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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 **XX**, 2012.

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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

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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. <u>Monitoring</u>: 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 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 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.

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, 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 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.