centered around the prospect for jobs, economic growth for New Bedford and surrounding communities, and the great potential for a variety business expansion. Many comments stressed the importance of ensuring that New Bedford and its surrounding communities benefit from the Project, particularly in securing jobs, union apprenticeships and training so that local high school and college graduates have opportunities to work and build a life and future in the area. There were also a number of comments about the need to balance growth of the waterfront area against the impact on the local community and to ensure both are protective of human health and the environment.

Several comments, while voicing support for the primary use of the terminal to support the wind industry, did not support the use of a Confined Aquatic Disposal (CAD) cell for disposal of the navigational dredged sediment. Others noted that not all CADs in the Harbor are the same as each other. Some comments pointed out the important nexus between the Superfund dredge project and this State Enhanced Remedy project; that is, that the dredging associated with this South Terminal Project will remove contaminated sediment that would not be addressed by the Superfund remedy since PCB concentration levels are below the Superfund cleanup levels. There were also comments on the air monitoring and long-term monitoring requirements, impacts to shellfish and fishery habitat and proposed recommendations for avoiding and minimizing those impacts. As part of its comments, the Commonwealth of Massachusetts submitted a revised site configuration plan. Finally, a significant number of comments urged swift action by EPA to issue this Final Determination approving this Project.

EPA did receive a number of comments about the New Bedford Harbor Superfund Site remediation. Because the Superfund remediation is outside the scope of this comment period, those comments are not relevant to this Project and will not be included in this Responsiveness Summary. EPA directs questions about the Harbor Superfund cleanup to www.EPA.gov/nbh for more information or to EPA Remedial Project Manager (RPM) Elaine Stanley, one of the three RPMs for the Site, at Stanley.elainet@epa.gov.

All comments received are included in the final Administrative Record for the Final Determination for the South Terminal Project. EPA's responses to these comments are described below.

II. Response to Comments

A. General Comments

1. *Comments nearly unanimously supported construction of the South Terminal and its potential use to support the offshore wind industry and future use for cargo shipping as an important economic boost for the New Bedford area.*

EPA Response:

EPA thanks all of those who commented and agrees that the planned and future use of the marine terminal offers the potential for important economic opportunity for New Bedford and the surrounding region. EPA evaluated all aspects of the Project to ensure it does not cause significant short or long-term impacts on the local community and that it minimizes impacts to all resources to the maximum extent practicable. Mitigation for those impacts that will be caused has been included in the Project and is a condition of EPA's approval.

The South Terminal project continues to support the nexus of the State Enhanced Remedy to the Superfund cleanup in that the navigational dredging will remove 225,600

cubic yards of PCB-contaminated sediment with concentrations below 50 ppm that would not have otherwise been addressed since the PCB concentration levels are below the Superfund dredging cleanup levels for the lower Harbor. In addition, upland areas with soil contamination that may not have been addressed for a long time will be remediated as part of this Project pursuant to the state's hazardous waste cleanup program.

On balance, EPA believes this Project can achieve both its development goals of serving as a marine terminal to support the offshore wind industry and be conducted in a safe, protective manner.

2. *Many comments identified the urgency for EPA to issue a positive Final Determination so that job creation and business expansion could begin as soon as possible.*

EPA Response:

Job creation and economic development are important to EPA. It is also our responsibility to ensure any proposed project is protective of human health and the environment and, as part of the State Enhanced Remedy, meets all substantive federal and state requirements. EPA views its mission to protect human health and the environment very seriously and wants to ensure this Project meets all the necessary criteria before a final determination was issued. Significant resources were devoted to ensuring protectiveness by, among other things, identifying and analyzing the impacts of the Project and reviewing the mitigation plans for those impacts. EPA conducted a careful review of the alternate locations identified by the Commonwealth to site this terminal, and found the South Terminal location to be the least environmentally damaging practicable alternative for a variety of reasons. Consultation with other federal agencies was conducted where required and the Commonwealth provided the additional information outlined in the Draft Determination. EPA has reviewed all the material provided and believes the project meets all substantive requirements. With this Final Determination, the South Terminal Project can now move forward.

3. *Several comments raised concerns about the use of a CAD cell to contain the navigational dredged sediment contaminated with less than 50 ppm PCBs and voiced fears of future leakage or failure of the CAD cell and lack of funding to address potential leakage or failure of this CAD cell.*

EPA Response:

EPA and the Commonwealth have determined that CAD cells are a safe and economical disposal alternative to permanently isolate and dispose of PCB-contaminated sediment generated from navigational dredging. Three navigational CAD cells have been built to date, with two now filled. These two (the borrow pit and CAD cell 1) will be capped as part of this Project and the third cell (CAD cell 2) is nearly full and will reach capacity as

a result of disposal of dredged sediment during this Project. Finally, a fourth navigational CAD cell, CAD cell 3, will be constructed and used during this Project.

A stable, clean, three foot thick cap will be highly effective in isolating the contaminated dredged material from the surrounding environment. Sediment which will naturally build up on the cap will further isolate the dredged material in the cell. As required by both EPA and the Commonwealth, long-term monitoring and institutional controls to prevent disturbance will ensure the stability of the cap. After final construction and capping, completed CAD cells will be clearly marked on navigation charts, plans and other records of construction, so they may be known to mariners and planning officials, monitored in the future or re-visited, if necessary, for any reason. Due to the expected permanence of the cells, and their ability to prevent further spread or contact with the environment during storage, the CAD cells will be equally suitable for permanent disposal of PCB impacted sediment.

CAD cell technology is a recognized, protective contaminated sediment disposal approach that is being used more and more frequently, especially for navigational dredged material that is unsuitable for open water disposal. CAD cells have been used in recent years for navigational dredging in major New England ports such as Boston, New Bedford and Providence, and have also been used (or selected for use) at contaminated sediment Superfund sites in Washington, Minnesota and Maine (EPA, 2010).

Significant engineering studies as a part of the permitting process of the Dredge Material Management Plan for New Bedford / Fairhaven Harbor from 1999 to 2003, completed by the Commonwealth, support this determination.

4. *EPA received comments recognizing that one of the many benefits of the Project was the removal of PCB-contaminated sediment that would not otherwise be addressed as part of the Superfund cleanup and the remediation of upland areas that might not otherwise be addressed for a long period of time.*

EPA Response:

EPA appreciates the comments that recognize the environmental and public health benefits of the Project. As stated above, EPA agrees that the navigational dredging associated with this Project provides additional protectiveness to the Harbor remediation by removing sediment with concentrations below 50 ppm.

With regard to upland contamination, although not subject to Superfund cleanup, EPA agrees that there are environmental and public health benefits by identifying and characterizing contaminated areas at the upland properties that comprise the main terminal facility and from the remediation, under the state cleanup law, which will occur on these properties. During due diligence activities completed at the proposed site, previously unknown concentrations of PCB and petroleum hydrocarbon impacts to soil were located. Identification of these impacted soils will allow the Commonwealth to

address the potential hazards to the public that these soils represent. The Commonwealth, through this project, will excavate the most highly contaminated soils ("hot spots") and dispose of that material off-site in accordance with the Massachusetts Contingency Plan (MCP) and the Toxic Substances Control Act (TSCA). The remainder of the site will be capped to ensure that any residual contaminated material is sequestered and remains isolated from human and environmental interaction. The upland environmental investigation and remediation portion of the project is further discussed in the response to a comment provided by Mr. Frank Haggerty. (See Comment II.C.8) EPA has also conditioned its Final Determination on the Commonwealth performing due diligence on ancillary properties and, if necessary, remediating those properties under the state cleanup law.

5. *A significant number of comments focused on concerns about providing jobs to workers in New Bedford and its surrounding communities and about providing opportunities through jobs to retain local graduates and young adults so that this segment of the population can build a future in their hometowns. Questions were raised about union hiring and apprenticeships and about job training programs. Some comments expressed concern that jobs would be directed only to big companies and union workers to the exclusion of those most impacted by the project.*

EPA Response:

EPA thanks all of those who submitted comments on this very important issue of jobs and retaining local talent and recognizes not only the benefits of job creation from the economic investment of such a project but also recognizes that the local community sustains the most impacts from the Project. It is EPA's role to ensure that this Project is protective of human health and the environment and meets the substantive requirements such a Project must meet were it a permitted project. Hiring and contracting objectives are beyond the purview of EPA. The Commonwealth of Massachusetts, as the Project proponent and lead agency would be responsible for hiring and contracting decisions. EPA has passed these concerns on to the Commonwealth.

B. Detailed Comments from Elected Officials

1. *Jon Mitchell, Mayor of New Bedford, voiced strong support for the Project and the terminal's primary use to support the offshore wind industry. He noted the attributes that make New Bedford well positioned to support the offshore wind industry, particularly its deep water port, industrial space to assemble and stage wind turbines, strong highway and railway access, and the seafaring and manufacturing skills the industry requires. The Mayor also commented on the use of a CAD cell as part of this Project, noting, in his view, "the infinitesimal risk, the leakage from the CAD cells contemplated by this project is greatly outweighed by the potential thousands of jobs that will be created as a result of this Project, bringing in millions and perhaps billions of dollars of revenue into the pockets of*

New Bedford citizens and citizens of the surrounding region" and, he noted, not all CAD cells are the same.

Remarking on the efforts of state and city staff and the diligence of EPA on this Project, he urged swift action on EPA's issuance of a final determination.

EPA Response:

EPA thanks the Mayor for his comment supporting the South Terminal Project and the marine terminal's primary use to support the offshore wind industry. For all the reasons set out in response to General Comment No. 3 above, we agree that the CAD cell contemplated by this Project is protective and appreciate the Mayor's support for the CAD cell. We also agree with the Mayor that the New Bedford community and surrounding area, with its rich history in seafaring and manufacturing, has much to offer as the working waterfront continues its path towards modernization. See EPA's response to General Comment No. 2 above regarding the need for urgency in issuing this Final Determination.

Because of the magnitude and complexity of the Harbor cleanup and the State Enhanced Remedy, EPA has had a long-standing relationship with the City of New Bedford, and its surrounding communities. We thank the City and all its departments and agencies for its collaboration and support in working with EPA to ensure that remediation and navigational dredging are done safely as development and economic revitalization occurs in this region.

2. *State Representative Tony Cabral voiced his strong support for the Project, noting his past efforts to secure funding for it, his commitment to continue those efforts and the potential for jobs that the Project could bring to the area. He commented on the positive benefits of removing contaminated sediment that would not otherwise be addressed by the Superfund dredging and of the savings that result from the use of clean dredged material as fill for construction of the terminal itself (the confined disposal facility). Representative Cabral also commented on EPA's responsibility to minimize the environmental impact of the Project during construction and during the terminal's operation, and the Project's impact on the nearby residents. He emphasized a hope that all interested stakeholders listen to each other and take all environmental concerns raised seriously while balancing the positive aspects of the Project.*

EPA Response:

EPA thanks State Representative Tony Cabral for his comment in support of the Project. EPA agrees there will be positive benefits from removing contaminated sediment that would not otherwise be addressed under EPA's Superfund dredging as well as from the use of clean dredged material as fill for the terminal itself. In addition, some of this clean material will be used in the creation of subtidal and intertidal habitat to mitigate some of

the Project's impact on natural resources. It is EPA's role to ensure that this Project is protective of human health and the environment and meets the substantive requirements such a project must meet were it a permitted project.

Regarding potential environmental impacts of the Project during construction and potential impacts on nearby residents, in this Final Determination, EPA is requiring that the Project meet all protective performance criteria it has established for the construction of the Project. In addition, EPA is requiring a Construction Management Plan prior to the start of work which will outline how impacts on the community will be reduced to the maximum extent practicable through the use of measures such as requiring the use of ultra low sulfur diesel fuel in all diesel engine powered equipment, the use of mufflers and enclosures to minimize sound, and certain traffic patterns to minimize impacts.

EPA has also passed these concerns on to the Commonwealth of Massachusetts, as the Project proponent and lead agency overseeing and monitoring all aspects of the Project.

3. *State Representative Chris Markey voiced his support for the Project, commenting that this Project will be a total game changer for a city like New Bedford. He noted this is the first real opportunity to look towards the future, not just two or three years, but 25 years down the road, and that it is supported by the resources of many sectors including UMass Dartmouth, a leader in marine renewable energy, the Mayor of the New Bedford, and the state Capital Assets and Bonding division of which Rep. Cabral is the chair. "We have incredible resources to do it, and it needs to get done."*

EPA Response:

EPA thanks State Representative Chris Markey for his comment in support of the Project.

4. *Congressman Bill Keating (through James Quigley) offered a statement of support commenting that [the Project] "...marks a milestone in the state and federal collaboration. The development of the New Bedford Marine Commerce Terminal will be the first facility in the country to support every phase of offshore wind development..". He notes "...this region has potential to become the magnet for all aspects of renewable energy industry...", and that he is '...especially eager to witness the expansion of the economic opportunity for the port in New Bedford with additional capacity for container and cargo shipping." Finally, he noted that projects such as "...the New Bedford Marine Commerce Terminal will contribute to our nation's larger goal of reducing the dependence on foreign oil and fighting back against global warming and climate change."*

EPA Response:

EPA thanks Congressman Keating for his comment supporting the Project and shares his view that South Terminal's use to support the offshore wind industry will contribute to reducing global warming and climate change.

5. *Congressman Ed Markey (through Mark Gallagher) offered a statement of support for the Project commenting on the potential for "...New England to become a world leader in the offshore wind industry..." and that "...investing in the New Bedford Marine Commerce Terminal will come back to Massachusetts many times over in the form of new jobs and economic growth in the region."*

EPA Response:

EPA thanks Congressman Markey for his comment supporting the Project.

6. *Senator John Kerry (through Amy Kerrigan) offered a statement of support noting, "The New Bedford Marine Commerce Terminal represents an important milestone for the offshore wind industry in Massachusetts and the nation. It will be the first U.S. port engineered to loads required for turbine assembly and deployment. The terminal is also an important step in America reclaiming its position as the world in innovative clean technologies." The Senator also noted the value of the Project in reducing the threat of climate change, the potential to create critically needed jobs in New Bedford, and that it will bring new businesses that will help grow the economy in Southeastern Massachusetts. He voiced his opinion that "...the terminal must be developed in a way that protects the important ecosystems in Massachusetts as well as federal waters and the health of workers and residents living near the port". He also noted that New Bedford is "... the ideal location. Inside the hurricane barrier near high wind areas and readily accessible by water and land-based modes of transportation and it's already host to a skilled maritime industrial workforce."*

EPA Response:

EPA thanks Senator Kerry for his comment supporting this Project and shares his view that the South Terminal Project and its supporting role in the wind industry can help reduce the threat of climate change. We also agree that the Project must protect human health and the environment and, for all the reasons stated above in the General Comment section, we find that this Project meets those standards.

7. *Congressman Barney Frank (through Inez Goncalves-Drolet) offered a statement in support noting the Project "...has immeasurable economic benefits to the state in general and the city specifically." With regard to disposal of dredged sediment, he said, "...it is important to fully educate the public regarding this disposal method, and I commend the EPA and the Commonwealth for their*

continued outreach and commitment to making sure that the public's concern are fully vetted in this type of forum. The benefits of this project cannot be understated." Finally, he noted, "The public and private investment these projects generate will significantly increase employment and revenue throughout the region and provide the type of clean energy this country needs to reduce our dependency on fossil fuels."

EPA Response:

EPA thanks Congressman Frank for his comment supporting this Project and his recognition of EPA's and the Commonwealth's efforts to involve the public in its activities in New Bedford and to address the communities' concerns about this Project, including the use of a CAD cell. EPA is committed to continuing its public outreach activities to ensure all concerns are appropriately vetted.

8. *Steve Martins, City Council President and Ward 2 City Councilor, New Bedford, voiced his support for the Project pointing out that it "...will benefit the City of New Bedford significantly and enhance the economic activity..." and will provide "...another reason for citizens to stay in our city and invest". Noting not only the primary use of supporting the offshore wind industry but the potential use for cargo and other shipping activities, Councilor Martins commented that this Project will bring much needed jobs to the area. He also thanked EPA for its willingness to hold open public hearings and to appear before the City Council to explain other projects or address concerns.*

EPA Response:

EPA thanks City Council President Martins for his comment in support of the Project and continues to make itself available to the City Council if further concerns are raised or further information is needed about the South Terminal Project.

9. *Henry Bousquet, Ward 3 City Councilor, voiced his support for the Project and its potential to open up opportunities for employment in New Bedford which is badly needed.*

EPA Response:

EPA thanks Councilor Bousquet's for his comment in support of the Project.

10. *City Councilor Oaks [sic] (Joseph Lopes) voiced his support for the Project noting some of the benefits including that it addresses contamination in some of the upland parcels and it provides local young people with the opportunity to work in the area. He supported the use of the CAD cell for this project and recognized the efforts of local officials and EPA for their work on this Project.*

EPA Response:

EPA thanks City Councilor Lopes for his comment in support of the Project and the use of a CAD cell to contain dredged sediment with low levels of PCB contamination. EPA also refers to the responses in the General Comment section about the environmental and human health benefits of the Project.

11. *Bruce Duarte, Ward 4 City Councilor, voiced his support for the Project and its value in bringing renewable energy to the community and the potential for employment. He also voiced support for the use of a CAD cell for this Project.*

EPA Response:

EPA thanks City Councilor Duarte for his comment in support of the Project and for his support for the use of a CAD cell to contain dredged sediment with low levels of PCB contamination.

C. Comments from Area Residents

1. *Karen Falange [sic] (Vilandry) orally commented that she supports the Project but not the use of a CAD cell. She commented that one part per million PCB is lethal and that PCBs are a dioxin. She also commented that there is a cumulative effect of the dredging projects in the Harbor, adding more PCBs to the Harbor and that CAD cells are "just a hole in the bottom of the sea, not lined. Just dig a hole, throw it in and that's it." She also commented that "when it was brought out to us tonight that tens of millions of dollars and billions of dollars have been invested in this South Terminal Project. Certainly 90 mill can be squeezed out for off-site disposal of PCBs." She also commented that the Superfund dewatering facility should be used, if necessary, for offsite disposal.*

EPA Response:

PCBs are a group of synthetic organic compounds that contain 209 individual chlorinated biphenyl compounds (also known as congeners), twelve of which are considered to be "dioxin-like". PCBs have varying harmful effects that may pose a risk to human health and the environment and must be properly addressed. This is exactly why EPA is conducting a Superfund cleanup of the PCB-contaminated sediment in New Bedford Harbor.

The South Terminal project will remove 225,600 cubic yards of existing PCB-contaminated sediment with concentrations below 50 ppm that would not have otherwise been addressed since the PCB concentration levels are below the Superfund dredging cleanup levels for the lower Harbor.

CAD cells are currently viewed as a permanent disposal solution by both EPA and the Commonwealth. A stable, clean, three foot thick cap will be highly effective in isolating

the contaminated dredged material from the surrounding environment. Sediment which will naturally build up on the cap will further isolate the dredged material in the cell.

Previous studies, including the Commonwealth's own Dredge Materials Management Planning process, a public process that took place between 1999 and 2003, have demonstrated that CAD cell technology is a viable and safe method for containment and isolation of contaminated sediment.

With regard to Project costs, the Commonwealth has communicated to EPA that the Commonwealth does not currently have a final construction cost for the New Bedford Marine Commerce Terminal (that information will not be available until the project is publicly bid. The "billions of dollars" to which the respondent is referring, may be in reference to the amount of expected investment in the Northeast Region by private development in the Wind Energy Industry.

With regard to utilizing EPA's dewatering facility to process sediment generated from this Project, the Superfund program will not be responsible for funding any part of the enhanced remedy consistent with 40 CFR 300.515(f)(l)(ii)(A).

2. *Brendan Bowen, a recent college graduate, voiced his support for the Project and sees great potential for this Project to "bring in new companies...new innovative firms, places that need engineers...lawyers, accountants, maybe an economist or two." Such an outcome would provide local young adults with an opportunity to live and work in New Bedford and not have to leave for other jobs in other cities.*

EPA Response:

EPA thanks Mr. Bowen for his comment supporting the Project and refers to the response to General Comment No. 4 above regarding jobs.

3. *Lauren Costello, a recent graduate from University of Massachusetts, Amherst, voiced her support for the Project because of the economic benefits it provides for the area and for its support for alternative energy. She also noted the potential to create "pertinent and progressive" jobs for recent college graduates.*

EPA Response:

EPA thanks Ms. Costello for her comment supporting the Project and refers to the response to General Comment No. 4 above regarding jobs.

4. *Tom Kennedy, former New Bedford City Councilor, voiced his support for the Project and for the offshore wind industry. He also commented that he is pleased with the size of the shellfish restoration plan being required by EPA.*

EPA Response:

EPA thanks Mr. Kennedy for his comment in support of the Project and agrees that the shellfish restoration plan required by EPA is necessary to ensure adequate mitigation for the impacted resource.

5. *Former Mayor Scott Lang voiced his support for the Project and the importance of the Project to waterfront development as it moves into the 21st century. He commented on the potential it brings for significant jobs that come with not only the offshore wind industry but with the future cargo shipping use of this deep water facility. He also commented that every environmental issue will be addressed, and that this is not the time to fight about CAD cells; that "Right now...the way to resolve contaminants that would not have been moved is through a CAD cell system that everyone can agree on and then we'll worry about where we go from there."*

EPA Response:

EPA thanks former Mayor Lang for his comment in support of the Project and for his support for the use of a CAD cell to contain navigationally dredged sediment.

6. *Joseph Jo Jo Fortes, former New Bedford City Councilman, voiced his support for the Project, but commented on the location of the meeting, stating that it should have been held in a location closer to the South Terminal construction site given the transportation challenges to get to the meeting location because it is important to hear the concerns of those most impacted. He also commented that he is pleased the sediment and upland area contamination will be addressed and that remediation, along with the South Terminal Project, will bring people back to the neighborhood. He looks to EPA to protect the community and he spoke of his desire that the local community gets its share of the jobs created by the Project.*

EPA Response:

EPA thanks Mr. Fortes for this comment in support of the Project and refers to the responses to the General Comments about the environmental and human health benefits of the Project. The Commonwealth and EPA chose to hold the informational meeting and public hearing at the Fort Taber Community Center because of its proximity to the area that will sustain the most impacts from construction and use of the South Terminal Project. The Community Center was also chosen because it provided a large enough venue to accommodate the high turnout of interested members of the community and is located in the southern part of the City. For those unable to attend the meeting, a 30 day public comment period provided an alternate method of providing comment on the Project.

7. *Chuck Dade commented orally and in writing that he could only support the Project if the PCB-contaminated dredged material is removed from the harbor,*

not buried in a CAD cell. He commented that it is EPA's responsibility to ensure the Project is for the public good and for the public will and that the use of a CAD cell for this Project is against that mission, results in an incomplete remediation and makes remediation of the material contained in the CAD impossible to treat by biological or other techniques.

He also commented that AVX, a responsible party for the Harbor contamination, and if not AVX then the federal government, should provide funding for offsite disposal of the navigational dredged contaminated sediment so that the South Terminal project can move forward and bring ocean commerce and the offshore wind industry to the area.

EPA Response:

EPA thanks Mr. Dade for his comment. EPA disagrees that the use of a CAD cell for this Project is against EPA's mission to protect human health and the environment and believes that CAD cells provide a safe and permanent disposal alternative which will isolate contaminated sediment and prevent exposure to the public and the environment. See responses to General Comment Nos. 1 and 2 about its mission to ensure protection of human health and the environment and No. 3 about the safety of CAD cells.

As set out in both the Draft and Final Determinations, the State Enhanced Remedy work is funded by the Commonwealth of Massachusetts, not the federal government. As clearly stated in EPA's Record of Decision, the Superfund program will not be responsible for funding any part of the enhanced remedy consistent with 40 CFR 300.515(f)(l)(ii)(A). The responsible parties are responsible for the Superfund cleanup costs, which in the lower harbor address PCBs greater than 50 ppm.

8. *Frank Haggerty raised a question about land transfers for the Project, particularly transfer of Brownfield properties that occurred after the start of the public comment period and whether EPA should wait until all the land involved in the project was transferred or purchased prior to holding a public comment period. His comments reflect a particular concern about inclusion of contaminated property in the Project; specifically, a portion of the Standard Times Field site and the underground fuel tanks, asbestos and coal tar residue at that site as well as the former Cannon Street Power Plant site and its proximity to South Terminal.*

EPA Response:

On August 2, 2012, Governor Patrick signed legislation approving the transfer of 3.4 acres of land adjacent to Blackmer Street in the South Terminal project area of New Bedford from the Commonwealth of Massachusetts to the City of New Bedford. In exchange, the City of New Bedford conveyed property on Rodney French Boulevard to the Massachusetts Department of Fish and Game. The approval to transfer the Blackmer

Street property was for the purpose of developing the South Terminal project. (See Attachment B, Reference Documents Nos. 1 through 6.)

EPA does not believe there was any need to wait until the Commonwealth purchased or obtained easements on all the parcels within the Project area before seeking public comment on the Draft Determination. The properties proposed to be within the Project area, including the Blackmer Street property, were identified in the maps delineating the scope of the South Terminal Project at the commencement of the comment period. Thus, the public was able to comment on the Project and its environmental impacts with respect to any of the parcels, irrespective of who owned the parcels. The Commonwealth has been in a lengthy process of acquiring ownership or control over various parcels. We do not believe that waiting until property transfers or purchases were completed before issuing the Draft Determination would have provided any additional relevant information for purposes of the public's ability to comment on the project.

With regard to the underground fuel tanks and hydrocarbons, EPA assumes the commenter is referring to a 150,000 gallon fuel tank and hydrocarbons mentioned in the Phase I Environmental Site Assessment Report prepared by the TRC environmental consulting firm for the City of New Bedford. That report addresses Former Standard Times Fields Lot 9G, which is to the west of both the Blackmer Street "swapped" property and the site of the South Terminal Project. Because this property is not included in the Project, a response to the comment is beyond the scope of this document. (See Attachment B, Reference Document No. 7, page 8.)

On a general note regarding remediation of contamination on the eleven acre upland area of the main portion of the South Terminal Project, including the property adjacent to Blackmer Street, the Commonwealth of Massachusetts has committed to conduct a remediation under the Massachusetts Contingency Plan. In addition, soils with elevated concentrations of PCBs will be addressed in a manner consistent with the federal Toxic Substances Control Act. As a result of these and other remediation activities, the upland area of the main terminal will achieve a level of "No Significant Risk' under the Massachusetts Contingency Plan.

D. Comments from Trade Unions:

1. *Ironworkers – Local 37, Greater Southeastern MA Central Labor Council, Bricklayers Union, International Longshoremen's Association, New England Carpenters Union, Boston and New England Maritime Trades Council, AFL-CIO; International Union of Operating Engineers – Local 4 expressed unanimous support for the Project, noting the potential for jobs and revitalization of the New Bedford waterfront and the surrounding communities. They urged EPA to move forward with its decision-making, not only for the economic benefits to be realized from the Project, but also from the cleanup of existing contamination that will result in a more healthy community. Some unions also*

commented on their willingness to create apprenticeship programs to train talented local workers.

EPA Response:

EPA appreciates the strong support for the Project from the many union representatives. We also agree that the Project provides an additional measure of protection for human health and the environment through the dredging of contaminated sediment that would not otherwise be dredged since it is below EPA's Superfund dredging cleanup levels.

We note also the unions' recognition of the local talent this area offers as well as their willingness to provide apprenticeships to train more workers in various trades as a way of retaining young men and women living locally. While EPA cannot direct hiring, we acknowledge the unions' very important role in providing jobs for this Project. See also response to General Comment No. 5 about jobs.

EPA also recognizes the potential for jobs and revitalization of the New Bedford waterfront and acknowledges the need to move this Project to completion. It is, however, important to ensure the Project balances those needs against the need to protect the aquatic resources, to provide adequate mitigation for those resources that are impacted and to protect human health and other environmental resources. We heard the unions' recognition of this need for balance as well and are grateful for their patience and support. After reviewing all the information provided by the Commonwealth, we have found that this Project meets all of these requirements. See also response to General Comment No. 2.

E. Business Advocacy Groups

1. *Anthony Sapienza, Chairperson, New Bedford Economic Development Council, commented that the Council and its Board of Directors endorse the Project and that it is important to the economic development strategy for the City.*

EPA Response:

EPA thanks the New Bedford Economic Development Council for its comment in support of this Project.

2. *New Bedford Harbor Development Commission (Ed Washburn) voiced its support for the Project and commented on the additional benefits the marine terminal offers the port of New Bedford for future cargo opportunities, the associated jobs that come with those shipping activities and the economic boost it provides to the area.*

EPA Response:

EPA thanks the New Bedford Harbor Development Commission for its comment in support of this Project.

F. Comments from Non-Profit, Religious, and Academic Institutions

1. *Hands Across the River (Ed Rivera) commented orally and in writing that it could only support the project if the PCB contaminated dredged material is removed from the harbor, not buried in a CAD cell and that there are other ways of getting rid of PCBs, including the use of the dewatering facility. It commented that it is EPA's responsibility to ensure the project is for the public good and for the public will and that the use of a CAD cell for this project is against that mission, results in an incomplete remediation and makes remediation of the material contained in the CAD impossible to treat by biological or other techniques.*

   HARC stated that it wants the Project and the green jobs it brings but it wants it done right so that 50 or 60 years from now if it turns out the CAD technology is not sound the community doesn't have to revisited addressing PCBs again. It commented that there are a lot of big companies interested in New Bedford and they should invest in the right way of addressing the contamination.

EPA Response:

EPA thanks HARC for its comment. EPA disagrees that the use of a CAD cell for this Project is against EPA's mission to protect human health and the environment and believes that CAD cells are safe. See responses to General Comment Nos. 1 and 2 about its mission to ensure protection of human health and the environment and No. 3 about the safety of CAD cells.

2. *John G. Buddy Andrade, Old Bedford Village Development Corporation, voiced his support for the Project and sees it as a catalyst for producing long-term employment both from the wind industry and from the future shipping activities at the terminal. He wants to make sure that local high school graduates, college students and recent college graduates benefit from the Project; that jobs should not go only to big companies and union workers but that the various unions create training programs and apprenticeships for the local workforce. He commented that "there are still a lot of issues of discrimination and exclusion and EPA has played a big role in that and so has the state." He also commented that this is the first time [EPA and the State] had an open hearing and that stakeholders don't get invited to these kinds of public hearings. He commented that there should be greater inclusion in all processes so that there is a level playing field so that those most impacted by*

the Project are also realizing the benefits of the Project. He also commented, "This meeting should have been held in the community, downtown in the neighborhoods where more of us would have been there. The bus stops at six o'clock, so there's no public transportation." Finally, he commented that agent orange (dioxin) is in PCBs and that "it wasn't part of the original raw decision to have CAD cells."

EPA Response:

EPA thanks Mr. Andrade for this comment supporting the Project and for his positive view on the public comment period associated with this Project. As part of its Draft Determination, EPA directed the Commonwealth to generate a Construction Management Plan which will, at a minimum, outline the process by which the Commonwealth will communicate with the community regarding the work associated with this Project, including holding public meetings to discuss the project. EPA disagrees with the comment concerning EPA's role in any discriminatory or exclusionary issues or that stakeholders aren't invited to public hearings and points to the myriad public meetings, public hearings, email and newspaper notices, as well as the fact sheets, technical documents and cleanup decision documents posted on EPA's website for New Bedford Harbor (*www.epa.gov/nbh*). With regard to the meeting locations, see response to Comment C.6 above.

Agent Orange is not a PCB. It is an herbicide that is a 50-50 mixture of two compounds known as 2,4,5-T and 2,4-D.

Finally, EPA refers to the response to General Comment No. 5 regarding jobs.

3. *Environmental League of Massachusetts (Ken Pruitt) voiced its support for the Project and for the wind industry. It commented on the importance of the Project in that it removes contaminated sediment that would not be addressed by the Superfund cleanup. "It's debated over whether it's the gold standard for cleanup, but at least it's a cleanup. It's better than nothing."*

EPA Response:

EPA thanks the Environmental League of Massachusetts for its support of the Project and its acknowledgement that addressing contaminated sediment which would not be included in the Harbor Superfund cleanup is an important benefit of the Project. See also response to General Comment No. 4 above about the additional protectiveness afforded by addressing this sediment.

4. *Buzzards Bay Coalition (Mark Rasmussen) orally expressed its support for the Project, recognizing the environmental benefits of addressing contaminated sediment that is below the Superfund cleanup levels for the Harbor, the upland remediation that will be performed by the State through the state*

cleanup program, and the additional capping that will occur just below the hurricane barrier in the pilot cap area as part of the mitigation plan.

With regard to the CAD cell, noting the low levels of contaminated sediment to be contained in the CAD cell, the Coalition commented, "For this use and this location, I think this can be done in an environmentally protective way to manage this material at this site for the South Terminal Project."

EPA Response:

EPA thanks Buzzard's Bay Coalition for its comment in support of the Project and for its support of the use of a CAD cell to contain dredged sediment with low levels of PCB contamination. EPA refers to its response to General Comment No. 3 above for more information concerning the safety of CAD cells.

EPA agrees that the Project offers many environmental and human health benefits from addressing both low level sediment contamination and upland contamination that would otherwise not be addressed or which might be addressed at some future date in the case of the upland areas. The added capping for habitat improvement below the hurricane barrier will address PCB-contaminated sediment in two locations that are generally at or below10 ppm. The mitigation plan includes a number of other measures including creation of a salt marsh at River's End Park, creation of 22.73 acres of winter flounder spawning habitat, and significant shellfish restoration.

5. *Sierra Club (Drew Grande) voiced its support for the South Terminal Project and for clean energy and the jobs that come along with the clean energy development. It commented that it had concerns about the harbor cleanup and that it was important to make sure that "as this project moves forward, we're also cleaning up the river to the extent that it is acceptable to the families and residents of New Bedford and is done in such a way that it doesn't put future generations at risk and it's also done in such a way that it complies with all aspects of the clean air and clean water act."*

EPA Response:

EPA thanks the Sierra Club for its comment in support of the Project. EPA points to the robust administrative record to support its determination that the Project is protective of human health and the environment, is a permanent solution and meets all substantive environmental laws, including the Clean Air and Clean Water Acts.

6. *University of Massachusetts, Dartmouth, Assistant Chancellor for Economic Development Paul Vigeant expressed his support for the Project, both orally and in writing, commenting that EPA conducted a careful analysis of the Project and agrees with EPA's conclusion that the Project is protective, meets*

ARARS and will have no adverse impacts. He notes the untapped supply of sustainable and renewable wind, wave and tidal energy just 30-40 miles offshore from the location of the proposed South Terminal and that modern industrial port facilities are an essential ingredient and absolute prerequisite for accessing those offshore energy resources. The project will create a wide range of jobs, including long-term jobs that will be attractive to local young adults, and reposition the region as a major deployment site within the ocean renewable energy marketplace.

EPA Response:

EPA thanks the Assistant Chancellor for his comment in support of the Project.

7. *Reverend David Lima, Executive Minister, Church Council of Greater New Bedford, voiced his support for the Project and commented that this Project is about restoring the sprit back to the community; to bring future and hope back to the City. He also noted the benefit of removing contaminated sediment in the Harbor that would not otherwise be addressed by the Superfund cleanup.*

EPA Response:

EPA thanks Reverend Lima for his comment in support of the Project.

8. *Marion Institute voiced its support for the Project and urged EPA "to take a step in the right direction by bringing renewable green energy to New Bedford." It commented that "It just makes sense for the Marion Institute to support the construction of wind turbines in our region." It goes on to say, "Wind turbines are the next step in curbing our energy consumption, creating jobs, and caring for our communities. While not a perfect system, we know that doing nothing is simply not on option at this juncture. We hope that the officials will take the necessary steps to bring New Bedford to the pinnacle of clean energy and green job creation in the nation."*

EPA Response:

EPA thanks Marion Institute for its comment in support of this Project.

9. *Clean Water Action (Joel Wool) orally commented on the Project's benefit of removing contaminated sediment that would not otherwise be addressed. He also commented, "Clean Water Action is a strong supporter of renewable energy generation and offshore wind, and applauds EPA for encouraging clean energy within the Commonwealth of Massachusetts. Nevertheless, it is unclear if the viability of remediation of the polluted harbor should be determined under the basis of supporting offshore wind." He also asked to see a number of things:*

A "...detailed breakdown of alternatives to on-site burial that details specific cost estimates and a rationale for viability or unviability of these alternatives" similar to the alternative analysis EPA conducted in Appendix E to the Draft Determination and"... if a cleaner method of disposal is possible, it seems reasonable to investigate the possibility of doing so and investigating funding sources for achieving this. If such an analysis has already taken place, please indicate where and how it has taken shape";

EPA Response:

The detailed breakdown requested in the comment was conducted by the Commonwealth during the Commonwealth's own Dredge Materials Management Planning process, a public process that took place between 1999 and 2003. During that process, multiple different methodologies for dredging and disposing of contaminated sediment were considered. The results of that study determined that CAD cell technology is a viable and safe method for containment and isolation of contaminated sediment, and is considerably less expensive than other alternatives, such as incineration or offsite transportation and disposal.

EPA directs the responder to refer to these documents for the in-depth analysis of alternatives to the use of CAD Cells, on which the Commonwealth based its decision, as well as the conclusions reached in the previous investigations of the available disposal alternatives. For the detailed analysis of disposal alternatives for unsuitable dredge material (UDM), (that is, navigational dredge material unsuitable for unconfined ocean disposal) presented in the 2002 New Bedford/Fairhaven Harbor Dredged Material Management Plan (DMMP) Draft Environmental Impact Report (DEIR) please go to the Massachusetts Coastal Zone Management website at this specific link: http://www.mass.gov/czm/nb_dmmp_deir.htm. Technical reports prepared for this DEIR may also be found at this site. After public comments were received on the DEIR, the New Bedford/Fairhaven Harbor Dredged Material Management Plan (DMMP) Final Environmental Impact Report (FEIR) was issued in 2003 which includes responses to comments on the DEIR and provides additional site information. To view this report, please go to: www.mass.gov/czm/dredgereports/2003/feirnb-f.htm.

10. *"We are concerned that the proposed remedy is not, in fact, fully tested to succeed. Personal correspondence with EPA staff suggests that - although the specific schematic design for the CAD cell is ongoing, similar projects have taken place in the United States and, thus far, have proven safe and protective of community health. CWA would like to see a clear comparison of the proposed CAD cell burial process with other projects with same or similar processes. CWA's initial dialogue with EPA suggests that certain Boston Harbor and/or West Coast projects may resemble this specific process. Please confirm this and provide clear examples, or provide a more detailed justification of how... this process can be affirmed as safe and healthy."*

EPA Response:

CAD cells have been utilized for disposal of UDM since the 1980s and now have a proven decades-long track record of safely containing contaminated sediment. CAD cell technology is a recognized, protective contaminated sediment disposal approach that is being used more and more frequently in the U.S. and around the world, especially for navigational dredged material that is unsuitable for open water disposal. CAD cells have been used in recent years for navigational dredging in major New England ports such as Boston, New Bedford and Providence, and have also been used (or selected for use) at contaminated sediment Superfund sites in Washington, Minnesota and Maine (EPA, 2010). Most of these harbor cities typically go through the same evaluation process that was performed for New Bedford Harbor; that is, designating a Dredge Material Management Plan (DMMP) Area for CAD cell disposal. A partial list of cities/harbors utilizing CAD cells include:

Boston Harbor
Providence Harbor
Hyannis, MA
Bridgeport, CT
New London, CT
Norwalk, CT
Newark, NJ
Baltimore, MD
Commencement Bay, WA (Superfund Site)
St. Louis River, MN (Superfund Site)
Callahan Mine Site, ME (Superfund Site)
Port of Hueneme, CA

Since 1993, EPA has had a long term ecological monitoring program in place to evaluate the effects of remedial activities on the overall ecological quality of New Bedford Harbor. This monitoring program has shown that significant improvement in lower harbor benthic quality has taken place over the approximate ten year period when three navigational CAD cells have been constructed and filled in the lower harbor. Environmental metrics for the lower harbor (surficial PCB levels, biodiversity, EMAP benthic index) indicate significant improvement in the ecological quality of the lower harbor benthic environment over this timeframe (Nelson and Bergen, 2011). See also the April 2010 monthly meeting presentation (http://www.epa.gov/regionl/superftind/sites/newbedford/299752.pdf) and slides 26-28 of the June 2010 monthly meeting presentation (http://www.epa.gov/regionl/superftind/sites/newbedford/299754.pdf) for more detail on these data.

G. Comments from Federal and State Entities

1. National Oceanic and Atmospheric Administration (National Marine Fisheries Service (NMFS) commented on the following issues:

NMFS note the Project would result in permanent loss of 6.85 acres of intertidal and shallow subtidal habitats from CDF construction; permanent loss of 20.21 acres of winter flounder spawning and nursery habitat due to dredging, and loss of almost 10 million shellfish. In its role as a consulting federal agency through the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and the Fish and Wildlife Coordination Act, NMFS made the following recommendations in its comment letter:

> *a. In order to minimize impacts of the projects on shallow sub-tidal habitat to the maximum extent practicable, while meeting the purpose and need of the project, the proposed additional work consisting of increasing the width of the approach channel by 50 feet, increasing the length of the deep draft dredging area by up to 300 feet, and expanding CAD cell 3 to accommodate the extra material, should be eliminated. NMFS noted that neither the Draft Determination nor the Commonwealth's June 18, 2012 submittal explains why this work is necessary to meet the purpose and need of the proposed project, and that although the mitigation areas include the impacts from this additional work, the impacts of the project have not been minimized to the maximum extent practicable.*

EPA Response:

With Regard to Expansion of the Deep-Draft Berthing Area: The Commonwealth proposed, in its January 18, 2012 submission, to excavate 600 feet of deep-draft area at the bulkhead to accommodate a maximum vessel length of approximately 500 feet. This 600 foot length of deep-draft area had been increased from a prior proposal of 500 feet. The vessels described in the submission that were expected to be used to support development of an offshore wind energy facility ranged in length up to approximately 490 feet.

In its June 18, 2012 submission, the Commonwealth described an additional amount of dredging that it wanted to include as part of the project at the request of the City of New Bedford, to accommodate the City's desire to expand the deep draft quay-side dredge area beyond the proposed 600 feet, to include an additional 200 feet to the north, or 100 feet to the south, or both, resulting in additional impact of 1.28 acres and 0.62 acres, respectively, and a combined total of 1.9 acres. At the same time, the Commonwealth stated that it did not anticipate obtaining sufficient funding to do the additional dredging but that the City was pursuing independent funding. (In a May 31, 2012 meeting with EPA, the Commonwealth mentioned its intent to request this additional dredging and indicated that this additional dredging reflected the City's hope to bring in larger vessels involved in short sea shipping operations.) Notwithstanding the City's desired expansion, the June 18, 2012 submission states that the design cargo vessel for the terminal is the

BBC Mississippi, and references Attachment T. That attachment states that the length of the BBC Mississippi is 143 meters, which equals 469.16 feet.

In its October 22, 2012 "Essential Fish Habitat Addendum" (MassDEP2012j), the Commonwealth provided a response to NMFS's conservation recommendation that this additional dredging be eliminated. It referred to a meeting with the Northeast Marine Pilots Association ("Pilots"), in which the Pilots "stated that the largest vessel they anticipated to dock at the new terminal facility is approximately 600 feet in length with a beam width of 90 feet." (See page 2.) However, the referenced Pilots' meeting occurred on February 11, 2011, so this statement was made well before the January 18, 2012 submission, as was the report on short sea shipping (MassDEP 2012, Appendix 23), but neither resulted in a proposal for a 700-900 foot deep-draft dredge length. It is clear from the meeting minutes that the pilots were referring to future cargo vessels (MassDEP 2012, Appendix 15). And indeed, in the October 22, 2012 submission, the Commonwealth states that "[T]he purpose of the expansion is to provide adequate deep draft area for large shipping vessels that are expected to utilize the terminal in the future." (MassDEP 2012j at 2.) Nevertheless, as noted above, the design cargo vessel for the terminal is 469 feet in length.

In the October 22, 2012 submission, the Commonwealth stated that "design standards" typically call for at least a 50 foot buffer on either end of the vessel for navigation and safety and that "guidance documents" recommend as much as 100 feet on either end. At most these would support an expansion to either 700 or 800 feet to accommodate a 600 foot long vessel, whereas the Commonwealth seeks approval to expand up to 900 feet. Even assuming a 600 foot vessel, the record would not support an expansion up to 900 feet.

The Commonwealth provided additional information on November 8, 2012, including an excerpt of the design standards referenced above and size details for a variety of vessels that potentially could use the port in the future. (MassDEP 2012p)

Based on the currently available information, EPA does not believe that additional deep-draft dredging at the quay-side area has been adequately justified. First, both the expected international vessels to support development of the initial offshore wind energy facility and the design cargo vessel are less than 500 feet in length. It is not evident that use of the terminal by 600 or 700 foot cargo vessels is likely to occur in the foreseeable future. In addition, the Commonwealth indicated in the June 18, 2012 submission that it did not expect to have funding to do the additional dredging, and it did not indicate anything to the contrary in the October 22 and November 8 submissions.

We recognize that in the future, facts may change that could justify additional dredging. We are also mindful of segmentation concerns. Accordingly, while we are not authorizing the additional dredging at this time, we will allow the Commonwealth, up to the date the State Enhanced Remedy work ends, to seek a modification of this final determination if additional information becomes available that would justify the need for

additional deep draft quay-side dredging. To avoid segmentation concerns, we have evaluated the impacts of the Project both without and with the additional dredging. The additional impacts associated with the expansion would not alter EPA's determination that, if properly mitigated, the impacts from the overall Project will not cause or contribute to significant degradation of waters of the U.S.

With Regard to Expansion of the Channel Dredging: In its January 18, 2012 submission, the Commonwealth changed the alignment of the navigational channel compared to its original proposal, increased the width of the navigational channel from 150 feet to 175 feet, and added a 100 foot tug channel, all in response to feedback in February 2011 from the Northeast Marine Pilots Association and New Bedford Harbor tug operators. In its June 18, 2012 submission, the Commonwealth proposed to add an *additional* 50 feet of width to the navigational channel based on its statement that "it is possible that the channel may need to be further expanded if a future vessel's dimensions vary significantly from what is currently anticipated." (MassDEP 2012a at 4.) The Commonwealth stated that the additional 50 foot width "is not currently contemplated for construction," but it was being included as a worst case scenario of impacts "assuming that the channel width may be expanded in the future to accommodate larger vessels than are currently envisioned." Id. at 5. It also discussed existing harbor use, environmental, and financial factors that limit expansion. Id. at 36-37. This additional dredging would affect 2.72 acres of shallow near-shore waters, and an additional 1.74 acres within the Federal Channel, for a total of 4.46 acres.

In its October 22, 2012 "Essential Fish Habitat Addendum" (MassDEP2012j), the Commonwealth provided a response to NMFS's conservation recommendation that this additional dredging be eliminated. The Commonwealth stated that it "may" become necessary in the future to widen the channel to 225 feet for safety and maneuverability to facilitate offshore energy development or future cargo operations at the terminal. However, the Commonwealth also stated that "due to existing harbor use limitations, environmental impact limitations, and financial limitations outlined in the June 18, 2012 submission ... only the current 175 foot channel is currently anticipated to be constructed by the Commonwealth at this time." (See page 1). Nonetheless, the Commonwealth renewed its request for approval of the additional dredging in order to avoid segmentation concerns. Id.

The Pilots' meeting referenced in the Commonwealth's October 22, 2012 submission occurred on February 11, 2011, and the Commonwealth responded to the Pilot's request for channel widening by expanding the proposed channel from 150 feet to 175 feet in its January 18, 2012 submission. The Pilots indicated that 200 feet would be better but did not state that 175 feet was unworkable. (MassDEP 2012, Appendix 15.) At a February 18, 2011 meeting, the tug operators "stated that they would like as much channel width as possible, but generally agreed that the adjusted footprint [to 175 feet] could work with the facility." (MassDEP 2012, Appendix 16.) The June 18, 2012 and October 22, 2012 submissions do not provide any new information about the likelihood that widening beyond 175 feet would be necessary. It is significant that in both the June 18 and

October 22 submissions, as well as in its June 29, 2012 submission (MassDEP 2012b), the Commonwealth is clear that it does not currently expect to do the additional dredging associated with widening the channel beyond 175 feet.

In its November 8, 2012 submission, the Commonwealth explained that many of the cargo vessels that may access the terminal in the future have a deeper draft than the design vessel. They would need a wider channel because of the trench design of the channel. Although the existence of deeper draft vessels was clearly documented, the November 8 submission only goes so far as to state that "the use of such vessels *may* require widening of the channel to be able to safely transit the vessels..." (emphasis added) (MassDEP 2012p at 5). The Commonwealth does not state any intention of conducting the expanded channel dredging in the immediate future.

Based on all of the available information, EPA does not believe that additional dredging to widen the channel beyond 175 feet has been adequately justified to support approval at this time. The Commonwealth does not currently intend to conduct the additional dredging, and it is not clear whether, if at all, it will become necessary. At the same time, we recognize that in the future, facts may change that could justify additional dredging. We are also mindful of segmentation concerns. Accordingly, while we are not authorizing the additional dredging at this time, we will allow the Commonwealth, up to the date the State Enhanced Remedy work ends (see footnote 1), to seek a modification of this final determination if additional information becomes available that would justify the need for additional dredging to widen the navigational channel beyond 175 feet. To avoid segmentation concerns, we have evaluated the impacts of the project both without and with the additional channel dredging. The additional impacts associated with the expansion would not alter EPA's determination that, if properly mitigated, the impacts from the overall project will not cause or contribute to significant degradation of waters of the U.S.

The Commonwealth's June 18 submission proposed creation of additional winter flounder spawning habitat and subtidal habitat to address impacts from the expanded dredging. Even though EPA is not at present approving additional deep-draft quay-side and expanded channel dredging, it is important for all of the habitat creation and enhancement work to be conducted at the same time, to avoid adverse impacts that could result from creating some habitat initially and then doing additional work at the same areas at a future date.

With respect to shellfish mitigation, the Commonwealth has proposed that it conduct the shellfish seeding in phases, so that if certain aspects of the project are not completed, the number of shellfish seed will be reduced accordingly. It is acceptable for the Commonwealth to reduce the amount of shellfish seed by the amount proportional to the area of expanded dredging that is not being approved at this time. The shellfish seeding will occur in multiple geographically separated areas over 10-15 years. Therefore, in contrast with the habitat mitigation, the shellfish seeding effort would not be adversely

affected by reducing the amount of seed to be planted now, and increasing it later if the expanded dredging is approved in the future.

Finally, the Commonwealth's June 18, 2012 submission included dredging for an 8.76 acre CAD cell, sized to accommodate disposal of excavated material associated with the additional dredging discussed above. Given that EPA is not approving the additional dredging, it is similarly not approving the additional CAD cell excavation. Therefore, the size of the CAD cell authorized under EPA's Final Determination is 8.54 acres. As discussed above, the Commonwealth may seek a modification of this final determination if additional information becomes available that would justify the need for additional channel and quayside dredging, and it may also seek approval for disposal of the additional channel and quayside dredging. A workplan for the dredging and disposal of this material will be required and an additional or modified TSCA Determination may be necessary. We have evaluated the impacts of the Project both with and without the larger CAD cell construction, and the additional temporary impacts from the larger CAD cell would not alter EPA's determination that, if properly mitigated, the impacts from the overall project will not cause or contribute to significant degradation of waters of the U.S.

> *b. In order to reduce impacts of fill on sub-tidal habitat, the concrete blanket proposed for the pile supported apron adjacent to the wharf should be reduced to the maximum extent possible. NMFS further commented that the construction plans for this area be clarified, including how much area will be filled with rip rap, why it is necessary, and whether rip rap will only be necessary at the pile supported area or also along the 1,200 linear feet of bulkhead (and if so, why it is necessary and if necessary, should also be included in project impacts.*

EPA Response:

The Commonwealth has submitted additional information in its "Essential Fish Habitat Assessment Addendum, New Bedford Harbor Marine Commerce Terminal", prepared by Land Use Ecological Services, Inc. which addresses this comment. (MassDEP2012j). The purpose of the concrete blanket is to prevent erosion of the area under the pile-supported apron, and it has been minimized to the extent feasible while preserving the structural integrity of the facility. The Commonwealth noted that the material used to construct the concrete blanket is very expensive, so there is a financial incentive to keep it as small as possible. The pile-supported apron was a change from the Commonwealth's original proposal, which would have included an additional 0.67 acres of solid fill at the CDF. The apron design reduces the amount of fill, but it is still necessary to partially fill at the base of the apron for structural integrity. The concrete blanket will only be necessary under the pile-supported apron, not along the entire length of the bulkhead. EPA believes that the Commonwealth has minimized the area of the concrete blanket to the greatest extent practicable.

c. In order to avoid adverse effects to winter flounder spawning and early life stages in New Bedford Harbor, in-water silt producing activity, including blasting, should be avoided between January 15 and May 31 of any year.

EPA Response: EPA's Final Determination does not allow for blasting to occur. As part of the normal Essential Fish Habitat consultation process, the Commonwealth, the National Marine Fisheries Service and EPA met on several occasions to devise an approach that would allow dredging to occur during the winter flounder spawning season, but would minimize impacts to the extent possible.

In the interest of minimizing impacts to winter flounder spawning, the Commonwealth has committed to implementing the following measures, which EPA is requiring as conditions of the Final Determination:

- The use of the environmental bucket for the dredging of fine grained material.
- Cordoning off the entire depth-relevant (16 feet and shallower) area of the Project from January 15 to June 15 with a combination of silt and bubble curtains and fish weirs. This is intended to prevent winter flounder from accessing these areas for spawning.
- Once the area is cordoned off and before construction begins, the Commonwealth will attempt to remove winter flounder and other fish from the area by using two different fish "startle" deterrent systems. The first system is an acoustic system that is primarily effective on schooling pelagic fish. The second system is a "tactile fish startle system", which targets benthic demersal fish, such as winter flounder. The tactile fish startle system will utilize a towed floating boom with a curtain of streamers that reach from the surface to the bottom.
- The Commonwealth will conduct weekly camera and diving inspections to ensure the continued integrity of the bubble and silt curtains and weirs.
- The Commonwealth will conduct weekly monitoring of the enclosed area for the presence of fish. This monitoring will include, but may not be limited to a towed camera system and an acoustic fish detection system. If a large number of fish are determined to be in the area, the fish startle systems will be deployed again to move them out.

d. In order to compensate for the loss of shellfish resources at the project area, a shellfish mitigation plan should include compensation of all shellfish species found at the project site. This would include expanding the proposed reseeding of quahog clams to include other species indentified in the shellfish survey.

EPA Response:

The Commonwealth's Final Mitigation Plan (MassDEP2012r) provides for seeding of 24,542,802 seed quahogs. It also indicates that some portion of the seed will be oyster stock, seeded in association with an oyster reef, as requested by NMFS. However, the Commonwealth has not submitted an oyster restoration plan for EPA to review and approve for this Final Determination. The Commonwealth has indicated that it plans to convene a working group of technical staff from Massachusetts Division of Marine Fisheries (MassDMF), NMFS and EPA to develop the details of an oyster restoration plan. In its Final Determination, EPA is approving shellfish restoration based on all seed being quahogs. Once a final oyster reef plan is developed, the Commonwealth may submit it to EPA with a request to modify the Final Determination to incorporate the plan as a mitigation condition.

e. With regard to mitigation and monitoring:

- *Prior to final approval, all mitigation plans and monitoring reports should be provided to the resource agencies for review and comment.*

- *Creating winter flounder habitat is experimental. It is critical that the proposed mitigation to create 22.73 acres of winter flounder spawning habitat is monitored closely to ensure this area is functioning properly. NMFS supports EPA's conditions for 5 years of bathymetric and habitat functions monitoring but also recommends a contingency plan be incorporated that specifies corrective action to be taken should the ecological goals of the mitigation sites not be achieved.*

- *It is not clear if monitoring to be conducted of intertidal and sub-tidal habitat will include monitoring to determine whether or not the ecological goals of this mitigation site are achieved.*

- *Regarding shellfish mitigation, the Draft Determination does not indicate whether or not monitoring of the reseeded sites would be required and why seeding will only occur for quahogs and not the other shellfish species that will be impacted by the project.*

EPA Response:

EPA has provided copies of the Commonwealth's mitigation and monitoring plans to NMFS and US FWS for review and comment. To the greatest extent possible, EPA and the Commonwealth have incorporated and responded to NMFS's comments.

NMFS, EPA and the Commonwealth were all involved in the conceptual design of the winter flounder habitat mitigation plan. All agencies are hopeful that the mitigation site will support a comparable or greater level of winter flounder spawning than the Project site. There will be monitoring of the physical integrity of the mitigation site and the level of winter flounder spawning. The monitoring of winter flounder spawning will be done in a Before After Control Impact (BACI) design. In the case of complete failure, the results of the physical and biological monitoring will be valuable to determine potential causes. At this point in time, EPA feels it is premature to develop a contingency plan with specific corrective actions without insight into what may have contributed to any failures, which may not even occur.

Monitoring of the sub-tidal and intertidal habitat is strictly of the physical integrity of the capped area. There have been numerous examples in the scientific literature of the benthic community recolonizing areas after a disturbance. We are confident that the benthic community will quickly reestablish itself at the mitigation locations. We do expect to see a different benthic community than what exists at those locations now. The capping of sediments with elevated contaminant levels with clean material will fundamentally change for the better the physical nature of the area. As a result, we anticipate that a healthier biological community will develop here as well.

The scope of the shellfish mitigation plan is explained in response to NMFS comment No. 4. Monitoring of reseeded areas will occur under the normal Mass DMF commercial shellfish monitoring program.

> *f. In its consultation role pursuant to the Fish and Wildlife Coordination Act, NMFS, in its comment letter, recommended the following:*
>
> *In order to avoid adverse impacts to migrating anadromous fish, blasting activity should not occur between April 1 and June 30 of any year. Attenuation devices such as bubble curtains or cofferdams may reduce the noise level exposure to surrounding fish species and thus reduce impacts and mortality from blasting;*

EPA Response: The proposal that EPA is currently approving does not allow for the use of blasting for rock removal. In an October 12, 2012 submission, the Commonwealth identified four potential alternate non-blasting rock removal methods, commonly referred to as Hoe Ram, Bucket Removal, Drill and Fracture and Cutter Head Dredging. (MassDEP2012g) According to the results of the Commonwealth's acoustical study, these techniques do not generate pressure waves, and the noise levels they generate are below the levels generated by blasting. The Commonwealth has not identified which rock removal technique(s) it would employ, but the results predict that all of them would minimize impacts sufficiently to allow rock removal to occur without time of year restrictions. On November 16, 2012, the Commonwealth submitted the final acoustic modeling report, which includes the details for the model, assumptions, and how the model works (MassDEP2012s). Due to the late date of the submission of this report,

EPA has not had adequate time to review it and confirm the results of the study. EPA intends to review the report expeditiously. EPA is conditioning its approval on a requirement that the rock removal activities may not proceed until EPA evaluates and confirms the reasonableness of the model and the results, to ensure that the noise impacts will not adversely affect the Atlantic sturgeon or other fish species. See Appendix H and Appendix I for additional information.

g. In its consultation role pursuant to Section 7 of the Endangered Species Act, triggered by the reasonable potential that Atlantic sturgeon, an endangered species, may be in the vicinity of New Bedford Harbor during certain times of the year, NMFS, in its comment letter, recommended the following:

1. Use of an environmental bucket for all dredging on this project;

EPA Response: The Commonwealth has agreed to use an environmental bucket on all fine-grained sediments. For rock, clay, gravel or other coarser material, the environmental bucket does not operate efficiently. Some of the subsurface sediments from this Project are coarser in nature and the environmental bucket will not be used. environmental bucket is not required from a pollutant containment and turbidity perspective.

2. All possible mitigation methods (i.e., time of year restrictions (same as those recommended for winter flounder but extended through the summer months), The subsurface material has been tested and deemed to be clean material, so the *dredge types, etc.) that further reduce potential impacts to Atlantic sturgeon migrating or foraging near the action area should be undertaken;*

EPA Response: The Commonwealth, in an October 4, 2012 letter to EPA (MassDEP2012j), has agreed to a suite of mitigation measures primarily directed at winter flounder. However, they should be equally effective for other benthic demersal fish, including Atlantic sturgeon. As explained above, dredging of fine-grained sediments will be conducted using an environmental bucket to minimize water quality impacts. In addition, from January 15 through June 15 of any year, the Commonwealth will install absorbent booms, silt and bubble curtains, and fish weirs around any work area that is shallower than -5 meters at Mean Low Lower Water ("MLLW") to keep fish out of the areas during dredging, filling, and capping activities. The silt curtains will be secured to the bottom to prevent demersal fish from penetrating the barrier. The Commonwealth will use multiple fish startle systems to move any fish in these areas out before construction begins. In addition, the Commonwealth will conduct weekly monitoring of these areas to ensure the silt and bubble curtains maintain their structural and operational integrity. Weekly monitoring will take place for the presence of fish in these areas. If a large number of fish are detected in the Project zone, the fish startle systems will be redeployed. In deeper areas ($\geq$ -5 m MLLW), from January 15 through June 15 of any year, the Commonwealth will encircle dredging and other work areas with

absorbent booms and silt curtains, Also, at all times of year and in all locations, stringent turbidity standards will need to be met.

3. To meet sound criteria for piling driving activities:

- *Piles installed in-the-dry during low water or in-water between November 15 – March 14; or*
- *Piles must be drilled and pinned to ledge; or*
- *Vibratory hammers used to install any size and quantity of wood, concrete or steel piles; or*
- *Impact hammers limited to one hammer and <50 piles installed/day with the following: wood piles of any size, concrete piles ≤ 18-inches diameter, steel piles <12-inches diameter if the hammer is ≤ 3000 lbs and a wood cushion is used between the hammer and steel pile.*
- *Any in-water work should take the following specification into consideration to be determined as "not likely to adversely affect" Atlantic sturgeon: (1) Noise levels shall not exceed >187dB SEL re 1ìPa or 206dB peak re 1ìPa at a distance >10m from the pile being installed; and (2) Noise levels >155 dB peak re 1µPa shall not exceed 12 consecutive hours on any given day and a 12 hour recovery period (i.e., in water noise below 155 dB peak re 1µPa) must be provided between work days.*

EPA Response: Both sheet pilings and pipe pilings will be installed as part of the CDF construction. To reduce noise impacts, the Commonwealth will use vibratory hammers (rather than impact hammers) to drive the sheet pilings. (See Commonwealth's Biological Assessment report submitted on October 22, 2012 (MassDEP2012j)). The Commonwealth will install the pipe pilings in the following manner with the intention of reducing sound impacts: The first set of pilings installed will be 65 pipe piles that are 24" diameter and have a 5/8" wall thickness. The pilings will be installed by drilling a "rock socket" in place, placing the piling in the hole and then grouting it in place. This construction technique is consistent with NMFS' recommendation of "drill and pin to ledge". The second set of pilings will be 22 pipe pilings of 30"diameter with ¾" wall thickness. They will be installed with same construction method as the first set of pilings. The third set of pilings includes 94 pipe piles that are of 30" diameter and have ¾" wall thickness. These piles will be installed behind the proposed cofferdams and after the filling has occurred. These pilings will be vibrated or driven in, but this installation is considered an upland activity and will not impact fishery resources. (See MassDEP2012j.)

The Commonwealth has completed an acoustic analysis of its proposed construction activities and submitted the results of the analysis in its above-referenced Biological Assessment (MassDEP2012j). This report presents results and conclusions, but does not contain detailed information on the construction and operation of the model. Thus,

EPA cannot at this time verify the complete accuracy of these results. However, some useful conclusions can be drawn from the analysis at this time.

1. Potential acoustic impacts would be primarily limited to behavioral (avoidance) effects.
2. Potential acoustic impacts seem to be limited to an area surrounding the Project site that represent less than approximately 1/3 of the cross-sectional area of the river. This leaves ample room for fish passage.
3. From January 15 through June 15, a large percentage of the zone of potential acoustic impact will already be blocked off with fish exclusion devices (silt curtains, bubble curtains and fish weirs) designed to keep benthic fish out of the project zone. Thus, during this time frame, Atlantic sturgeon will be physically shielded from a large part of the area that could cause them harm.
4. Bubble curtains can be employed as an effective means of minimizing the potential area of impact.

4. Blasting sound decibel levels should be assessed if time of year restrictions are not imposed. Atlantic sturgeon would be unlikely to be in the vicinity of any blasting activity between November and March. If blasting is performed during this time frame (March to November), a zone of passage, free of decibel levels higher than those described above, should be available to avoid potential impacts to Atlantic sturgeon.

EPA Response: In the Final Determination, EPA is not approving the use of blasting. The alternative methods of rock removal discussed above are expected to result in noise impacts below the decibel levels identified in NMFS's comment, that trigger acute mortality. In general, predicted acoustic impacts to Atlantic sturgeon will be limited to behavioral responses (avoidance) in a small spatial area closest to the project site.

h. NMFS also commented that the Draft Determination is inconsistent regarding the minimum total area necessary for the marine terminal. Appendix E (section 4.3, page 15) says 28 acres; Section 4.4 of the Draft Determination says 20 to 28 acres are needed. The total minimum area required to meet the project purpose and need should be clarified.

EPA Response:

We understand NMFS's comment to be pertinent to whether the filling of waters of the U.S. has been avoided and minimized to the greatest extent practicable. The alternatives discussion in Appendix E of EPA's Draft Determination mentioned the 20-28 acre range based on information in the record and in comparison to alternative sites that were all less than 20 acres. It was not necessary for purposes of that discussion to explicitly identify the minimum practicable acreage since all of the alternative sites were impracticable even using the lower figure of that range. We note, however, that the Commonwealth did

provide information from Siemens (see Appendix 4 of the Commonwealth's January 18, 2012 submission to EPA), the first expected user of the South Terminal Facility, including a letter which makes a general statement to the effect that a 28 acre facility is the minimum size which would be required to support a the Cape Wind project. This 28 acre figure cited in the letter is backed by information regarding Siemens' logistics and planned construction schedule to justify its statement, including a diagram of how the area would be utilized. The letter points to the logistical considerations of staging material, offloading and loading, and assembling turbines that Siemens examined at this specific proposed facility which details how and why this area was calculated.

Even if the minimum acreage were 20 acres, however, the need for the proposed filling at the site would be unchanged, since it is driven by other (non-areal) requirements also cited in the Siemens letter, such as the requirement that 1200 linear feet of bulkhead be available for berthing of one international vessel and two installation vessels at one time. Additionally, the loading criteria described within Section 4.3.2 of the Commonwealth's January 18, 2012 submission to EPA indicates that a pile-supported structure is not feasible due to the extreme point loads anticipated from large cranes lifting heavy pieces of equipment. It is the combination of these two requirements (1,200 feet of bulkhead and the high loading conditions requiring a filled structure) that necessitate a certain quantity of filling of aquatic resources that would remain constant, irrespective of the minimum size of the available backland that could accommodate the proposed project. EPA is persuaded that the fill in waters of the U.S. has been avoided to the greatest extent practicable.

2. *The Commonwealth of Massachusetts commented on the following issues:*

   a. *Regarding shellfish mitigation, the Commonwealth commented that it continues to believe that its proposed shellfish mitigation plan (grow 9,817,121 shellfish through seeding between 1million and 2 million seeds annually over a 5 to 10 year period) is sufficient mitigation for the lost shellfish resources associated with the project because*

      (1) the impacted areas contain very high levels of shellfish because these areas are contaminated with PCBs and are closed to shellfishing and consequently, shellfish are permitted to reproduce without the impact of shellfishing on their population;

      (2) while consumption of shellfish in this area is forbidden due to PCB contamination, as is relaying outside this area, EPA asserts that these shellfish repreent a legitimate source of forage for winter flounder -- even though humans may consume those same winter flounder which have foraged on the impacted shellfish. The Commonwealth contends that either the shellfish are acceptable for

introduction into the food supply through relaying (and are therefore an un-impacted resource), or they are not (and are an impacted, degraded resource);

(3) the degraded nature of the existing resource may be compensated for by a reduced seeding program; these shellfish represent contaminated forage for winter flounder and winter flounder appear to be negatively impacted by this consumption, due to the high PCB content of the shellfish. Removal of these shellfish, while impacting the available food supply for winter flounder, eliminates a significant source of contamination to winter founder;

(4) shellfish mitigation is not required for EPA, USACE, or State Enhanced Remedy projects; for instance, the U.S. Army Corps of Engineers would not be required to mitigate for shellfish impacts associated with dredging of the Federal Channel and shellfish mitigation has not previously been mandated for navigational dredging by EPA or MassDEP, nor has EPA conducted any shellfish mitigation in association with its remediation of the upper harbor.

EPA Response: EPA continues to believe that seeding of approximately 24 million shellfish is necessary to adequately address the loss of this resource due to the Project. Specific responses to the Commonwealth's points follow. We note that the Commonwealth, in its Final Mitigation Plan for the New Bedford Marine Commerce Terminal, has agreed to seed 24,542,802 shellfish.

1. EPA agrees that the lack of commercial shellfishing in the Project area certainly has contributed to the great abundance of shellfish there. It also shows that the environmental conditions are sufficient to support that large quantity of the resource. The fact that the resource hasn't been reduced as a result of commercial shellfishing does not alter the significance of the loss of the resource as a prey base for winter flounder and other species.

2. Shellfish are widely recognized as a commercially and ecologically important resource. The shellfish in New Bedford Harbor not only serve as a prey base for winter flounder and other species, but they are important source of seed for other shellfish beds downstream. In addition, they are important filterers of the water. This water filtration function and the seeding of remote beds are ecological functions that are performed irrespective of PCB tissue concentrations, and losses of these functions merit compensatory mitigation. Finally, as a point of additional

clarification, human consumption of winter flounder is prohibited in fish closure area number 2.

3. It has been well established that winter flounder forage on clam siphons, while humans tend to consume all of the soft tissue of the clam. In general, contaminant concentrations in the digestive tract and internal organs tend to be elevated over concentrations in the siphons.

4. EPA disagrees with this comment. Impacts to shellfish were considered both in the Final EIR and in EPA's Record of Decision. Section 7.00 of the Final EIR provides a summary of plans to avoid and minimize impacts to shellfish. Specifically, the DMF "will require compensatory replacement of lost shellfish." As for EPA's 1998 ROD, at pages 36-37, the ROD recognized that the cleanup would have impact on shellfish and committed to coordinate with U.S. Fish and Wildlife Service, NOAA, and the State Division of Marine Fisheries to accommodate dredging schedule impacts on shellfish habitat.

b. With regard to air monitoring:

(1) requiring work to cease immediately if Particulates exceed 100 ug/m3 is inconsistent with the Particulate standard used by EPA for the Aerovox building demolition where work was not suspended until Particulate levels reach at least 150 ug/m3. This inconsistency is not explained within EPA's Draft Decision document and is a departure from EPA's previously established position that 150 ug/m3 [at the Aerovox site] is sufficiently protective of human health.

EPA Response:

The 100 $\mu g/m^3$ action level was also used for Aerovox. The 100 $\mu g/m^3$ action level was based on a 10-hour time-weighted-average (TWA) while the 150 μ/m^3 action level was based on a 5-minute average. Either of these conditions would have required a work stoppage. Given that PM_{10} is being used as a surrogate to monitor for potential emissions from other contaminants, EPA has determined that applying the same standards used for Aerovox to this Project is reasonable and has incorporated these levels into its Final Determination.

Prior to remedial activities within the Project, the Commonwealth will collect background samples to establish site conditions. In the event that background levels are higher than the established action levels, the background levels shall be the controlling standards for the Project, which is consistent with the Aerovox project.

(2) Because there is no current evidence of widespread presence of asbestos contamination, asbestos air monitoring should occur as a contingency (should bulk asbestos be located during work onsite), rather than as a requirement.

EPA Response:

EPA agrees that Asbestos did not appear to be contaminant at the Project based on the 21E investigations. However, given the Project location, EPA has determined that it is reasonable and prudent to include Asbestos in its air monitoring requirements. In the event the Commonwealth is able to demonstrate that Asbestos is not a contaminant of concern through monitoring, the Commonwealth may reduce its air monitoring frequency for Asbestos, subject to EPA approval. EPA is requiring that the Commonwealth include Asbestos sampling in the baseline sampling event and for the first two weeks of active excavation at the Main Facility, at a minimum.

In the event that new environmental conditions are identified during remedial or other land excavation activities, EPA's Final Determination includes a condition for the Commonwealth to report the new condition to EPA and identify what, if any, modifications are necessary to the air monitoring plan and/or to the remedial plan. In addition, the new condition may trigger a state reporting condition under the MCP.

> *(3) How does the 0.1 ug/m3 standard for Airborne PCBs compare with the airborne standard utilized by EPA during its dredging, dewatering, and other remediation work in the Upper Harbor, as well as the standard used by EPA during the Aerovox Building demolition.*

EPA Response:

The action levels established for the Aerovox building demolition work were based on background concentrations that have been observed during EPA's dredge work. Use of an air standard lower than the observed background PCB air concentrations did not make sense for this reason. As such, EPA's approach was to use the observed background airborne PCB levels as the controlling standard for the Aerovox project. Note that the standards that were used for Aerovox were lower for the residential boundaries than for the non-residential boundaries.

For the South Terminal project, EPA used a risk-based air concentration of 0.1 $\mu g/m^3$ that was derived for the non-cancer effects in a residential setting. In its draft determination, EPA provided for an alternative air concentration of 0.26 $\mu g/m^3$ if land activities were located greater than 200 feet from a residential area. EPA derived this alternative standard based on non-cancer effects for a commercial setting.

Prior to remedial activities within the Project, the Commonwealth will collect background samples to establish site conditions. In the event that background levels are higher than the established action levels, the background levels shall be the controlling standards for the Project, which is consistent with the Aerovox project.

c. Regarding long-term monitoring, the Commonwealth commented that the long-term monitoring requirements exceed those standards necessary to ensure long-

term viability of the associated resource areas and, in some cases, extremely difficult if not impossible and overly burdensome. In particular:

> *(1) for annual bulkhead inspection a group of divers would likely have to be trained, and detection of new aquatic invasive species within New Bedford Harbor, which typically has extremely cloudy water, will be very difficult, if not impossible. Additionally, this requirement appears to be indefinite causing an unfair burden to the Commonwealth. The Commonwealth proposes to develop an invasive monitoring and control program through the Commonwealth's existing CZM Aquatic Invasive Species Program within the framework of the Massachusetts Aquatic Invasive Species Management.*

EPA Response:

The Commonwealth in its Final Mitigation Plan (MassDEP2012r) has provided a reasonable invasive species monitoring plan featuring an annual inspection of the bulkhead with divers. EPA finds this monitoring plan sufficient assuming that it is implemented as described.

> *(2) The Commonwealth cannot be responsible for removal of invasive species on property not owned or controlled by the Commonwealth and commented that this is overly burdensome, even if it would be beneficial to the overall health of the restoration area.*

EPA Response:

This comment responds to a concern EPA identified regarding the Commonwealth's initial compensatory mitigation plan for a salt marsh creation/enhancement adjacent to the hurricane barrier. That plan has been abandoned in favor of a plan to create new salt marsh at River's End Park. The issue of invasives on abutting private property to which the Commonwealth could not gain access is not pertinent to the Commonwealth's new plan. The River's End Park mitigation plan includes an appropriate invasive species management plan.

> *d. With regard to dredging, the Commonwealth commented that it cannot comply with EPA's requirement that all dredging be done using an environmental bucket because that method is only effective for surficial silty or organic material (which is also the material that typically is impacted with anthropogenic material); denser "parent" material (material that underlies the organic silts and predates anthropogenic impacts) is typically too stiff to remove with an environmental bucket and more typically dredged using a clamshell or excavator bucket.*

EPA Response: EPA agrees that the environmental bucket should be used for the potentially contaminated surface silty material. We also agree that for parent material, which has been deemed to be relatively free of anthropogenic influence, the environmental bucket is not required.

e. As to site configuration, the Commonwealth submitted a revised site plan as Attachment 1 (Configuration A2) to its comment letter that increases the overall acreage of the project to 29.58 acres by adding property owned by NB Radio, Inc., comprised of 4.4 acres (New Bedford Asssessor's Map 31, Lot 234;) (the "Radio Tower Site"), and removing the public boating area situated at the Gifford Street Boat Ramp. The Commonwealth comments that this modification does not present a significant project change and Configuration A2 enhances the overall operation utility of the proposed New Bedford Marine Commerce Terminal because (1) the Radio Tower Site, located immediately adjacent to the parcels of land abutting New Bedford Harbor, expands and enhances the operational utility of the site; allows direct roadway access to Potomska Street, minimizing the impact of commercial traffic on the residential communities; and is not anticipated to present additional impacts to resource areas, subject, however, to an environmental assessment[1]; and (2) removing the Gifford Street boat ramp from the facility footprint eliminates potential impacts to recreational boating.

EPA Response:

EPA notes that since the Commonwealth's comment was submitted, the Commonwealth has decided not to include in the terminal site the approximately 4 acre parcel just west of the Gifford Street boat ramp parcel (Parcel 48). See Figure 4 of the Final Determination. Based on EPA's review of the revised configuration, EPA concurs that the new configuration (28.45 acres) should provide better utilization and enhancement of the site operations. Given that the changes still provide for the site size requirements specified in the Commonwealth's plan, EPA agrees that the new configuration does not conceptually alter the objectives of the project.

f. With regard to time of year restrictions on construction activities and resulting impacts to the construction schedule and the Commonwealth's ability to complete the project on a schedule that will allow it to meet its stated goals, the Commonwealth commented

(1) time of year restrictions on blasting activities (that they only be conducted in the time period from November to February [to avoid adverse affects on the Atlantic sturgeon]) is problematic for a variety of reasons including the necessary sequence of construction activities. The Commonwealth anticipates completing an acoustical

[1] The Commonwealth has submitted a Phase 1 environmental assessment for this property which can be found in its October 1, 2012 submission. (MassDEP2012f)

modeling study and reviewing results with EPA to determine if the time of year restrictions can be eliminated;

EPA Response:

At this point in time, EPA is not approving blasting to be used during construction of this Project. EPA does not have sufficient information on the potential environmental impacts associated with blasting, particularly with respect to impacts on Atlantic sturgeon and other aquatic species, and on the Hurricane Barrier, to make an informed judgment at this time. If the Commonwealth in the future determines that blasting is necessary, it will need to seek a modification of the Final Determination, and will need to provide additional information on potential impacts from blasting and mitigation steps needed to minimize or eliminate those impacts.

(2) similar restrictions on pile driving activities could severely impact the construction schedule beyond those associated with blasting since pile driving is anticipated to take approximately eight months whereas blasting will take approximately two months; the Commonwealth requests that these restrictions be removed;

EPA Response:

In consultation with NMFS, EPA has determined that pile driving is unlikely to cause adverse effects to Atlantic sturgeon or other species if conducted at a time of year when the species may be present, as long as certain alternate construction techniques are used. Accordingly, EPA is allowing pile driving to proceed without a time of year restriction so long as the Commonwealth uses techniques such as "rock-socketing" and vibratory hammers to minimize impacts from pile driving.

(3) because dredging is currently anticipated to take place for approximately 14 of the 22 months of construction (63% of construction), time of year restrictions on dredging (February to June), or if not completely stopped during this period, restricted to deeper water to avoid winter flounder spawning habitat would likely have a significant impact on the construction schedule. The Commonwealth, therefore, requests an opportunity to work with EPA to reduce the time of year and geographic restrictions to the minimum necessary to protect affected species.

EPA Response:

To protect winter flounder spawning, the Commonwealth has devised a plan that will result in the deployment of a series of silt and bubble curtains to minimize winter flounder access to areas <-5 MLLW within the project area. After the curtains have been erected, the Commonwealth will deploy multiple fish startle systems to encourage fish to leave the work area. Weekly monitoring with a towed camera and divers will occur to check on the integrity of the curtains and to look for the presence of fish in the work area. If a large number of fish, including winter flounder, are found in the work area, the fish

startle systems will be deployed in an attempt to get them to move out. EPA, in consultation with NMFS, has reviewed this plan and determined that it is sufficiently protective of the winter flounder. Accordingly, EPA is requiring the Commonwealth to use this plan for dredging (as well as filling and capping) that occurs in the shallow waters between January 15 and June 15 of any year.

g. A methodology that allows the Contractor to submit a Contingency Plan prior to the start of construction, which contains a number of alternative contingency measures that could be implemented successively to control turbidity, rather than a requirement that booms and silt curtains be utilized if Performance Standards are not met would be preferable as multiple different measures are available to address this issue, including slowing the pace.

EPA Response:

The Performance Standards in Appendix C do allow for development of a contingency plan that could include a number of measures to control turbidity, not just the deployment of silt curtains.

H. Comments from Commercial and Business Community

1. *Acorn Management Company (Steve Rodni) voiced his support for the Project especially given its potential to create jobs. He also expressed his faith in EPA and MassDEP that they would not allow PCBs be contained if they believed it was going to be more harmful for the community; "We can approach those containment areas in the future and completely remove them when we have the technology and ability to do so." Mr. Rodni also noted that he is willing to help in any way possible.*

EPA Response:

EPA thanks Acorn Management Company for its comment supporting the Project and the use of a CAD to contained dredged sediment that contains low levels of PCBs. Please refer to EPA's response to General Comment No. 3 concerning CADs.

2. *AFC Cable Systems (Ken Lamar) expressed its support for the Project seeing it as a job creator and as an opportunity to expand its business which produces armor cable.*

EPA Response:

EPA thanks AFC Cable Systems for its comment supporting the Project.

3. *Maritime Terminal, Inc. (Pierre Bernier) expressed its support in writing and orally for the modernization South Terminal will bring to New Bedford. He noted the economic value of having a multi-use terminal and its potential to reduce*

transport costs for inbound and outbound material to help grow the industrial base in New Bedford.

He also commented that vessels do not have to intake ballast inside the harbor before sailing for high seas; instead, intake the can be done on the way out in transit or at anchorage without putting the vessel in danger of sinking. He further commented that EPA did not cite CFR Part 51, Subpart D (prevention of non-indigenous species entering via ballast water discharge), a regulation enforced by the U.S. Coast Guard who would prevent a violator from entering the harbor.

EPA Response:

EPA thanks Maritime Terminal, Inc. for its comment in support of the Project EPA assumes the comment is referring to 33 C.F.R. Part 151, Subpart D, Ballast Water Management for Control of Nonindigenous Species in Water of the United States, which applies to vessels "that operate in the waters of the United States and are bound for ports or places in the United States." 33 C.F.R. § 151.2005. However, according to the Commonwealth, the international vessels that will be delivering the wind turbines will not need to carry (or discharge) ballast water. Therefore, our environmental analysis focused on the reasonable worst case situation for impacts due to the wind turbine delivery vessels taking on ballast before making their return trip. We found the level of impact on the aquatic environment from this practice would be minimal and acceptable. If the vessels do not take on ballast until they leave Buzzards Bay, then the projected impacts would be even less. Note, however, that ballast water is not the only vector of travel for invasive species; they can be frequently found on cryptic parts of a ship's hull or superstructure. Thus, EPA has required the Commonwealth to conduct annual monitoring of invasive species on the bulkhead and pilings at the new port facility.

4. *Deep Water Wind (Jeff Growbrowski) expressed its support for the Project, and voiced its confidence that offshore wind will begin in the northeastern part of the United States first and that New Bedford is ideally situated to the best wind resources offshore on the East Coast. He noted that huge ports have developed in Northern Europe where wind farms have been built and that his company is committed to building a large wind farm in the Northeast and committed to bringing jobs with them.*

EPA Response:

EPA thanks Deep Water Wind for its comment in support of the Project.

5. *Cape Wind (Jim Gordon) spoke of his support for the Project and, as happened in the past with construction of natural gas fired power plants that this company helped to build in the area which provided permanent, high-paying jobs for citizens in the area, this Project could "help catalyze and make this area the center of gravity for the offshore wind industry." He also commented that wind*

power produces even less environmental impact than natural gas power plants, thus reducing CO2 and SO2 in the air.

EPA Response:

EPA thanks Cape Wind for its comment in support of the Project.

6. *Neptune Wind, (Chuck Degadi) voiced his support for the Project and noted that there is a cumulative effect to having this terminal built in that there are many offshore wind development companies that are interested in building offshore wind projects off the coast of Massachusetts and they will bring construction, operation, engineering and management jobs.*

EPA Response:

EPA thanks Neptune Wind for its comment in support of the Project.

7. *Joseph Abboud Manufacturing Corporation (Anthony Sapienza) expressed its support for the Project noting its past experience with the textile industry in New Bedford that has died and the "cataclysmic" kind of event this Project offers to support growth in the offshore wind industry and which can revitalize the area.*

EPA Response:

EPA thanks Joseph Abboud Manufacturing Corporation for its comment in support of the Project.

8. *Mass Tank Manufactures (Steven Lynch) expressed it support for the Project seeing it as a game changer, bringing new industry to the area as well as business expansions, noting that if it doesn't happen in New Bedford, it will happen somewhere else and all the jobs will follow.*

EPA Response:

EPA thanks Mass Tank Manufacturer for its comment in support of the Project.

9. *New England Marine Renewable Energy Center (John Miller) expressed its support for the Project, noting the incredible scale of support needed for offshore wind, including assembly space, and the number of jobs created.*

EPA Response:

EPA thanks New England Marine Renewable Energy Center for its comment in support of the Project.

10. *Rodney Avila and Richard LaFrance, both longtime commercial fishermen, had similar comments. They both voiced their support for the Project and commented on the importance of preserving the working waterfront and associated jobs in the fishing industry. They commented that they do not find any negative effects on the*

waterfront or fishing industry from locating a terminal that supports the wind industry. They commented that the terminal can be a productive engine for the working waterfront and for the next generation.

EPA Response:

EPA thanks both Mr. Avila and Mr. LaFrance for their comments in support of the Project.

11. *TPI Composites (Jim Hannan) expressed its support for the Project and its potential for expansion of this wind blade manufacturing business.*

EPA Response:

EPA thanks TPI Composites for its comments in support of the Project.

12. *Fugro, (Sally McNeeland), an international geotechnical engineering from the Netherlands, expressed its support for the Project and the potential for expansion of its business in New Bedford.*

EPA Response:

EPA thanks Fugro for its comment in support of the Project.

13. *No Fossil Fuel (Mary O'Donald) expressed support for the Project and commented that PCBs should go into the CAD cell because it is urgent to get this Project done given the benefits of wind energy to the environment.*

EPA Response:

EPA thanks No Fossil Fuel for its comment in support of the Project and refers to General Comment No. 2 in response to the need for swift action in issuing a Final Determination.

14. *Sgurr Energy (James Toland), a Scottish company specializing in renewable energy, expressed its support for the Project, commenting that this company has been building and training its staff in the United States in anticipation of the wind industry. He urged an expeditious decision approving the Project "to help jump start the offshore wind industry in Massachusetts and the U.S.A. and be in a position to become a regional hub for future projects."*

EPA Response:

EPA thanks Sgurr Energy for its comment in support of the Project and refers to General Comment No. 2 in response to the need for swift action in issuing a Final Determination.

15. *K2 Management of North America (Garston Jensen) expressed its support for the Project and commented on the importance of investing in the infrastructure of the Harbor to support the wind industry otherwise the companies and jobs associated with the wind industry will move to harbors and ports that can accommodate the industry. He commented on the variety of jobs spawned by the industry and urge swift action on a final decision in favor of the Project.*

EPA Response:

EPA thanks K2 Management of North America for its comment in support of the Project and refers to General Comment No. 2 in response to the need for swift action in issuing the Final Determination.

16. *Siemens Wind Power (Kasper Vincent), manufacturer of offshore wind turbines, expressed its support for the Project, commenting on the attributes of a Harbor that make it suitable to support assembly of the components of the turbines, including accessibility to the offshore turbine location, local employment, support from local businesses, sand adequate acreage and based on his knowledge, the South Terminal Project meets these needs.*

EPA Response:

EPA thanks Siemens Wind Power for its comment in support of the Project.

17. *Global Marine Energy (Joel Whitman) an American subsidiary of a British company that is the largest installer of offshore cable in the world, expressed its support for the Project and commented that its company has a presence all over the world and with it jobs and that it would like to expand into the East Coast but so far there is not been a port to support offshore renewable energy. He urged all stakeholders to work together to bring this Project to New Bedford.*

EPA Response:

EPA thanks Global Marine Energy for its comment in support of the Project.

18. *EDF Renewable Energy expressed its support and commented that, based on its European experience in developing and building offshore wind projects, the location and scale of nearby ports is an important component in choosing where to assemble components and deploy vessels. This project is likely to result in new investment and job creation in Massachusetts.*

EPA Comment:

EPA thanks EDF Renewable Energy for its comment in support of the Project.

Responsiveness Summary
Attachment A – List of Submitted Comments

A. General Comments

B. Elected Officials
New Bedford Mayor Jon Mitchell
State Senator Tony Cabral
State Representative Chris Markey
Congressman William Keating (through James Quigley)
Congressman Edward Markey (through Mark Gallagher)
Senator John Kerry (through Amy Kerrigan)
Congressman Barney Frank (through Inez Goncalves-Drolet)
New Bedford City Council (President and Ward 2 City Councilor Steven Martins)
New Bedford City Councilor (Ward 3 City Councilor, Henry Bousquet)
New Bedford City Councilor (City Councilor, Joseph Lopes)
New Bedford City Councilor (Ward 4 City Councilor, Bruce Duarte)

C. Area residents
KarenVilandry [sic] Falange
Brendan Bowen
Lauren Costello
Tom Kennedy
Scott Lang, former Mayor, New Bedford
Joseph 'Jo-Jo' Fortes
Chuck Dade
Frank Haggerty

D. Trade Unions
Ironworkers – Local 37 (Roy Coulombe)
Greater Southeastern Mass Central Labor Council (John Fernandez)
Bricklayers Union (Tim Pimental)
International Longshoremens Association (Joseph 'Jo-Jo' Fortes)
New England Carpenters Union (Ron Rheaume)
Boston & New England Maritime Trades Council, AFL-CIO (Gerard Dhooge)
International Union of Operating Engineers, Local 4 (Louis Rasetta and David Fantini)

E. **Business Advocacy Groups**
New Bedford Economic Development Council (Anthony Sapienza)
Port of New Bedford (Ed Washburn)

F. Non Profit, Religious and Academic Institutions
Hands Across the River Coalition (Ed Rivera)

Old Bedford Village Development Corporation (John Buddy Andrade)
Environmental League of Massachusetts (Ken Pruitt)
Buzzards Bay Coalition (Marc Rasmussen)
Sierra Club (Drew Granday)
University of Massachusetts, Dartmouth (Paul Vigeant)
Church Council of Greater New Bedford (Rev. David A. Lima)
Marion Institute (Desa VanLaarhoen)
Clean Water Action (Joel Wool)

G. Federal and State Entities

National Marine Fisheries Service, Northeast Region (John K. Bullard)
Massachusetts Executive Office of Energy and Environmental Affairs (Gary Davis)

H. Commercial and Business Community

Acorn Management Company (Steve Rodni)
AFC Cable Systems (Ken Lamarre)
Maritime Terminal (Pierre Bernier)
Deepwater Wind (Jeff Grybowski)
Cape Wind (Jim Gordon)
Neptune Wind (Chuck Digate)
Joseph Abboud Manufacturing Corp (Anthony Sapienza)
Mass Tank (Stephen Lynch/Carl Horstmann)
New England Marine Renewable Energy Center (John Miller)
Richard LaFrance, Commercial Fisherman
TPI Composites (Jim Hannon)
Fugro (Sally McNeilan)
No Fossil Fuel (Mary O'Donnell)
Sgurr Energy (Jim Tolan)
K2 Management (Carsten Jensen)
Siemens Wind Power (Casper Kvitzau)
Global Marine Energy (Joel Whitman)
EDF Renewable Energy (Doug Copeland)
Rodney Avila, Commercial Fisherman

Responsiveness Summary
Attachment B – Reference Documents

1. Senate Bill No. 02367, The Commonwealth of Massachusetts, In the year Two thousand Twelve – An Act authorizing the commissioner of the Division of Capital Asset Management and Maintenance to convey certain land in New Bedford to the city of New Bedford.

2. Press Release from office of Jonathan F. Mitchell, Mayor, City of New Bedford, dated August 2, 2012,"Governor Signs Key South Terminal Bill: Project Continues to Accelerate".

3. Article from New Bedford Standard Times, dated July 19, 2012, "Council to take South Terminal vote, as project begins to inch forward".

4. Article from New Bedford Standard Times, dated August 1, 2012, "State moves forward on South Terminal".

5. Plan entitled "Approval Not Required Plan of Land located in New Bedford, MA prepared for City of New Bedford Development Authority recorded in the Bristol South Registry of Deeds in Plan Book 148 at Page 92. As referenced in The Consensual Order of Taking from Bristol South County Registry of Deeds Book 7642, Page 344.

6. City of New Bedford, MA/Success Stories/Brownfields in New England/EPA New England website found at http://www.epa.gov/region1/Brownfields/success/newbedford1.html.

7. Cover page, pages 1 and 8, Appendix 1 with 2 figures of a report entitled: Phase 1 Environmental Site Assessment, January 2006 For Property at: Former Standard Times Field, Lot 9G, New Bedford Massachusetts 02740, Prepared by TRC Environmental Corporation. The full report may be found at http://www.newbedford-ma.gov/Environmental/L2006-034new.pdf.