UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

JUL 16 2020

To All Interested Parties:

Section 506 of the Water Resources and Development Act (WRDA) of 1992, which amended the Marine Protection, Research, and Sanctuaries Act of 1972 (MPRSA), requires the U.S. Environmental Protection Agency and the U.S. Army Corps of Engineers to prepare a Site Management and Monitoring Plan (SMMP) for all Ocean Disposal Sites.

Section 102 of MPRSA describes requirements for designated dredged material disposal sites, including the requirement of a schedule for review and revision of the SMMP ("which shall not be reviewed and revised less frequently than 10 years after adoption of the plan and every 10 years thereafter"). The SMMP for the Historic Area Remediation Site (HARS) was finalized on August 25, 1997. The SMMP was subsequently revised in 2000 and 2010.

On April 3, 2020, a public notice was issued for a 30-day public review of the draft revised SMMP. Comments were received from Clean Ocean Action and the U.S. Coast Guard. EPA Region 2 revised the SMMP based on comments received on the draft. The HARS SMMP is hereby approved by the Region 2 Administrator and will be in effect until the closure of the HARS or next SMMP revision.

If you have any questions concerning the HARS SMMP or require a copy, please contact Ms. Kathryn Drisco at (212) 637-3775/Email: Drisco.Kathryn@epa.gov.

Peter D. Lopez, Regional Administrator
U.S. Environmental Protection Agency
Region 2

US ARMY CORPS
OF ENGINEERS
NEW YORK DISTRICT

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2

Site Management and Monitoring Plan for Historic Area Remediation Site (HARS)

Final

July 2020

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New York District
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US Environmental Protection Agency
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1.0 Introduction

In September 1997, the United States Environmental Protection Agency (EPA) de-designated and terminated the use of the Mud Dump Site (MDS) and simultaneously re-designated the site and surrounding areas that had been historically used for dredged material disposal as the Historic Area Remediation Site (HARS) (40 CFR Sections 228.15(d)(6); see 62 Fed. Reg. 46142 (29 August 1997); 62 Fed. Reg. 26267 (13 May 1997). The HARS (which includes the 2.2 square nautical mile MDS) is a 15.7 square nautical mile area located approximately 3.5 nautical miles east of Highlands, New Jersey and 7.7

nautical miles south of Rockaway, New York (Figure 1). The presence of toxic effects of sediment, dioxin bioaccumulation exceeding Category 1 levels in worm tissue, as well as TCDD/PCB contamination in area lobster stocks supported the need for remediation of the sediments within the HARS. Since 1997, the HARS has been managed to reduce impacts of historical disposal activities at the site by lowering sediment contaminant concentrations to acceptable levels in accordance with 40 CFR Section 228.11(c) through the placement of material that meets ocean disposal criteria (Category I) and will hereinafter be referred to as "Remediation Material."

Section 506 of the Water Resources and Development Act (WRDA) of 1992, which amended the Marine Protection, Research and Sanctuaries Act (MPRSA) Section 102 (c)(3)(F), requires that a Site Management and Monitoring Plan (SMMP) be drafted and implemented for all ocean disposal sites (such as the HARS), and also provides for a schedule for review and revision of a SMMP to occur not less than 10 years after adoption of the SMMP, and every 10 years thereafter. When the HARS was designated in 1997, a SMMP was established.[4] The last review and revision of the HARS SMMP occurred in April 2010.[5-7] EPA Region 2 (EPA) and United States Army Corps of Engineers New York District (USACE) have reviewed the plan and have found that the original procedures and protocols continue to meet the management objectives of the HARS and will continue to be used. This updated SMMP fulfills the 10-year revision requirement of the MPRSA, as modified by WRDA.

An updated baseline of conditions at the HARS is presented in the sections that follow. Baseline conditions are defined as the most recent data at the time of writing this report. Together these data form our most current understanding of conditions in the HARS. Earlier baseline conditions, data, and establishment of specific requirements of the HARS can be found in the April 29, 2010 version of the SMMP (https://www.epa.gov/sites/production/files/2015-10/documents/r2_hars_smmp_3-10_final.pdf).[7]

The objectives of the SMMP are as follows:

A. Collect data to ensure that no significant adverse environmental impacts occur from the placement of Remediation Material at the HARS.
B. Recognize and correct potential unacceptable conditions before they cause any significant adverse impacts to the marine environment or present a navigational hazard to water-borne vessel traffic.
C. Provide a schedule for review and revision of the HARS SMMP.
D. Provide a program for monitoring the HARS.
E. Describe special management conditions/practices to be implemented at the HARS.
F. Determine/enforce compliance with MPRSA Permit and federal contract conditions.
G. Provide a baseline assessment of conditions at the HARS.
H. Specify the anticipated quantity of Remediation Material to be placed at the HARS and the presence, nature and bioavailability of the contaminants in the Remediation Material.

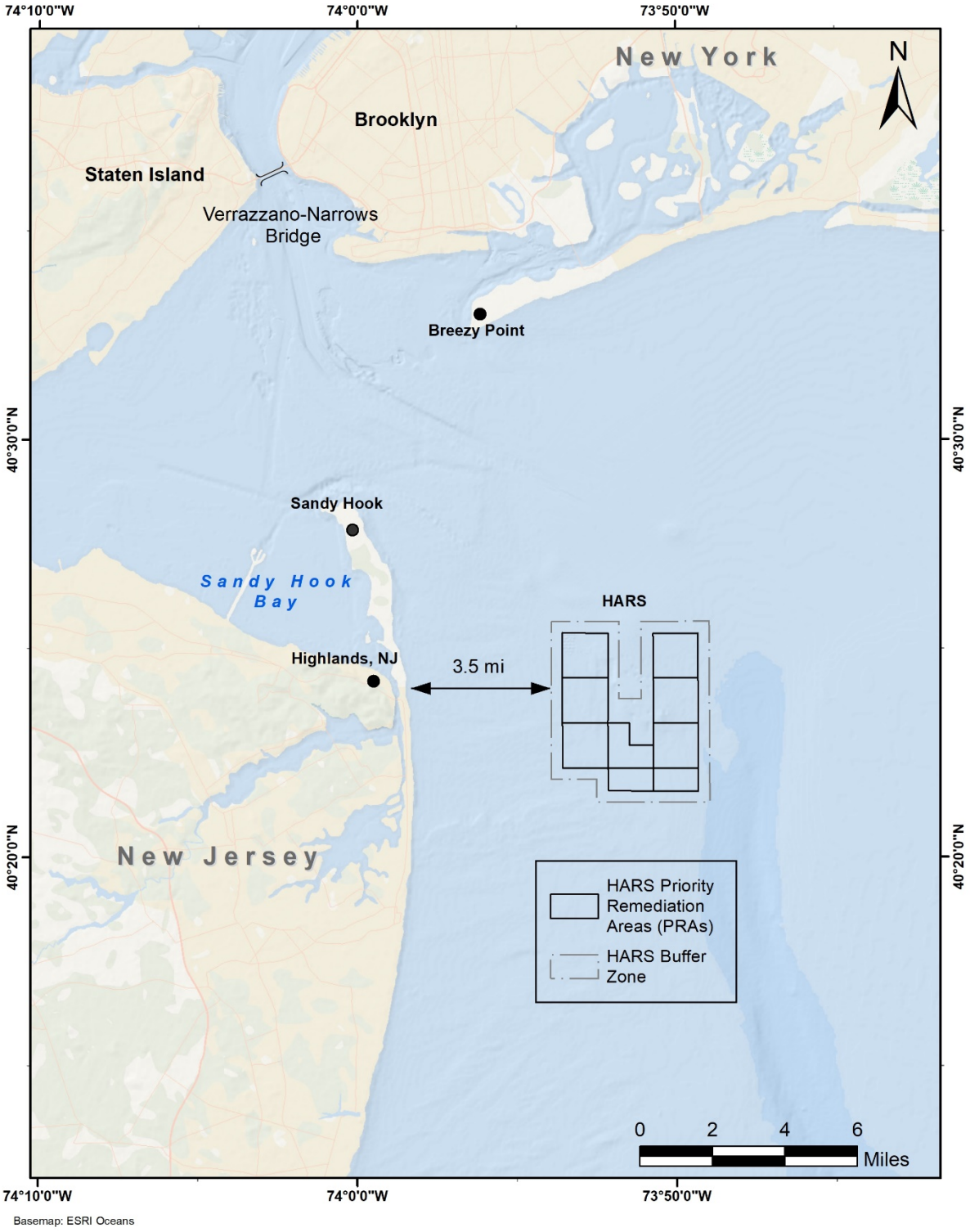

Figure 1. Location of the HARS

1.1 HARS Configuration

The areas for the HARS are described below and corresponding letter points are included in each section. Coordinates for each point are provided in Table 1 in Degrees, Minutes, Seconds (DMS) and Degrees, Decimal Minutes (DDM).

HARS Boundary: the boundary of the HARS is encompassed by points A, M, P, R, S, and V.

Priority Remediation Area (PRA): 9.0 square nautical mile area to be remediated with at least one meter of the Remediation Material. PRA boundary points are B, D, F, G, H, I, L, N, O, Q, T and U.

Buffer Zone: an approximately 5.7 square nautical mile area (0.27 nautical mile wide band around the PRA) into which no directed placement of Remediation Material will be allowed but may receive Remediation Material that spreads out of the PRA during placement. The Buffer Zone boundary points are A – V.

No Discharge Zone: an approximately 1.0 square nautical mile area in which no placement or incidental spread of Remediation Material is allowed. The No Discharge Zone boundary points are C, E, J and K.

Shipwreck Buffer Zones: a 0.27 nautical mile radius around the following coordinates due to the presence of shipwrecks in which placement of Remediation Material is prohibited:

1. 40° 25.30' W 73° 52.80' N
2. 40° 25.07' W 73° 50.05' N
3. 40° 25.27' W 73° 52.13' N
4. 40° 22.46' W 73° 53.27' N

Table 1. Coordinates for Individual Points of the HARS

Point	Latitude (DMS)	Longitude (DMS)	Latitude (DDM)	Longitude (DDM)
A	40° 25' 39" N	73° 53' 55" W	40° 25.65' N	73° 53.92' W
B	40° 25' 23" N	73° 53' 34" W	40° 25.38' N	73° 53.57' W
C	40° 25' 39" N	73° 51' 48" W	40° 25.65' N	73° 51.80' W
D	40° 25' 22" N	73° 52' 08" W	40° 25.37' N	73° 52.13' W
E	40° 23' 48" N	73° 51' 48" W	40° 23.80' N	73° 51.80' W
F	40° 23' 13" N	73° 52' 09" W	40° 23.22' N	73° 52.15' W
G	40° 23' 13" N	73° 51' 28" W	40° 23.22' N	73° 51.47' W
H	40° 22' 41" N	73° 51' 28" W	40° 22.68' N	73° 51.47' W
I	40° 22' 41" N	73° 50' 43" W	40° 22.68' N	73° 50.72' W
J	40° 23' 48" N	73° 51' 06" W	40° 23.80' N	73° 51.10' W
K	40° 25' 39" N	73° 51' 06" W	40° 25.65' N	73° 51.10' W
L	40° 25' 22" N	73° 50' 43" W	40° 22.68' N	73° 50.72' W
M	40° 25' 39" N	73° 48' 58" W	40° 25.65' N	73° 48.97' W
N	40° 25' 22" N	73° 49' 19" W	40° 25.37' N	73° 49.32' W
O	40° 21' 35" N	73° 49' 19" W	40° 21.58' N	73° 49.32' W
P	40° 21' 19" N	73° 48' 57" W	40° 21.32' N	73° 48.95' W
Q	40° 21' 36" N	73° 52' 08" W	40° 21.60' N	73° 52.13' W
R	40° 21' 19" N	73° 52' 30" W	40° 21.32' N	73° 52.50' W
S	40° 21' 52" N	73° 53' 55" W	40° 21.87' N	73° 53.92' W
T	40° 22' 08" N	73° 52' 08" W	40° 22.13' N	73° 52.13' W
U	40° 22' 08" N	73° 53' 34" W	40° 22.13' N	73° 53.57' W
V	40° 21' 52" N	73° 52' 30" W	40° 21.87' N	73° 52.50' W

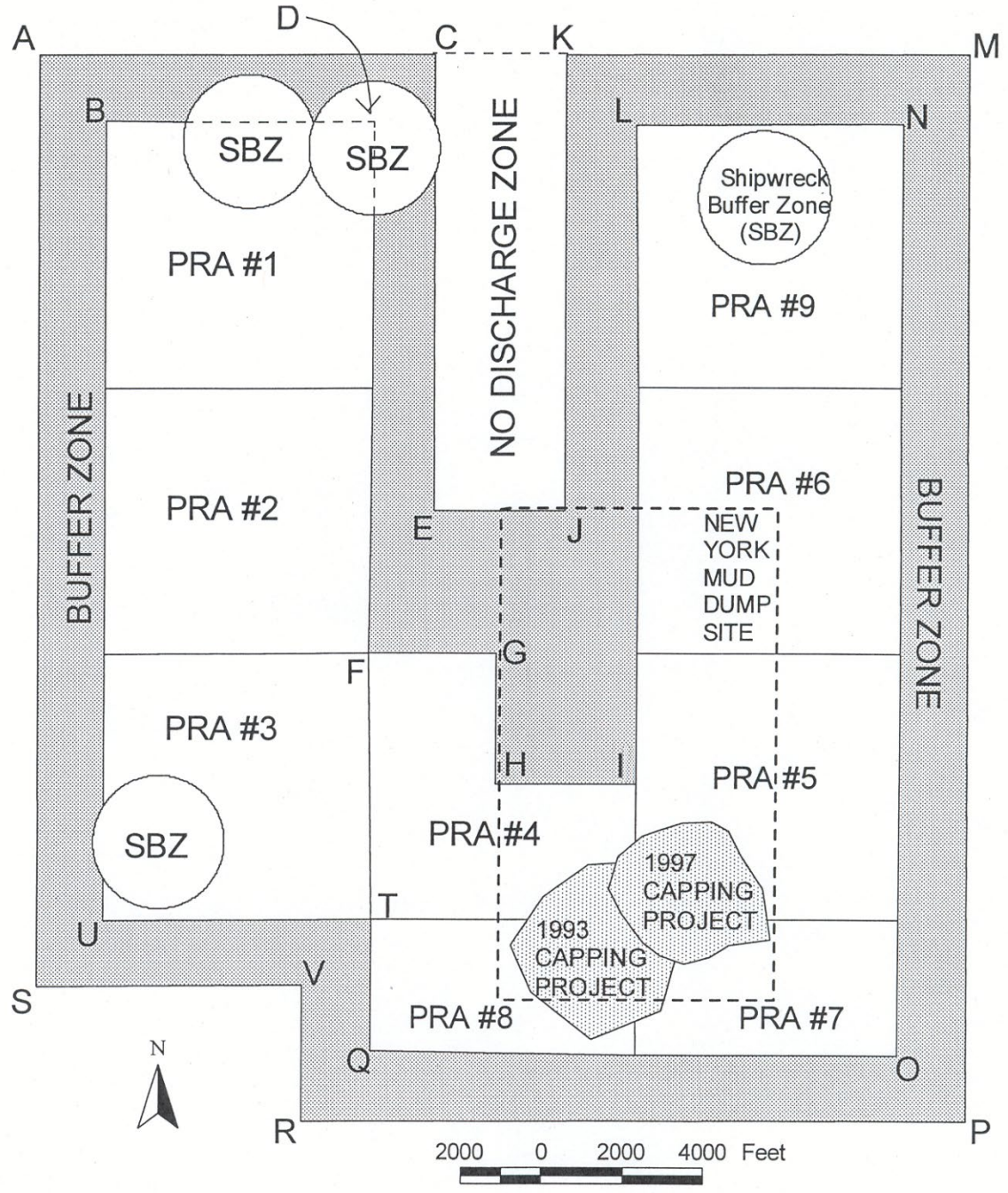

Figure 2. Historic Area Remediation Site including nine PRAs, HARS Buffer Zone, No Discharge Zone, Shipwreck Buffer Zones and Category II dredged material capping projects areas.

2.0 Summary of Remediation Activity

The HARS will be remediated only with dredged material that meets ocean disposal criteria and that will not cause significant undesirable effects through unacceptable toxicity or bioaccumulation. Dredged material meeting these standards will hereinafter be referred to as "Remediation Material." Remediation Material may not cause bioaccumulation of contaminants in test organisms exposed to the material to levels exceeding Category I standards, including 2,3,7,8-TCDD (dioxin) of 1 part per trillion and the HARS-specific worm tissue PCB criterion of 113 parts per billion.

Table 2 provides a summary of remediation activity at the HARS through December 31, 2019. Reported volumes are based on estimated scow volumes. Scow volume overestimates the actual placed volume because water is added to scows during dredging operations. Maintenance sediment consists primarily of sands and muds. Deepening material consists of clay, unsorted glacial tills, and rock. Rock from channel deepening projects were placed along the western edge of the HARS in PRAs 1, 2, and 3.

Table 2. Summary of HARS remediation projects through December 31, 2019

Project Type	Private Permitted	Federal Maintenance	Federal Deepening	Total
Number of Remediation Projects	75	25	29	129
Volume of Remediation Material (MCY = Million Cubic Yards)	16.036 MCY	9.513 MCY	51.047 MCY	76.596 MCY

2.1 Estimating Closure Date

Since 1998, approximately 40 million cubic yards of material has been placed at the HARS based on calculations of in situ volume based on depth changes through 2019. This corresponds to placement of more than 76 million cubic yards of material (estimated barge volumes). In 2017, bathymetry suggested that approximately 7.5 million cubic yards of capacity remained in the HARS (based on one meter) which is equivalent to some 15 million cubic yards of barge volume. Since that time a million or so cubic yards (barge volume) has been placed at the HARS.

In general, some 0.5 million cubic yards of maintenance materials (in barge) are managed at the HARS each year. Therefore, we might estimate that the remaining HARS capacity would accommodate 28 years of NY/NJ Harbor maintenance. However, there are anchorage deepening, bend easing, and other navigation improvements being considered which will generate significant volumes of material which could significantly reduce the serviceable life of the HARS.

Certain materials do not readily spread on the seafloor and therefore some mounding is expected for certain projects which leads to more than one meter being placed at certain locations. In addition, certain areas may require additional placement of Remediation Material to address areas

that continue to show relatively higher contaminant concentrations or reduced benthic health. With these uncertainties, estimating a closure date for the HARS is difficult, though it is expected to be on the order of ten years.

3.0 Updated Baseline Assessment

Data to characterize remedial progress and benthic conditions at the HARS have been collected over several years and from several different locations. Bathymetry, sediment toxicity and chemistry, and worm tissue residue data were collected from 1994 to 1996 to characterize conditions at the HARS at the time of designation. This SMMP incorporates more recent data including results from the latest bathymetry survey (2019), sediment profile imaging (SPI) surveys conducted in 2016,[9] sediment samples collected in 2011-2012, 2016 and 2018,[2,3,9,17] and worm tissue samples collected in 2011, 2012, and 2018 surveys to characterize current baseline conditions.[2,3,17]

3.1 Bathymetry

High-resolution bathymetry data is collected annually to determine the physical distribution and thickness of Remediation Material after its placement at the HARS. This data helps to assess progress in attaining the remediation goal of placing at least one meter of Remediation Material over the nine PRAs of the HARS. Bathymetry is also used to verify that a location may receive Remediation Material without becoming a hazard to navigation

Figure 3 shows the bathymetry of the HARS in 1998 and the most recent bathymetry data for 2019. Figure 4 shows the depth change that has occurred from 1998 to 2019.[12]

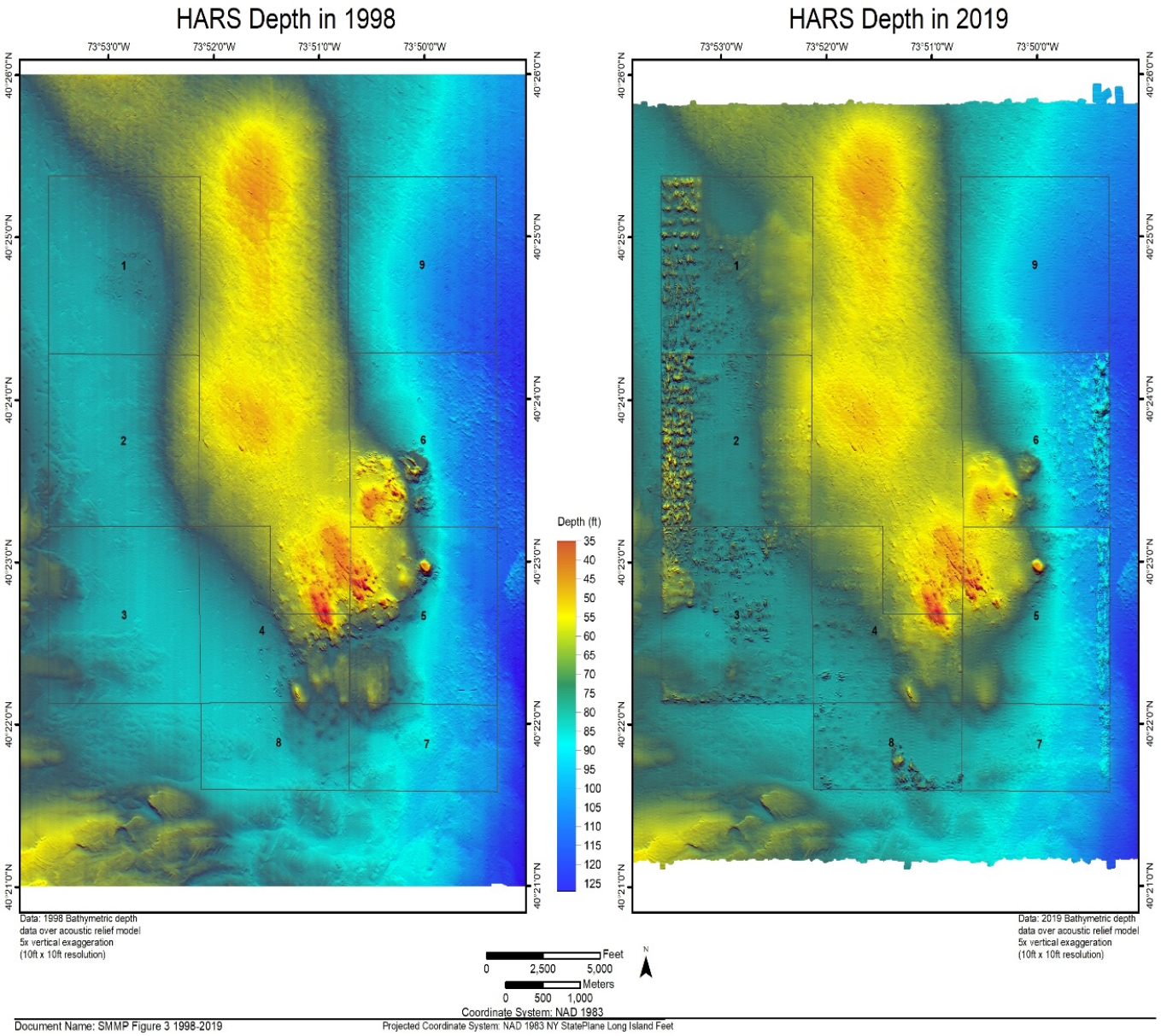

Figure 3. Depth of the HARS in 1998 and 2019[12]

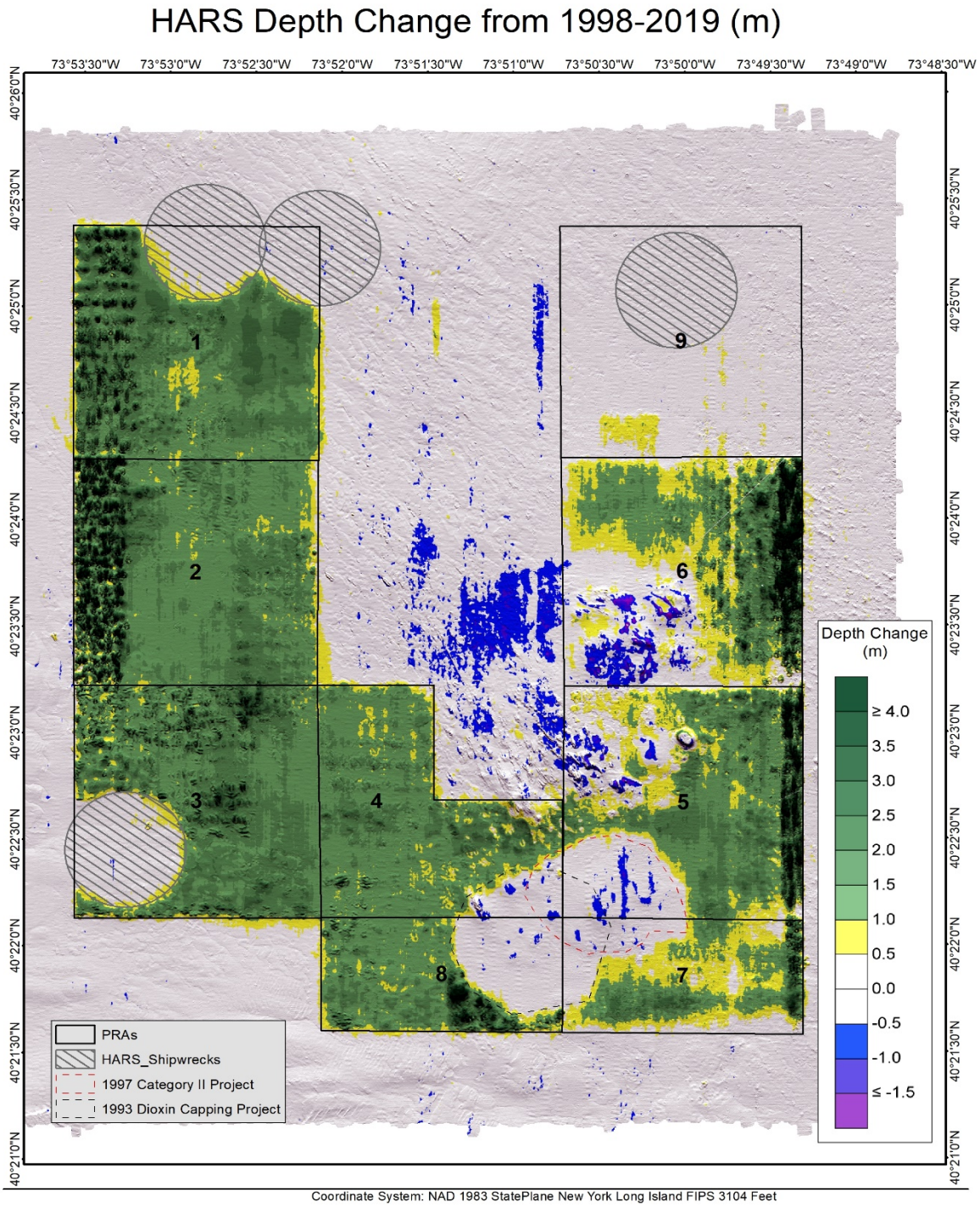

Figure 4. HARS Depth Change from 1998 -2019 in meters (m)[12]

3.2 Worm Tissue Testing and Analysis

Worm tissue samples collected in 1994-1996, 2011-2012, and 2018 were analyzed for the parameters listed in Table 3.[2,3,7] These data provide information on the uptake of contaminants by benthic infauna and a way to monitor for occurrence of unacceptable levels of bioaccumulation. Data from 1994-1996 show that contaminant concentrations varied broadly in tissues of worms collected from within the geographic footprint of the HARS prior to its designation.[7] The 2011-2012 and 2018 data are from worms collected from PRAs that had received at least 1 m of Remediation Material across 95% of its surface area.[2,3] While these datasets are not directly comparable because they are not from the same areas of the HARS, they provide information on post-remediation conditions in different areas of the HARS in reference to the range of pre-remediation conditions found across the entire site that formed the original baseline.

In the post-remediation monitoring in 2011-2012 and 2018, concentration maxima for all contaminants in worm tissue in the remediated HARS PRAs were lower than in the 1994-1996 pre-remediation sampling of the entire HARS. This indicates that remediation has been effective in lowering risks for bioaccumulation. However, levels of PCBs and dioxin in some of the worm tissue samples taken from remediated areas of the HARS were still above or close to the HARS limits.

Table 3. Concentration Ranges of Contaminants in Worm Tissue from the HARS

Parameter	Pre-remediation	Post-remediation*	
	1994-1996[7]	2011-2012[2,3]	2018[17]
	Entire HARS**	29 stations PRAs 1 & 2	8 stations PRAs 3, 4 & 8
Total PAH (ng/g wet weight or ppb)	244 to 928	66.6 to 414.8	176 to 521
Total PCB*** (ng/g wet weight or ppb)	54.6 to 225	14.8 to 83.6	28.6 to 55.1
Total DDT (ng/g wet weight or ppb)	13.3 to 44.8	2.96 to 15.8	6.72 to 10.41
2,3,7,8-TCDD (dioxin) (ng/kg wet weight or pptr)	2.96 to 5.84	0.01 to 1.37	0.38 to 0.94

* Post-remediation monitoring after placement of the minimum 1 m of Remediation Material

** PRAs were not yet established, sampling occurred throughout HARS including buffer zone and no discharge zone

*** PCB values should be multiplied by two to account for untested congeners

3.3 Sediment Testing and Analysis

3.3.1 Sediment Grain Size/TOC

Information about the physical makeup of the sediment provides information on the variety and distribution of substrate conditions that are important factors in benthic habitat. Data on sediment physical characteristics and carbon content can also be useful in evaluating sediment contaminant concentration data. These data can allow for standardization of organic contaminant concentrations for

sediment organic carbon content to better interpret any spatial differences in contaminant concentrations.

Grain size and total organic carbon (TOC) content of surface sediments in remediated areas of the HARS (i.e., PRAs 1, 2, 3, 4 & 8) were characterized in 2018. Particle size distribution of surface sediments was variable among stations sampled. Most stations had a majority proportion of sand. Ten stations were composed of > 90% sand. The remaining stations ranged in average sand proportion from 32.9% to 88 %. One station in PRA 3 and one station in PRA 8 had a higher average proportion of fines than sand, and another station in PRA 3 had approximately equal proportions of sand and fines. Gravel did not make up a high proportion in any station. Stations along the western edge of the HARS in PRAs 1-3 and in one station in PRA 4 had average proportions ranging from 1.2% to 21.5% gravel. Elsewhere, gravel made up < 1% of the sampled sediment. These gravels probably resulted from the placement of glacial till from deepening projects into these PRAs.

As is expected, TOC was generally higher in sediment samples having higher proportions of fine particles and lower proportion of sand. TOC content ranged from 2.51% to 0.99% (dry weight) in eight stations with higher proportions of fine particles. All other stations had average TOC contents below 0.75%.

3.3.2 Sediment Chemistry

Sediment chemistry data helps to determine the extent and distribution of dredged material and of specific contaminants. The results of the data analyses help to determine whether there is a potential for bioaccumulation of these contaminants to unacceptable levels and the need for body burden analyses. In addition to bioaccumulation of contaminants, sediment contamination can cause toxicity to exposed organisms.

The information provided in Table 4 below shows sediment contaminant ranges (2011-2018)[2,3,9,17] for samples collected in remediated areas of the HARS (PRAs 1, 2, 3, 4 and 8) compared to ranges of contaminants measured in sediment samples collected in the area of the HARS prior to its designation (i.e. 1994-1996).[7] Table 5 provides the results of amphipod toxicity tests conducted in areas of the HARS. Despite the inherent variability of sediment contaminant concentrations, the general trend shows a reduction in concentration of contaminants in PRAs where Remediation Material has been placed. The toxicity test results show that HARS surface sediment is not toxic to amphipods.

Table 4. Concentration Ranges of Sediment Contaminants in the HARS

	Pre-Remediation	**Post-Remediation***		
Parameter	**1994-1996**	**2011 & 2012[2,3]**	**2016[9]**	**2018[17]**
	Entire HARS**	**22 stations 29 samples PRAs 1 & 2**	**24 stations 29 samples PRAs 1, 2, 3, 4 & 8**	**26 stations 90 samples PRAs 1, 2, 3, 4 & 8**
Total PAH (ng/g dry weight or ppb)	10.7 to 33,067	13.7 to 3,442	-	4.5 to 23,190
Total PCB* (ng/g dry weight or ppb)	0.73 to 678	1 to 62.6	1.4 to 62.2	1.33 to 154
Total DDT (ng/g dry weight or ppb)	<0.07 to 151	<0.45 to 37.2	<0.23 to 16.4	<0.4 to 66.9
2,3,7,8-TCDD (dioxin)	<0.2 to 41.7	<0.01 to 2.07	<0.01 to 5.1	<0.006 to 5.18

(ng/kg dry weight or pptr)					
Metals (µg/g dry weight or ppm)	Silver	<0.04 to 7.33	0.035 to 0.7	-	<0.008 to 3.05
	Arsenic	2.3 to 29.7	1.41 to 5.7	-	1.71 to 22.7
	Cadmium	<0.03 to 3.22	0.001 to 0.253	-	<0.008 to 1.27
	Chromium	15.4 to 187	6.6 to 56.3	-	3.59 to 86
	Copper	4.8 to 178	1.24 to 50.1	-	0.95 to 138
	Mercury	<0.03 to 2.47	<0.0084 to 1.16	-	<0.006 to 1.53
	Nickel	<3 to 99.4	2.72 to 57.8	-	1.54 to 189
	Lead	10.2 to 402	3.3 to 39.1	-	2.8 to 130
	Zinc	20.5 to 329	8.96 to 100	-	7.62 to 256

* Post-remediation monitoring after placement of the minimum 1 m of Remediation Material over 95% of PRA

** PRAs were not yet established, sampling occurred throughout HARS including buffer zone and no discharge zone

*** PCB values should be multiplied by two to account for untested congeners.

- analysis not conducted

Table 5. Results of Sediment Toxicity Tests of Samples Collected at the HARS

Sediment Toxicity	**1994-1996[7]**	**2002[15]**	**2005[16]**	**2010[1]**	**2018[17]**
	Entire HARS*	**37 stations 37 samples All PRAs but 8**	**37 stations 37 samples All PRAs but 8**	**66 stations 66 samples All PRAs**	**17 stations 81 samples PRAs 1 - 4 & 8**
% Ampelisca Survival	0 to 99	75 to 98	92 to 100	83 to 100	75 to 100

* PRAs were not yet established, sampling occurred throughout HARS including buffer zone and no discharge zone

3.3.3 Sediment Profile Imaging (SPI)

Sediment Profile Imaging (SPI) is a technique by which a specialized apparatus is lowered to the seafloor to allow a digital image of the sediment-water interface to be obtained. These images provide useful information on the physical, geochemical and biological characteristics of surface sediments at those locations. SPI images are used to gauge the degree to which benthic communities are progressing toward a stable ecologically mature status following disturbance (burial). Stable benthic communities are characterized by increased species diversity and the increased presence of longer-lived burrowing species. This ecological progression is referred to as succession.

SPI was conducted in remediated areas of the HARS (PRAs 1, 2, 3, 4, & 8) in 2016.[9] Based on the species observed and level of colonization, a successional stage score from 1 to 3 was assigned to each image from the 2016 survey. Average successional stage was higher in PRA 3 than in a reference area outside of the HARS. Average successional stages in PRAs 2, 4, & 8 were similar to the reference area. Successional stage was too highly variable in PRA 1 to make a statistical comparison to the reference area. Overall these results show that although successional stage is variable within remediated areas of the HARS, sediments within these areas and outside the HARS support benthic communities of similar successional stages.

4.0 Future Remediation Needs of the HARS

From the establishment of the HARS up to December 2019, a volume of 76.596 MCY of Remediation Material has been placed at the HARS. This reported volume represents scow volume, not measured in-situ volumes at either the dredging site or the HARS. As can be seen in Figure 4, at least one meter of Remediation Material has been placed over 90% of PRAs 1, 2, 3, 4 and 8, and in substantial portions of PRAs 5, 6, and 7. Remediation Material will continue to be placed at the HARS to ensure that 95% of the surface areas of all PRAs are remediated with at least one meter of cover.

Sampling and testing of the HARS sediments and worm tissue indicate that concentrations of contaminants and bioaccumulation are generally decreasing when compared to earlier sampling and testing of HARS sediments and worm tissue. However, the 2018 data for worm tissue residues and sediment chemistry have shown specific locations where concentrations are at levels that warrant additional placement of Remediation Material in areas of PRAs that have reached the minimum coverage of one meter of Remediation Material.

In 2015, a series of videos and still images were obtained using divers and remotely operated vehicles along transects over rocks placed along the western margins of PRAs 1-3.[13] These surveys examined the status of the ecological communities on the rock surfaces. Differences in colonization were apparent that could not be explained by depth, water quality or date of placement. Additional survey efforts are being planned to investigate whether the sediment type adjacent to the rock placed on the western boundary of HARS is having an impact on recolonization of the benthic community on those rocks. If those studies reveal that specific sediment types, i.e. clays, are impacting recolonization, then additional coarse material may be placed to help with recolonization and to improve the habitat for benthic communities and biota.

5.0 HARS Remediation Permit Condition and Management Practices

5.1 HARS Permit Conditions

Placement of Remediation Material cannot occur at the HARS without a permit or MPRSA Section 103 (e) equivalent for Federal projects authorized by Congress. Department of the Army (DA) permits will be issued for HARS remediation activities involving non-federal projects and are valid for a period of three years. Copies of the permits or the letters modifying these permits can be obtained from the USACE. HARS-specific transport and placement Special Conditions are developed by USACE's New York District Regulatory Branch and Dredged Material Management Section prior to the issuance of permits/federal equivalents and are in addition to the general permit conditions that incorporate marine industry standards and US Coast Guard regulations. Special Conditions ensure compliant, safe, and efficient dredged material placement at the HARS. These Special Conditions may address: the placement grid within the HARS, requirements and duties for NYD-certified Dredged Material Inspectors (DMI), reporting requirements for Transportation and Placement Logs and Checklists (Appendix A), monitoring software requirements, and other requirements that may be necessitated by the nature of a dredging project or its timing. An example of placement requirements for a HARS project is provided in the Appendix.

5.2 Federal Authorization

Contracts for Federal Navigation Projects incorporate Special Conditions into contract specifications (see MPRSA Section 103 (e)). These conditions are equivalent to permit conditions and are enforceable under applicable law.

5.3 Violation/Enforcement Cases and Corrective Actions

Any action which does not comply with the authorization issued pursuant to MPRSA, or its equivalent, or for which authorization has not been issued, may violate MPRSA and is subject to civil or judicial enforcement action. This includes, but is not limited to, unauthorized activities (overdredging, short dumps, etc.), noncompliance with activities described in any permit or equivalent (Contract Specification and/or Work Order for Federal Projects), reauthorization, response letter, remediation requirements, and/or remediation operation. The USACE may refer MPRSA enforcement to EPA or EPA may initiate enforcement.

5.4 Management of Placement Activities

Grids are developed in Arc GIS to designate specific locations in a PRA for placement of Remediation Material at the HARS. These grids are created for each project based on the physical characteristics and volume of material and the thickness of Remediation Material needed to provide 1-meter of cover at that location based on the results of annual bathymetric surveys.

Data is collected from every HARS placement trip via multiple methods: scow monitoring data captured from onboard sensors tracked online (using the Automated Disposal Surveillance System – ADISS), Transportation and Placement Logs filed by DMIs after each trip, and periodic bathymetry monitoring surveys to check extent of placement. These logs and surveys are compiled to inform management decisions related to future placement and remediation, as well as for the purpose of enhancing placement guidelines.

6.0 HARS Monitoring Program

MPRSA 102 (c)(3)(B) requires that the SMMP include a program for monitoring the site. The HARS Monitoring Program (HARSMP) will serve to address both the regulatory and technical issues associated with placement of Remediation Material at the HARS and status of the HARS in general. Monitoring program activities include remediation monitoring and post-remediation monitoring. Remediation monitoring occurs until 95% of the PRA has been covered with at least one meter of Category I dredged material as determined by bathymetry. Once 95% of the PRA has been covered with at least one meter of Category I material, post-remediation monitoring activities occur. Funding for HARS Monitoring activities is a high priority within the USACE budget for the New York District. Funds have always been made available as part of the New York Harbor Federal Navigation Project. New York District will continue to allocate as much funds as is necessary to fully implement the SMMP.

6.1 HARS Monitoring Program (HARSMP)

The HARSMP will focus on the overall effects of the placement of Remediation Material on the entire HARS and in each of the nine Priority Remediation Areas (PRAs). In addition to addressing focused scientific questions regarding physical, chemical, and biological conditions at the HARS, overall goals of the HARSMP are as follows:

A. Monitor and verify that Remediation Material placed at the HARS does not cause any significant adverse environmental impacts, including through bioaccumulation.

B. Monitor and verify that Remediation Material placed at the HARS does cause desirable impacts, such as non-toxicity to amphipods.

C. Assess and monitor sediment quality at the HARS as compared to the HARS Baseline Data (40 CFR Section 228.9 and Section 228.10) and the Impact Category I conditions in the PRA within the HARS (40 CFR Section 228.11).

6.2 Coordination

EPA and the USACE will coordinate meetings, as needed, with a Scientific Review Panel (SRP) to discuss relevant monitoring and status issues. The SRP will consist of qualified representatives from federal agencies, state agencies, academia, public interest groups, port representatives, and consultants. Attendance at SRP meetings will be by invitation only. All data reports and meeting minutes will be provided to interested persons/parties on request.

6.3 Types of Monitoring

The HARSMP consists of physical, chemical and biological monitoring. The types of monitoring suitable for assessing remediation do not need to be conducted sequentially. However, the results of one or more activities will be evaluated to determine if additional monitoring activities are warranted.

6.3.1 Physical Monitoring

Various methods will be employed to determine the physical distribution and characteristics of Remediation Material after its placement at the HARS (i.e., assess whether material conformed to the placement design). Types of measurements may include bathymetry, side scan sonar imaging, Sediment Profile Imaging (SPI) and grain size analyses.

6.3.2 Chemical Monitoring

Monitoring will be conducted to evaluate bioaccumulation of contaminants of concern in benthic organisms (body burden levels) and sediments. Measurements may include sediment toxicity, analysis of the body burden levels of contaminants within target marine species, and analysis of level of contaminants within sediments. Analytical methods, detection limits, and quality assurance information are contained in the EPA/USACE Regional Testing Manual (EPA/USACE 2016).

6.3.3 Biological Monitoring

Monitoring will typically be done by measuring and analyzing benthic community structure using SPI and/or standard benthic community structure measurements of species diversity, abundance, and biomass.

6.4 Questions and Triggers to be Addressed by Monitoring/Surveillance Activities in the HARSMP

Management questions and triggers have been developed to guide the monitoring of remediation of the HARS.

Available funding will directly impact the number and type of activities that can be performed in any given fiscal year.

6.4.1 Questions

The following actions describe monitoring activities that are recommended, as opposed to required, for attaining the best possible data for addressing scientific questions regarding conditions at the HARS.

Question 1. Are Remediation Material placement operations consistent with the requirements of the issued permits/authorizations?

Actions:

- Monitor real-time data outputs of the scow monitoring systems for proper placement of the material
- Review the USACE Certified Dredged Material Inspector Reports, scow monitoring data and information submitted by permittees to determine compliance
- Conduct independent surveillance of remediation operations
- See Section 5.3 for corrective actions/enforcement

Question 2. Has the PRA been capped with at least 1 meter of Remediation Material?

Actions:

- Conduct a high accuracy multi-beam bathymetric survey of the PRA annually

Question 3. Has the placement of Remediation Material within all areas of the HARS met HARS SMMP Objectives A and B?

Actions:

- Conduct a bathymetric survey of the entire HARS annually
- Conduct sediment toxicity tests in the specific PRAs (1 through 9, depending on placement schedule) where Remediation Material has been placed

Question 4. Are Remediation Material placement operations causing significant unacceptable impacts (physical, chemical or biological) at the HARS and/or surrounding areas?

Actions:

- Review Certified Dredge Material Inspector Report to ensure that Remediation Material is not being placed in the HARS in the presence of any marine mammals/endangered turtles
- Monitor marine mammals/sea turtle landings/strandings
- Conduct bathymetry survey to detect any loss of Remediation Material and pre-HARS dredged material from the HARS
- Conduct sediment toxicity tests in remediated areas
- Conduct benthic community structure analyses as needed within the HARS and surrounding area (sooner if other monitoring results trigger additional monitoring)

EPA and the USACE have concluded that routine placement of Remediation Material at the HARS conducted in accordance with the provisions of this SMMP will not have any adverse impacts on marine mammals/sea turtles. The Endangered Species Act (ESA) Section 7 consultation conducted with NOAA-NMFS has been periodically revisited since the HARS's designation; the latest consultation (September 2012) is still current and up to date (NOAA/NMFS 2020). However, EPA and the USACE continue to monitor marine mammals/sea turtle landings/stranding in order to determine if there is any correlation between stranding and HARS placement activities.

Question 5. Has post-remediation monitoring been conducted?

Actions:

- The option to conduct post-remediation monitoring activities may be exercised when 95% of a PRA has been remediated with at least one meter of Remediation Material and/or time has passed, without active placement, to allow sufficient recolonization of worm populations to levels that would provide adequate tissue samples for body burden analyses.

Question 6. Do Remediation Material placement operations significantly alter the benthic community structure of the HARS or surrounding area in the long-term (i.e. allowing sufficient time for re-colonization by the same or similar organisms)?

Actions:

- Conduct benthic community structure monitoring using SPI technology as needed if other monitoring results trigger additional monitoring

6.4.2 Triggers

Triggers are characteristics that will initiate making decisions as to whether field surveys, additional investigations or management actions are necessary. Specific trigger actions will be decided between EPA and the USACE on a case-by-case basis. If results indicate that any of the triggers have been identified, then decisions will be made as to whether field surveys, additional investigations or management actions are necessary. The SRP will be consulted on these decisions, as appropriate.

Trigger 1. Loss of Remediation Material, such that less than 60 cm (24 in) of Remediation Material exists over the remediated areas within the HARS (including capped mounds inside the boundaries of the former MDS) will result in appropriate action, which may include the implementation of contingency capping operations and/or trigger additional investigations in the appropriate location(s) (sediment chemistry, toxicity).

Trigger 2. Bathymetry indicating sufficient cover and SPI data indicating recolonization or lack of recolonization in remediated areas will trigger timely investigation as to whether additional monitoring activities are needed and if additional placement of the Remediation Material is needed.

Trigger 3. Demonstrated increase in tissue chemical concentrations above HARS suitability levels will trigger timely investigations into whether post-remediation monitoring activities are warranted. Upon identification of unsuitable body burdens, EPA and the USACE will examine monitoring data to determine the cause, if possible, and decide upon corrective management actions (additional remediation, move remediation location, etc.).

Trigger 4. Surficial sediment toxicity tests indicating biologically significant amphipod toxicity in areas determined to have been remediated will trigger timely investigation into whether additional analyses are needed and if additional placement of the Remediation Material is needed.

6.4.3 Quality Assurance/Quality Control (QA/QC)

Monitoring activities will be accomplished through a combination of EPA and USACE resources. Documentation of QA/QC is required by both agencies for all monitoring activities (i.e. physical, chemical, biological sampling and testing). QA/QC is documented in the form of Quality Assurance Project Plans (QAPP) and/or Monitoring Work Plan. QAPPs are required for all EPA and USACE monitoring activities. Analytical methods, detection limits, and QA procedures are contained in the EPA/USACE Regional Testing Manual (2016).

7.0 References

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2) EPA Region 2, 2011. Ocean Survey Vessel BOLD Survey Report: Post-remediation Monitoring of Sediment Chemistry and Worm Tissue Residue at the Historic Area Remediation Site and Marine Debris Baseline Monitoring in New York Bight Apex. August 2011.

3) EPA Region 2, 2012. Ocean Survey Vessel BOLD Survey Report: Post-remediation Monitoring of Sediment Chemistry and Worm Tissue Residue at the Historic Area Remediation Site and Marine Debris Baseline Monitoring in New York Bight Apex. August 2012.

4) EPA Region 2/USACE-NYD. 1997. Site Management and Monitoring Plan for the Historic Area Remediation Site (HARS) (August 1997)

5) EPA Region 2/USACE-NYD, 2005. Site Management and Monitoring Plan for the Historic Area Remediation Site (Revision, August 2005).

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7) EPA Region 2/USACE-NYD, 2010. Site Management and Monitoring Plan for the Historic Area Remediation Site. (Revision, April 2010).

8) EPA Region 2/USACE-NYD, 2016. Guidance for Performing Tests on Dredged Material Proposed for Ocean Disposal (Regional Testing Manual). April 2016.

9) INSPIRE Environmental, 2017. HARS Monitoring Report Including Synthesis and Comparison of Data Collected in 2010, 2011, 2012, 2014, 2015 and 2016. Contract No. W912DS-13-D-0007, Task Order #0003. Submitted to US Army Corps of Engineers, New York District, July 2017.

10) INSPIRE Environmental, 2018. Multibeam Echosounder Survey (MBES) Final Report for the 2018 Historic Area Remediation Site (HARS) Monitoring Project. Contract No. W912DS-18-F0071, Work Order #0005. Submitted to US Army Corps of Engineers, New York District, October 2018.

11) INSPIRE Environmental, 2019. 2019 Historic Area Remediation Site (HARS) Shipwrecks Investigation Report. Contract No. W912DS-19-D0006, Task Order #0006. Submitted to US Army Corps of Engineers, New York District, December 2019.

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13) INSPIRE Environmental and Battelle, 2017. Data Analysis Report for the Region 2 Historic Area Remediation Site: Quantitative Image Analysis: Hard Bottom Habitat Quality Assessment. Contract No. EP-C-14-017, Work Assignment 2-02. Submitted to EPA Region 2, March 2017.

14) NOAA/NMFS, 2020. Email communication from E. Carlos-Supino to Kathryn Drisco, dated March 4, 2020.

15) Science Applications International Corporation (SAIC), 2003. Results of the Summer 2002 Sediment Toxicity and REMOTS Sediment-Profile Imaging Survey at the Historic Area Remediation Site. Submitted to US Army Corps of Engineers, New York District. May 2003.

16) Science Applications International Corporation (SAIC), 2005. Results of the Summer 2005 Sediment Toxicity and Sediment-Profile Imaging Survey at the Historic Area Remediation Site. Submitted to US Army Corps of Engineers, New York District. December 2005.

17) *Unpublished:* EPA Region 2. Survey Data Report: Results of the Fall 2018 HARS Monitoring Survey. To be completed in 2020.

8.0 Appendix A

DEPARTMENT OF THE ARMY PERMIT
HARS Placement Requirements

Permittee: _____

Permit No.: NAN-20XX-_____

Project: Dredging Project _____

1. DREDGED MATERIAL TRANSPORT, PLACEMENT AND MONITORING

The Historic Area Remediation Site (HARS) Placement Requirements (placement requirements) must be used by the permittee for the placement at the HARS of only dredged material determined suitable for such purposes, as per the criteria set forth by the U.S. Environmental Protection Agency (EPA) in Title 40 of the Code of Federal Regulations (40 CFR 227.27(b)). All placement activities occurring at the HARS will be conducted in accordance with the placement requirements.

The permittee must implement these placement requirements to ensure compliance with all applicable laws, regulations and special conditions specified in Department of the Army (DA) Permit NAN-2016-01924 (the permit), including those requirements within the Marine Protection, Research and Sanctuaries Act (MPRSA Section 103) for the monitoring and surveillance of the transportation and ocean-placement of dredged material, and associated with the joint U.S. Army Corps of Engineers (USACE) / EPA (Region 2) HARS Site Management and Monitoring Plan (SMMP), as required by MPRSA Section 102 (c)(3)(B).

The basic components of the placement requirements are described below. The implementation of these requirements is discussed thereafter.

2. DREDGED MATERIAL TRANSPORT AND PLACEMENT MEETING

Prior to the initiation of all dredging, representatives of the permittee (including all of the permittee's agents, representatives, contractors, and Inspectors on the project), shall meet with representatives of the USACE NY District (NYD) to discuss these placement requirements. Placement of dredged material must NOT occur until this pre-construction meeting (otherwise known as the Dredged Material Transport and Placement Meeting (DMTPM)) has occurred. The placement requirements may be subject to change at any time during the dredging project. Any changes or additional requirements, specified by NYD, must be implemented by the permittee as soon as practicable.

At the pre-construction meeting, the permittee must provide a list of all container vessels[1] planned for use on this dredging project, which must include at least one (1) vessel designated as a backup barge (as per the applicable special condition for this permit). Container vessels identified for use on the project must be certified by the permittee to be fully operational, mechanically sound, completely seaworthy, and free of leaks or other defects.

At the pre-construction meeting, the permittee must also submit a list to NYD with the names of all DMIs who will be working on the project (as per the applicable special condition for this permit). This list must also specify and verify DMI company affiliations,

[1] The term "container vessel" refers to any vessel used to contain, or hold, dredged material (scow, barge, hopper dredge, etc.).

DMI certification, and the expected duration of employment. DMIs who will be on duty at the beginning of the dredging project must be present at the pre-construction meeting to review the placement requirements associated with this project. Any DMIs who begin duty after the first day of dredging must also be briefed by NYD personnel on the placement requirements prior to working as a DMI on the project. Notice of replacement DMIs must be submitted to NYD at least five (5) business days prior to beginning work, unless unforeseen events prevent such notification.

The permittee must also provide NYD with documentation of National Marine Fisheries Service (NMFS) endangered species/marine mammal observer certification for each such observer who will be working on the project at the pre-construction meeting (see Section 4.).

3. NEW YORK DISTRICT CERTIFIED DREDGED MATERIAL INSPECTORS

The permittee, at its own expense, shall have NYD certified dredged material inspectors (DMIs) monitor the transport of all dredged materials to the HARS and/or any other open-water placement location, as described further within this section. A list of DMIs can be obtained from the NYD Technical Manager for Dredged Material Management, Ryan Corbett, at (917) 790-8082. Only DMIs on this list may be used during this project.

The permittee is responsible for ensuring that DMIs, employed either directly or through sub-contracting, are fulfilling the DMI duties described in these placement requirements. Any DMI determined to be performing unsatisfactorily may also be subject to de-certification of their DMI status by NYD.

DMIs are not required to be present on transport vessels[2] used when transporting container vessels loaded with dredged material for upland treatment/placement, however, NYD may require the permittee to provide an independent observer to accompany each upland placement trip and to verify data associated with each upland placement trip.

3.1 RESPONSIBILITIES OF DREDGED MATERIAL INSPECTORS

Dredged material inspector (DMI) responsibilities are described as follows:

- DMIs will ensure that the placement requirements are being followed;

[2] The term "transport vessel" refers to any vessel (tugboat, hopper dredge, workboat, etc.) used to move a container vessel. In the case of a hopper dredge, the hopper dredge may act as both a "container vessel" and a "transport vessel". If hopper dredge engines are not used for propulsion, and another vessel (tugboat, for example) is used to move it, then the hopper dredge would be the "container vessel" and the tugboat would be the "transport vessel".

- DMIs are required to be on duty and in the transport vessel wheelhouse, to observe container vessel monitoring[3] equipment function, watch for endangered species, if the DMIs are also NMFS certified endangered species/marine mammal observers (see Section 4. for further explanation of these NMFS observer requirements), from the time the transport vessel departs from the dredging site, until the container vessel has completely emptied and **all DMI reporting requirements have been completed for each placement;**

- DMIs must estimate the volume of dredged material within each container vessel prior to the start of each trip to the designated dredged material placement location. The dredged material density and container vessel draft must be used by the DMI to estimate this volume, via use of dredging contractor-provided container vessel loading tables, unless the container vessel monitoring software provides the calculation automatically based on container vessel sensor data. This estimated volume must be recorded on the USACE (NYD) Transportation and Placement Log (TPL) form (see Section 8. for an example of this form);

- DMIs must clearly photograph each container vessel (both in close-up and overview) with a working digital camera after loading, but prior to transport away from the dredging site. The close-up photograph must show the loaded container vessel such that the level and characteristics of material (e.g. color, texture, material composition, and approximate grain size) within the container vessel can be determined from the photograph. The overview photograph must show the relationship between the material in the container vessel and the container vessel itself (e.g. height of material in container vessel, distribution of material in container vessel, standing water next to dredged material in container vessel, etc.). The DMI must also take a photograph of the container vessel that documents the position of the plimsoll line relative to the water level;

    - The minimum resolution required for each photograph is 1200 x 1600 pixels. Digital cameras used for the photography must be capable of both wide and narrow angle photographs;

    - The permittee[4], either directly or indirectly via one or more of its agents (e.g. dredging contractor) , will be responsible for ensuring that sufficient lighting is provided to meet the container vessel photograph requirements, regardless of weather conditions or time of day. Flash photography must be used if darkness or other conditions require supplemental illumination. If the flash included with

[3] The terms 'dredged material monitoring' and 'container vessel monitoring' are used interchangeably throughout this document.

[4] Where within this document, it states the permittee's responsibilities, this is inclusive of any and all agents (e.g. dredging contractor) that may act on the permittee's behalf to ensure these placement requirements are met. Failure of an agent to act on the permittee's behalf does not relieve the permittee of its responsibility to comply with these placement requirements.

the digital camera does not provide adequate lighting, supplemental flash units and/or flood lights, may be necessary;
- Each digital photograph must be submitted, by the DMI, with the other container vessel monitoring data (TPL, checklist, etc.) for posting on the dredged material / container vessel monitoring website. Photographs must be digitally imprinted with the dredging project name, permit number, date and time of each photograph, the trip number, and the container vessel identification;

- DMIs must measure the distance from the transport vessel to the container vessel, at the time of placement, using the hand-held laser range finder (if necessary) and record the value on the TPL;

- DMIs must complete a TPL and checklist for each ocean placement trip made by a container vessel loaded with dredged material, while on duty within the transport vessel, utilizing the dredged material monitoring software on a laptop dedicated for this purpose. DMI submittals (i.e. TPL and checklist), on the basis of one (1) set of submittals for each container vessel of dredged material, must be electronically submitted to NYD by email within two (2) hours after each placement event at the HARS has occurred.

  - The DMI must either select “YES” or “NO” for each checklist item as appropriate, at each major stage of a trip (i.e. at the dredging site, while underway to the open water placement site, and during placement of dredged material). The checklist is included in Section 9. of these requirements;

  - Any items receiving a "NO" answer are considered discrepancies and must be reported **immediately** to NYD at (917) 790-8082 or (917) 790-8537, the permittee, and a dredging contractor representative not on the towing vessel, and the Dredged Material Monitoring Equipment and Software Contractor (DMMESC). These contacts are referred to as the "Notification List". Any discrepancies must also be recorded in the ‘Comments’ section of the TPL;

  - When DMIs place the ‘Notification List’ telephone calls, DMIs must state their name, the dredging project they are serving as a DMI on, the name of the transport vessel, container vessel, the date, the time, and a brief description of the checklist item and the reason for the "NO" answer(s) for any checklist items;

- In the event of container vessel monitoring equipment/software[5] malfunction, the DMI must manually complete a map of the placement area showing the position of the container vessel at the time container vessel doors were first opened, including the distance from the transport vessel to the container vessel (as determined using the hand-held laser range finder), the transport vessel differential global positioning system (DGPS) position at the time of initial container vessel door opening, the

[5] Including both the Primary Dredged Material Monitoring Equipment and Software (PDMMES) and Backup Dredged Material Monitoring Equipment and Software (BDMMES) systems), discussed further in Sections 5.1 and 5.2, respectively.

vessel direction of travel, and the bearing to the container vessel from the transport vessel. Maps must also be submitted to NYD with the TPL and other required documents. Please refer to Section 7.2 for a detailed description of this procedure;

- DMIs are NOT responsible for the operation of transport vessels nor are DMIs authorized to operate any equipment used to open and/or close container vessels;

- The permittee may be required to have DMIs take on additional duties at any time during the dredging project, as specified by NYD.

3.2 EQUIPMENT REQUIREMENTS FOR DREDGED MATERIAL INSPECTORS

The permittee is responsible for ensuring that each DMI working on the dredging project is provided with the following equipment (e.g. items, provisions, accommodations, and supplies):

- A legible copy of the permit or contract specifications;

- A legible copy of the placement requirements (including the placement grid map) received at the pre-construction meeting, and any additional requirements provided by NYD during the dredging project;

- An 8" - 12" wide protractor with degrees printed or embossed on the curved surface, and dividers for scaling distances off of maps and charts;

- Container vessel loading tables for each container vessel used to transport dredged material;

- A fully operational, handheld laser range finder with a range of at least 1,000 feet, not more than ten (10) years old. Spare batteries for the laser range finder must be available at all times;

- A working digital camera for the purposes of taking container vessel load and plimsoll photographs, which meets the specifications and requirements described above in Section 3.1;

- A fully operable cellphone in each DMI's possession at all times, with active phone numbers unique to each phone, available for placing and receiving calls at all times. DMI cell phone numbers must be provided to NYD at the pre-construction meeting;

- Access to the transport vessel DGPS, fathometer, and radar;

- DMIs must be provided with a designated bunk space or other suitable sleeping location, and a suitable location for completing paperwork associated with DMIs duties, while working aboard a transport vessel as a DMI.

- DMIs are not allowed to be on duty for more than twelve (12) hours per twenty-four (24) hour day (a day is defined as the 24-hour period from 12:00 AM to 12:00 AM the following day);

- DMIs must be provided a minimum of eight (8) hours of continuous off-duty time each day to allow appropriate rest to ensure safety and competence.

4. NATIONAL MARINE FISHERIES SERVICE ENDANDERED SPECIES / MARINE MAMMAL OBSERVERS

The permittee shall ensure that a National Marine Fisheries Service (NMFS) approved Observer is aboard the vessel transporting any container loaded with dredged material to the placement site. The observer will have the responsibility for determining the presence of endangered species (sea turtles and whales) during transit to, and upon arrival at the location for all placement activities. The observer will ensure that the transport and container vessels do not intentionally approach any whale or sea turtle closer than 100 feet while in transit to and from the HARS. Upon arrival at the placement site, placement of dredged material may occur only if no endangered species are observed to be present within a 0.25 nautical mile of the placement site.

If endangered species are observed to be present within 0.25 nautical mile of the designated placement location, then the placement of dredged material must not occur. Placement of the dredged material may occur only when the observed animals have moved outside the 0.25 nautical mile zone around the designated placement location or have completely departed the site.

In all such cases where whales or sea turtles have been encountered, the observer must submit a written report incorporating the following information: animal type (Whale or sea turtle); the specific species (if known); the date, time and location of the sighting (latitude, longitude); approximate distance away from the transport vessel and/or container vessel; number of individuals observed; behavior (feeding, nursing, migrating, etc.).

DMIs who are also certified as NMFS Observers may fulfill the duties of both positions currently on the same project. If a DMI is to also serve as a NMFS Observer, he/she must possess or acquire, prior to the initiation of the project, valid certification from NMFS of training on techniques for identifying species and preparing applicable reports for instances where endangered species are encountered. *Please note, if a DMI is not a NMFS certified endangered species/marine mammal observer, the permittee must still ensure that such an observer is aboard the vessel transporting any container loaded with dredged material to the placement site within the HARS, as per the permit special conditions.*

5. DREDGED MATERIAL MONITORING EQUIPMENT

The permittee is required, at its own expense, to have all container vessels used to transport dredged material to any and all placement or treatment locations (HARS, non-HARS, or any other locations in the New York Bight or Lower Bay or any other area) equipped with container vessel monitoring equipment and software, through a separate contractor (i.e. Dredged Material Monitoring Equipment and Software Contractor (DMMESC)) not owned or affiliated with the dredging company. Only the DMMESC may service (e.g. install, modify, program, repair/replace and/or remove) the container vessel monitoring software/equipment.

Container vessel monitoring equipment must be installed and operating correctly on any container vessel used to transport dredged material prior to ANY dredged material being placed in the container vessel. All container vessel monitoring data collection must begin prior to ANY dredged material being placed in the container vessel and continue for the duration that any dredged material is contained in a container vessel. Container vessels loaded with any quantity of dredged material transported from the dredging site, must have all monitoring equipment functioning and recording data.

The permittee shall ensure that the container vessel monitoring equipment is continuously operational twenty-four (24) hours each day, at all times any dredged material is being loaded at dredging sites, when any dredged material is contained within any container vessel, when any dredged material is transported from dredging sites, while any container vessels are returning to dredging sites after ocean placement, and when any container vessel is returning from upland facilities.

The permittee is also responsible for maintenance of all container vessel monitoring equipment and software, through the services of a Dredged Material Monitoring Equipment and Software Contractor (DMMESC). Any problems with operation/function of the container vessel monitoring software and/or equipment must be directed to the DMMESC immediately to address, and to the NYD at (917) 790-8082 or (917) 790-8537. The DMMESC for this permit is ADISS, Inc. ADISS can be contacted by email at the following addresses: mwakeman@adissdata.com and adouglas@adissdata.com. Any monitoring equipment that is damaged or destroyed must be replaced/repaired prior to using the container vessel again.

At any time during the dredging project, the permittee must provide the DMMESC full access to all dredges, transport vessels, and/or container vessels used on this project, as the DMMESC determines necessary, to complete any services that may be required to fulfill the container vessel monitoring requirements associated with the project.

As it pertains to such services stated above, the permittee must provide the DMMESC with transportation from the shore to any vessel equipped with container vessel monitoring equipment, and any other assistance determined reasonable and/or

necessary. Transportation must be provided in a timely manner such that the requirements associated with container vessel monitoring continue without interruption.

The permittee must provide the DMMESC with all plans and specs, drawings, etc., associated with the project at least ten (10) business days prior to the start of dredging;

The permittee is required to provide the DMMESC with a container vessel loading table, or ullage table, for each container vessel used to transport dredged material to upland facilities and ocean placement locations, that includes the range of possible container vessel drafts associated with the range of possible dredged material volumes contained in each container vessel;

Container vessel monitoring equipment and software must be approved by NYD prior to use. If NYD has not previously observed the operation of a specific sub-contractor's container vessel monitoring equipment and software proposed for use, the permittee is responsible for satisfactorily demonstrating the operability of this proposed equipment and software in order to receive approval by NYD. Such approval must be obtained by the permittee at least ten (10) business days prior to the start of dredging.

The following specifications are associated with, and required for, the container vessel monitoring equipment, software, and the container vessel monitoring website:

- A self-contained "black box" unit must be installed on all container vessels, and must be capable of recording on a twenty-four (24) hour basis, latitude and longitude positions of the container vessel, through DGPS (or wide area augmentation system (WAAS) enabled) technology, and container vessel draft, using a water pressure sensor, and the level of dredged material within container vessels, using a bin level sensor, both at variable sampling rates ranging from one (1) reading (i.e. of position, draft, and bin level every six (6) to nine (9) seconds to one (1) reading every one (1) minute:

- Container vessels used to transport sand, glacial till, Pleistocene clay, or rock, to an offshore placement location (HARS and/or reef) must include fore and aft draft sensors and one (1) bin level sensor.

- Container vessels used for transport of fine-grained, muddy dredged material to the HARS must include fore and aft draft sensors and fore and aft bin level sensors.

- Container vessels used to transport fine-grained, muddy dredged material to upland placement/treatment sites must include one (1) bin level sensor and one (1) draft sensor.

- Any transport vessels used to transport dredged material to any location, and all dredges used on the project, must be equipped with satellite (or cellular) real-time tracking and messaging systems maintained by the DMMESC;

- All transport vessels used to transport dredged material to open-water placement sites (non-upland placement/treatment locations) must be equipped to automatically record bathymetric data using a fathometer on each transport vessel. Transport vessel fathometers must have digital data output that is compatible with container vessel monitoring laptop computers and software;

Laptop computer container vessel monitoring software must include the following required capabilities:

- Trip numbering assignment, to be entered by the DMI at the beginning of each placement trip;

- Electronic versions of the TPL and checklist, to be completed by the DMI during each placement trip;

- Map displays with selectable scales that allow DMIs to view the dredging site, the New York Harbor area and New York Bight, the HARS and designated placement grids and coordinates. The container vessel monitoring software must graphically display placement grids developed for the project and allow viewing of the position of the transport vessel and/or container vessel throughout the placement trip;

- Links to websites that allow National Oceanic and Atmospheric Administration (NOAA) offshore buoy data to be viewed in real-time, along with the latest marine weather forecasts;

- Real-time plotting of container vessel draft, bin level and speed, to be used to monitor potential container vessel leakage;

- Downloading of digital camera photos for inclusion with placement trip data;

- Collection of transport vessel fathometer data for inclusion with other placement trip data. Fathometer data must be collected within the specified boundaries that define each placement site;

- Transmission, at the end of each placement trip, of electronic TPLs, checklists, container vessel position, speed, draft & bin level data, fathometer data, and digital photos, to a website described below.

A website must be maintained by the DMMESC and include the following capabilities and reporting products:

- All data collected by the container vessel monitoring equipment, including, but not limited to, trip plots, draft & bin level plots, TPLs, checklists, digital photos, must be posted to a website accessible to NYD personnel as follows:

- within two (2) hours of DMI submission of the data from the laptop computer.

- within twenty-four (24) hours of container vessel unloading at the upland/treatment facility, for each container vessel used for upland placement/treatment.

- Plotting of summary maps, illustrating recorded trip courses (i.e. trip plots) to placement site(s), as a function of trip quantity (i.e. individual, multiple or all trips), trip date range, dredge, container vessel, transport vessel, DMI, placement location, and sub-project i.d., This feature must also allow the user to sub-query and map the selected trip data sets, as a function of the parameters described above, based on trip positioning data classification, as follows: loading points, standby points, all placement points, first placement point, full trip plot (i.e. all data points).

  This feature must allow the user to view trip data at various scales, by map type (i.e. areal overview (with and without labels), and road), and by pre-configured default zoom extents (i.e. initial overview (full trip plot), dredging site, and placement site). Interactive coordinate information (i.e. latitude & longitude specified in decimal degrees to six (6) decimal places) must be illustrated, as function of cursor position on the map.

  This feature must also contain a measuring tool that allows the user to measure distances (in feet, yards, miles, nautical miles, meters, and kilometers), areas of any shape (in square (sq.) feet, sq. yards, sq. miles, sq. meters, sq. kilometers, acres, and hectares, and plot points (in decimals degrees, and in degrees, minutes, seconds).

  - Plotting of all recorded container vessel draft, bin level, and transport vessel speed, data points, as function of time, per selected trip data set. Each data plot type must be clearly distinguished from the others, must allow for cursor selected illustration of date, time and value (i.e. draft & bin level in feet, and speed in knots, both to one (1) decimal place) for each recorded data point.

  As the cursor moves across any of the data plots, the respective position as which all data was recorded, must be illustrated in the map display of the trip plot.

  This measure must also allow the user to zoom in and plot sub-sets of trip data.

  - Automatic generation of emails to the Notification List for the following trip incidents:

  - TPL checklist items marked "No".

- Misplaced dredged material (e.g. emergency short dumps, or mis-dumps due to human and/or mechanical error, at the dredging site, in transit, or in the vicinity of the placement site).

- Container vessel losses or gains in draft and/or bin level of 1.5 feet or greater, occurring during the transit and/or standby phases of a trip (based on the DMMESC's quality assurance (QA) review of the trip data set); the standby phase is defined as that stage in the trip, prior to transit to the HARS, either after the loading phase at the dredging site is complete, or in between loading phases, regardless of the nature of the loss or gain.

- Malfunctioning / non-working sensors (e.g. DGPS, bin, draft/water pressure) on any container vessels.

- Observed placement location depths shallower than fifty (50) feet, based on recorded fathometer values.

All of the automatic emails types described above will also be recorded on the website in a consolidated database. This database must include the following data fields: trip number, container vessel, transport vessel, DMI, alarm type, date sent, and hyperlink to the email sent. For the 'TPL checklist' emails, this database must keep a record of the cumulative "No" results for the duration of the project, including a description of and tally of those checklist items receiving a "No";

- A placement grid cell management tool that reports the following per grid cell: total container vessel placements, total estimated volume of dredged material in the cell resulting from container vessel placements, the trip numbers associated with the container vessel placement events that occurred within the cell. The placement grid cell management tool must also have the capability for NYD, or the DMMESC as directed by NYD, to enable, disable, and set the number of maximum container vessel placement events within placement grid cells;

- Positioning information, viewable in real-time, or as soon as data transmission permits, of all dredge plants, container vessels and transport vessels used in the project, based on location data acquired by the satellite (or cellular) tracking system.

The satellite (cellular) tracking system must allow NYD to communicate with DMIs stationed aboard transport vessels via a messaging tool within the website, as a backup measure, when other modes of communication are not possible (e.g. in the event transport vessels are out of cell phone range);

- A dredging production database that reports the following per trip: trip number, date of trip, dredge used, transport vessel used, container vessel used, trip destination, estimated container vessel volume, and the time taken for the

following - container vessel loading, container vessel de-watering, container vessel transit, container vessel unloading, dredged material disposal from the container vessel, return trip from the placement site and container vessel idleness, as applicable. The dredging production database will also include a map of the dredging site that is updated after the completion of each trip with the location of where dredging associated with each container vessel-loading event occurred;

- Transport vessel fathometer data must be acquired during all trips, and generated into the following reporting formats, for viewing on the container vessel monitoring website:

- Trip-specific bathymetric plots (depth vs. time).

- Bathymetric map(s) of the placement site, based on the cumulative fathometer data collected throughout the duration of the dredging project; where overlapping of data occurs, the shallowest depth must be reported. For rock projects, the above-described map must be generated and updated on a weekly basis. For non-rock projects, the above-described map must be generated at project completion.

- Provide a maintenance log on the container vessel monitoring website of the DMMESC's remote-access and on-site service visits associated with any container and/or transport vessel hardware/software installation and/or repairs.

- The DMMESC will submit all acquired monitoring data on a weekly basis, for those weeks that data acquisition occurs, no later than (NLT) the close of business (COB) of the Friday of the following week. This data will be submitted remotely, via a USACE-approved web-based file sharing system, which the DMMSEC will be provided access to by NYD at the start of the project. Should the DMMSEC not be able to transmit the data remotely via this system, it must do so by regular mail, in a CD/DVD format to NYD (address specified below), and within the same timeframe described above.

  The positioning data associated with each trip, must be submitted in format compatible with ArcGIS10 software, such that the user is able to view the data output as a function of loading points, all placement points, first placement point, full trip plot (i.e. all data points).

  This data submission must also include all required digital photos taken by DMIs of loaded container vessels.

  All information entered into TPLs must be submitted in a relational database format.

  DEPARTMENT OF THE ARMY
  U.S. Army Corps of Engineers, New York District, Operations Division
  Dredged Material Management Section (CENAN-OP-SD)

Jacob K. Javits Federal Building
26 Federal Plaza (Room 16-406)
New York, NY 10278-0090
Attn: Ryan Corbett
Office: (917) 790-8082

5.1 PRIMARY DREDGED MATERIAL MONITORING EQUIPMENT AND SOFTWARE SYSTEMS

Primary Dredged Material Monitoring Equipment and Software (PDMMES) systems, consisting of laptop computers with container vessel monitoring software, onboard all transport vessels used to transport dredged material to all sites, must allow the data (e.g. vessel location, draft, and bin level), being collected by the "black box" unit DGPS (or WAAS enabled) receiver and sensors on the container vessels being transported, to be viewed in real-time by the DMIs and by transport vessel crew members when used for open-water placement trips. PDMMES system data must be automatically transmitted from all container vessels to the transport vessel for storage and transmission to the DMMESC's computer system for posting on the container vessel monitoring website.

5.2 BACKUP DREDGED MATERIAL MONITORING EQUIPMENT AND SOFTWARE SYSTEMS

Backup Dredged Material Monitoring Equipment and Software (BDMMES) systems, used for placement trips, consisting of laptop computers with container vessel monitoring software, onboard all transport vessels used to transport dredged material, must allow the DGPS (or WAAS enabled) position of the transport vessel to be viewed on the computer screen, along with an estimated position of the container vessel based on the towing distance and angular offset of the container vessel from the course line of the transport vessel.

6. HISTORIC AREA REMEDIATION SITE (HARS)

The HARS is a 15.7 square nautical mile area located approximately 3.5 nautical miles east of Highlands, New Jersey and 7.7 nautical miles south of Rockaway, Long Island, New York, bounded by the following coordinates[6]:

Point	Latitude (DMS)	Longitude (DMS)	Latitude (DDM)	Longitude (DDM)
A	40º 25' 39" N	73º 53' 55" W	40º 25.65' N	73º 53.92' W
M	40º 25' 39" N	73º 48' 58" W	40º 25.65' N	73º 48.97' W

[6] https://www.epa.gov/ocean-dumping/site-management-and-monitoring-plan-smmp-historic-area-remediation-site-nj

P	40º 21' 19" N	73º 48' 57" W	40º 21.32' N	73º 48.95' W
R	40º 21' 19" N	73º 52' 30" W	40º 21.32' N	73º 52.50' W
V	40º 21' 52" N	73º 52' 30" W	40º 21.87' N	73º 52.50' W
S	40º 21' 52" N	73º 53' 55" W	40º 21.87' N	73º 53.92' W

DMS = Degrees, Minutes, Seconds
DDM = Degrees, Decimal Minutes

	NJ State Plane Coord. (2900)	
	Easting	Northing
A	659540.27	581207.48
M	682506.88	581374.53
P	682787.79	555066.12
R	666299.18	554944.14
V	666275.59	558283.33
S	659696.53	558237.73

7. PLACEMENT OF DREDGED MATERIAL AT OCEAN WATER SITES

7.1 PLACEMENT OF DREDGED MATERIAL AT OCEAN WATER SITES, GENERAL

All placement of dredged material within the HARS must occur in accordance with the placement requirements, and with any additional requirements provided by NYD at any time during the project. Additional placement locations may be provided after dredging begins.

The permittee must receive grid coordinates for the HARS placement location(s) before dredging starts. Individual grid cells may be as small as 100 feet wide and 100 feet long. Details of the placement location within the HARS, for HARS-suitable dredged material (see Section 10.), will be provided at the pre-construction meeting.

Twenty-four (24) hours prior to departure of the first project vessel from port for the open water placement of any dredged material, the permittee must notify NYD by email. Emails regarding departures must be made to the Dredged Material Management Section at ryan.p.corbett@usace.army.mil, beth.k.nash@usace.army.mil, and kelly.l.vega@usace.army.mil. The permittee must furnish the permittee name, project name, DMI name and estimated time of departure.

All non-rock material approved for ocean disposal shall be transported to the HARS, unless otherwise directed. Dredged material placement must not occur anywhere outside of the HARS, in HARS buffer zones, in shipwreck buffer zones, in the HARS "No Discharge Zone", or in any other area of the HARS determined by NYD to be off-limits for dredged material placement.

All placement events must be recorded and signed by the master of the tow. Every vessel engaged in the transportation of dredged material must have its name or number, and owner's name, painted in letters and numbers at least fourteen (14) inches high, on both port and starboard sides of the vessel. These names and numbers must be kept distinctly legible at all times, and vessels not so marked, cannot be used to transport or place dredged material.

The NY District reserves the right to have NYD and/or EPA employees and other invited representatives accompany all trips to the placement site(s) to observe placement activities and/or verify the permittee's compliance with these placement requirements.

7.2 PLACEMENT OF DREDGED MATERIAL AT OCEAN WATER SITES, PROTOCOLS

To help ensure proper placement of dredged material at the HARS, or other open-water placement locations, the following placement protocols must be followed:

a. DGPS navigation and fathometer equipment must be present and fully operational on board the transport vessel and must be calibrated periodically in accordance with the manufacturer's guidelines. The instrumentation must also conform to current industry standards. Re-calibration of the instrumentation will be required in instances where major modifications to the transport vessel have been made. Specific documentation certifying the accuracy of instruments may be requested by NYD when needed at any time. Fixed aids to navigation, with known latitude-longitude coordinates, must be used periodically to double-check the accuracy of navigation equipment. In addition, locations with a known depth and stable bottom must be used to periodically double-check accuracy of fathometers.

   Container vessels may not be transported from the dredging site for offshore placement of dredged material unless the transport vessel DGPS navigation system, container vessel monitoring equipment and software, transport vessel fathometer, hand-held laser rangefinder, container vessel radio-control system (if used), digital camera, and backup radio on container vessel (if a scowman is used) are all in full working order and provide correct information.

b. The container vessel radio-control system (if used on the project) and the PDMMES and BDMMES systems must be inspected for correct operation. If any problems with the container vessel, radio-control system, PDMMES and BDMMES systems, video camera, or laser range finder, are encountered, corrections must be made before offshore transport of the container vessel may proceed, except when DMMESC personnel are onboard or attempting to fix a container vessel monitoring problem, in which case placement would proceed using the BDMMES. However, the BDMMES must not be used on more than two (2) consecutive placement trips.

c. Container vessels must be inspected for the presence of any conditions that may cause potential leakage. Prior to loading an empty container vessel at the dredging site, the empty container vessel must be inspected for presence of large dents or visible holes. Any holes must be repaired prior to placing any dredged material in the container vessel. Dents must be closely examined to ensure that a hole is not present, or that the hull strength is not compromised. The juncture of the two (2) split hulls, when the container vessel is closed, must form a straight line and the rubber gasket must form a tight seal. Damage to the rubber seal or juncture must be repaired prior to loading the container vessel.

   Prior to leaving the dredging site, container vessels must be inspected to ensure correct operation of mechanical features. Container vessels must also be inspected for the presence of any conditions that may cause navigation problems. At least one (1) backup container vessel must be available for immediate use, if one (1) of the regularly used container vessels developments a condition that prevents it from being fully operational, mechanically sound, completely seaworthy, and free of leaks or other defects.

d. Container vessels loaded with a total of more than 6,000 CY of dredged material and water must not be transported to the HARS. Only HARS-suitable dredged material can be transported to the HARS. Container vessels used for transporting HARS-suitable material must not be used for the transport of material that is unsuitable for the HARS; container vessels used for transporting material, unsuitable for the HARS, to upland placement/treatment sites, must not be used for the transport of HARS-suitable material to the HARS and/or other open-water placement sites.

   Floatable material, and/or trash, and/or debris excavated during the dredging project, including, but not limited to, wood, tires, scrap metal, car bodies, shopping carts, etc., must never be transported to the HARS or other open-water placement locations, regardless of the source of the items/material. Only dredged material approved for open-water placement shall be transported and/or placed at designated open-water placement locations. The permittee will be responsible for retrieving non-approved materials/items from open-water placement sites if such placement occurs.

e. The permittee is responsible for determining, prior to the departure of the transport vessel from the dredging site, that the forecasted weather and sea conditions at the expected time of placement of dredged material within the HARS will:

   1) Allow for the safeguard of personnel and property during the transporting operation and full release of material from the container vessel at the designated location and

   2) Not result in a loss of dredged material from the container vessel due to waves breaking into the container vessel.

If weather/sea conditions will not permit placement of dredged material at the designated grid cell, the container vessel must not be towed from the dredging site until conditions improve and allow safe and accurate dredged material placement.

f. Container vessels must be observed for potential leaking of dredged material, as indicated by visible turbidity plumes (muddier water) behind the container vessel, or significant change (of greater to or equal than 1.5 feet) in the container vessel draft and/or bin level. Container vessels exhibiting gradual changes (of at least one (1) foot) in draft and/or bin level changes may be leaking, and this must be noted on the TPL, and also must be reported to the Notification List immediately.

   If gradual draft and/or bin level changes appear to occur regularly, or if a significant change in container vessel draft and/or bin level occurs during any trip, the permittee must examine the container vessel as soon as possible to determine if a leak is present. If a situation arises that requires emergency dumping of dredged material, all reasonable efforts to dump outside of navigation channels must be made by the permittee.

   The container vessel draft and bin level values, as recorded by the container vessel sensors, must be documented in the TPL by the DMIs reported five (5) minutes of departing from the dredge site, while in transit, and at the designated placement location, just prior to container vessel door opening.

g. Container vessels must be brought to the designated grid cell, or coordinates, of the HARS, or other designated placement location, using the DGPS navigation systems of the transport vessel and the container vessel monitoring software onboard the transport vessel. Placement in the appropriate location must be documented by the DMI using the container vessel monitoring software while the container vessel position data is automatically being recorded by the container vessel monitoring system.

   Container vessels must be towed at an appropriate speed and tow length that ensures successful placement of dredged material at the placement site, and that also maintains reliable navigation under safe weather/sea conditions. For each trip, the DMI must measure the distance from the transport vessel to the container vessel at the time of placement using the hand-held laser range finder, obtain a reading, and record the value on the TPL.

   During each trip to the HARS, the dredged material contained in a container vessel must be able to be placed (initiation of placement) within individual grid cells as small as 100 feet wide and 100 feet long. Dredged material placed outside of designated grid areas of the HARS must be minimized to the maximum extent practicable. Dredged material placement must not occur anywhere outside of the HARS, in HARS buffer zones, in shipwreck buffer zones, in the HARS "No Discharge Zone", or in any other area of the HARS determined by NYD to be off-limits for dredged material placement.

h. If the PDMMES does not show reliable DGPS (or WAAS enabled) coordinates in the vicinity of the designated placement grid or other designated placement location, or is not functional, the BDMMES must be used to locate the placement site and estimate the container vessel position during placement. Length of towlines must be measured using the hand-held laser range finder. The bearing to the container vessel from the transport vessel must also be noted at the time of placement. Vessel navigation must be maintained in the direction of the maximum grid dimension for all placements, to the greatest extent possible.

The angular displacement of the container vessel from the transport vessel course (i.e. trackline) must be estimated by sighting the container vessel behind the transport vessel while holding a protractor with the 90-degree mark pointing directly behind the transport vessel in line with the vessel track line (wake). A pencil must then be used to point at the container vessel, to the left or right of the 90° mark, to determine the angular displacement off of the transport vessel track line, recorded as degrees to the left or right when sighting the container vessel, rounded to the nearest 5°. Container vessels directly behind the transport vessel would be reported at 0° angular displacement (a container vessel displaced 10° to the left of the 90° mark on the protractor would be reported as 10° left, etc.). This angle must be recorded on the TPL, along with the following information if this option is used:

1) Coordinates of the transport vessel at the start and end of placement.

2) Length of tow line (distance from transport vessel stern to container vessel bow).

3) Angular displacement of container vessel from trackline of transport vessel.

4) Estimate of lateral displacement of container vessel from the transport vessel trackline.

5) Estimated longitude and latitude of container vessel at time of door opening and closing.

The lateral displacement may be estimated by the following formula (for angular displacements up to 20 degrees):

Lateral Displacement = Tow Length x Sine of Angular Displacement

The following values of sine (i.e. Sin θ) may be used:

Sin (5 degrees of angular displacement) = 0.087
Sin (10 degrees of angular displacement) = 0.174
Sin (15 degrees of angular displacement) = 0.259
Sin (20 degrees of angular displacement) = 0.342

For example, when using a 200-foot tow length, a container vessel is observed to track 15 degrees to the right of the transport vessel trackline. The estimated lateral displacement of the container vessel is:

200 feet x 0.259 = 52 feet

This means that when plotting the container vessel position on a map of the placement area, the container vessel would be plotted ~50 feet to the right and ~200 feet behind the position of the transport vessel (i.e. tow length distance). The errors in estimating increase with longer tow lengths. Because of this, it is critical to maintain as short a tow length as possible if the BDMMES or transport vessel's DGPS navigation system is used for placement. Perimeter grid cells are not permitted for use if PDMMES is not functioning. The closest adjacent grid cell toward the center of the grid must be used.

If the PDMMES system fails after leaving the dredging site, the backup system may be used for up to two (2) consecutive placement trips while awaiting DMMESC personnel to service the equipment. No more than two (2) consecutive trips to ocean placement sites may be made by such container vessels without the PDMMES fully functioning.

i. If neither the PDMMES nor BDMMES show reliable DGPS (or WAAS enabled) coordinates in the vicinity of the designated placement grid or other designated placement location, or are not functional, or weather/sea conditions prevent reliable maneuvering of the container vessel, the transport vessel DGPS must be used to position the container vessel at the center of the grid, or other backup location in the grid as specified by NYD.

Length of towlines must be measured using the hand-held laser range finder. The bearing to the container vessel from the transport vessel must also be noted at the time of placement. The angular displacement of the container vessel from the transport vessel course (track line) must be estimated by sighting the container vessel behind the transport vessel while holding a protractor. This angle must be recorded on the TPL, along with the following information if this option is used:

1) Coordinates of the transport vessel at the start and end of placement.

2) Length of tow line (distance from transport vessel stern to container vessel bow).

3) Angular displacement of container vessel from trackline of transport vessel.

4) Estimate of lateral displacement of container vessel from the transport vessel trackline.

5) Estimated longitude and latitude of container vessel at time of door opening and closing.

j. The grid center, or other backup placement location, will only be used if steps (h) and (i) are attempted without success, or when inclement weather/sea conditions prevent reliable maneuvering of the container vessel. The grid center must not be used if inclement weather conditions persist. Placement at the grid center is an emergency procedure.
k. If weather and/or sea conditions prevent reliable measurement of transport distance using the hand-held laser range finder, the transport vessel's radar must be used to determine the distance and bearing to the container vessel.

l. If neither the PDMMES nor BDMMES systems, nor the transport vessel DGPS systems, provide navigation coordinates, the container vessel must be brought to a suitable location for correction of navigation problems. Placement of dredged material is not allowed if a reliable DGPS system is not providing coordinates at the time of container vessel door opening.

m. If radio communication with the container vessel is lost, preventing operation of radio-controlled container vessels, placement must not occur until the system is repaired. Voice contact, through radio or direct communication, must be maintained with a scowman, or other personnel, who is riding aboard a container vessel, for the duration of the placement trip. Container vessel opening must only occur when a direct, voice command has been given to personnel aboard the container vessel, or when radio communication with radio-controlled container vessels is maintained.

   If the container vessel's engine cannot be operated by the radio-control system, and the container vessel is boarded to attempt to fix the engine, the container vessel must be located at the designated placement position if the container vessel's engine is started. Any problems with a radio control system must be fixed prior to subsequent use of the container vessel. The DMI must note on the TPL any time the radio-controlled container vessel system malfunctions and manual discharge is required, and immediately notify the Notification List.

n. A primary and backup radio must be on board all manned container vessels, along with backup power supplies. Hand signals must never be used to direct the scowman regarding container vessel opening/closing. All personnel aboard container vessels, or who may board container vessels while transporting dredged material, must be informed that discharge of dredged material will only be allowed while voice communication is maintained.

o. To help ensure that dredged material is transported and placed at the HARS in accordance with the requirements described above, for each trip, the DMI must complete the required checklist (see Section 9.). Items in the checklist must be reviewed by the DMI at the dredging site, while underway, and at the HARS. Any item on the checklist that receives a "NO" answer must be reported immediately to the Notification List. If the "NO" answer is related to the container vessel monitoring equipment and/or software, the DMMESC must also be notified immediately. These

discrepancies must be noted on the TPL associated with the trip using the letter-number code associated with each item. Each placement trip to the HARS must use a checklist, to be completed by the DMI working aboard the transport vessel, using the container vessel monitoring software or by hand.

All of the checklist items included with the "At the Dredging Site" portion of the trip MUST receive a "YES" answer before a container vessel may be towed from the dredging site for placement at the HARS. If ANY of these checklist items receives a "NO" answer on the checklist, the issue must be corrected such that the checklist item can be answered with a "YES" prior to the container vessel being used to transport dredged material away from the dredging site.

p. Two (2) exceptions to this exist: 1) If a backup container vessel is used, it must be noted on the TPL, but normal placement can continue. 2) When the PDMMES systems are malfunctioning, dredged material may be transported from the dredging site if DMMESC personnel are onboard to fix/service the equipment, or if the BDMMES system is functioning. If any of the items in Part A are answered "NO" by the DMI, the Notification List must be contacted immediately. Telephone numbers and emails of personnel on the Notification List must be supplied to all DMIs working on the dredging project. Reports of discrepancies or unusual events must also be submitted by the DMI as soon as possible to the NYD. Discrepancies must be noted on the TPL using the code letter/number associated with each item in the lists.

q. Parts B and C of the checklist pertain to activities/requirements of DMI while underway to the designated placement location and at the placement location, respectively. All of these items must be verified by the DMI aboard the transportation vessel. If any of these items are answered "NO" by the DMI, the Notification List must be contacted immediately.

r. At the completion of the project, or as otherwise requested, all original signed TPLs and checklists associated with this project must be submitted to the NYD at the following address:

DEPARTMENT OF THE ARMY
U.S. Army Corps of Engineers, New York District, Operations Division
Dredged Material Management Section (CENAN-OP-SD)
Jacob K. Javits Federal Building
26 Federal Plaza (Room 16-406)
New York, NY 10278-0090
Attn: Ryan Corbett
Office: (917) 790-8537
Ryan.P.Corbett@usace.army.mil

8. USACE Transportation and Placement Log

USACE Transportation and Placement Log

Log Number: **Date:**

Project Information

Trip Number: **Target Cell:** **PRA Number:** **Tow Owner:**

Permit: **Inspector's Name:**

Project Name: **Tug's Navigational Unit:**

Tug and Scow Information

Tug Name: **Scow Name/Number:**

Tug Captain: **Scowman's Name:**

Loading/Pre-Transit Information:

Dredge Departed From:

Material (Cubic yds.): **Time Loading Complete (hh:mm:ss):**

Est. Density: **ETA to Placement Site (hh:mm:ss):**

Material Description: **Aft Draft: Forward Draft:**

Winds at reporting station closest to placement location are presently blowing:

Image of Material: **Material Closeup:** **Image of Plimsoll Mark:**

Placement Site Weather Conditions

Wind Direction (from): **Wind Speed (mph):**

Observed Water Depth (ft): **Wave Swell Height (ft):**

Visibility (N miles): **Weather Conditions:**

Marine Mammals/Sea Turtles Sighting (Yes/No):

Transit/Placement Information

Time Scow Departed Dredge Site: **Tug position determined by (GPS/DGPS):**

Time scow arrives at project placement area:

Approximate distance from scow to target at time of discharge (ft):

Length of towline at time of discharge:

Distance from tug navigational antenna to tug's towing bit (ft):

Direction of scow relative to tug towing bit (degrees):

Estimated Scow Speed (kts): **Scow Heading (Degrees):**

Start Time (doors open):

Speed (kts): **GPS/DGPS Latitude:**

Heading (degrees): **GPS/DGPS Longitude:**

End Time (placement complete):

Speed (kts): **GPS/DGPS Latitude:**

Heading (degrees): **GPS/DGPS Longitude:**

Post Placement Time (doors closed):

Speed (kts): **GPS/DGPS Latitude:**

Heading (degrees): 9 **GPS/DGPS Longitude:**

Comments

9. DREDGED MATERIAL INSPECTOR CHECKLIST

Dredged Material Inspector (DMI) Checklist:

DREDGING PROJECT: _____

TRIP NUMBER: _____

DREDGED MATERIAL INSPECTOR NAME: _____

INSPECTOR SIGNATURE: _____

DATE: _____

Answer YES or NO to the following questions. Circle other choices and/or fill in blanks as appropriate. Any item on the checklist that receives a "NO" answer must be reported immediately to NY District at: (917) 790-8082 or (917) 790-8537, the permittee, and a dredging contractor representative not onboard the transport vessel. If the "NO" answer is related to the container vessel monitoring systems, the container vessel monitoring contractor must also be notified immediately at_____. Items receiving "NO" answers must be indicated on the TPL using the letter-number code next to each item description and described on the TPL comments section.

All of the checklist items included with the "At the Dredging Site" portion of the trip must receive a "YES" answer before a vessel containing dredged material may be transported away from the dredging site for placement at the HARS. If ANY of these checklist items receives a "NO" answer on the checklist, the issue must be corrected, such that the checklist item can be answered with a "YES" prior to the container vessel that is being used for transport of dredged material departs from the dredging site.

PART A - At the Dredging Site:

A1 For all dredging projects, a copy of the placement requirements, received at the pre-construction and/or Dredged Material Transport and Placement Meeting (DMTPM) is in the DMI's possession. For federal projects, a copy of the contract specifications is in the DMI's possession. For permitted projects, a copy of the permit special conditions is in the DMI's possession.

A2 The container vessel being used to transport the dredged material is mechanically sound, does not leak, and has no visible damage that may cause leaking.

A3 A regularly used container vessel was used (i.e. as opposed to a backup container vessel).

A4 A container vessel loading table for the container vessel being towed is aboard the transport vessel and available for the DMI to use.

A5 An estimated dredged material density has been provided by the dredging contractor and recorded on the TPL form.

A6 The material being dredged has been observed by the DMI for general characteristics (grain size, color, consistency) and recorded on the TPL form.

A7 For container vessels loaded with any rock (rock is defined as any stones greater than 2.5 inches in diameter), the estimated rock percent, as provided by the dredge operator, has been recorded on the TPL form.

A8 An estimate of the volume of material in the container vessel has been calculated by the DMI using the container vessel loading table and recorded on the TPL form; if not automatically calculated by the container vessel monitoring software.

A9 Container vessel contains less volume of dredged material than the maximum volume allowed for placement during a single trip. *Container vessels loaded with a total of more than 6,000 CY of dredged material and water must not be transported to the HARS.*

A10 The monitoring systems (Primary and Backup) are fully operational and are functioning. Any container vessel monitoring system malfunctions must be reported immediately to the DMMESC. Transport vessels are not allowed to leave the dredging site while transporting any container vessels with dredged material if the container vessel monitoring systems are not fully operational. If the PDMMES system is not functional, the Backup monitoring system may only be used on two (2) consecutive offshore placement trips using an affected container vessel. No more than two (2) consecutive trips without the PDMMES system can ever be made.

A11 A fathometer is fully operational, functioning, and installed on the transport vessel.

A12 A radio onboard the transporting vessel is operable and can receive NOAA marine weather forecasts and ocean conditions.

A13 Current and forecasted marine weather and ocean conditions at the designated placement location have been monitored on the radio and will allow safe and accurate placement of dredged material. Conditions have been recorded on the TPL form.

A14 DGPS navigation system is fully operational, functioning, and installed aboard the transporting vessel.

A15 A radar system is fully operational, functioning, and installed aboard the transporting vessel.

A16 The satellite (or cellular), vessel tracking system on the transport vessel is present and operable.

A17 Radio-control system for container vessel operation (if scowman is not used) is fully operational and functioning.

A18 Radio and backup radio system, for communication between container vessels and transport vessels, are aboard container vessel (if scowman is used), are fully operational and functioning.

A19 Hand-held laser range finder, not more than ten (10) years old, with at least a 1000 foot range, is aboard transport vessel, fully operational and functioning, and available for DMI use, along with a set of backup batteries.

A20 A fully operable cell phone that can send and receive calls is in the possession of the DMI onboard the transport vessel.

A21 A protractor, pair of dividers (for map/chart distance scaling), and an up-to-date nautical chart that includes the placement area, are available for use by the DMI aboard the transport vessel.

A22 DMI is provided full access to fathometer, radar, vessel DGPS, and any other equipment/information necessary to conduct DMI duties.

A23 A digital photograph has been taken of the container vessel that documents the position of the plimsoll line relative to the water level.

A24 A digital photograph (close-up) has been taken of the loaded container vessel such that the level and characteristics of material (color, texture, material composition, and approximate grain size) within the container vessel can be determined from the photograph. A digital photograph (overview) has been taken of the loaded container vessel such that the relationships between material and container vessel walls can be determined from the photograph.

A25 The container vessel contains only dredged material (no trash, debris, timbers, tires, etc.) and only dredged material approved for open-water placement.

A26 Digital photograph(s) of the container vessel have been downloaded into the container vessel monitoring software.

A27 DMI activated the container vessel monitoring software at the dredging site.

A28 Time of departure from dredging site has been recorded on the TPL form.

A29 The bin-level, as indicated by the container vessel fore and aft bin sensors, has been entered into the TPL form comments section.

A30 DMI was at the dredging site while Part A, Items 1-30, of the TPL checklist was reviewed and completed.

A31 The container vessel draft (pressure) and bin level sensor values, as displayed by the container vessel monitoring software has been recorded on the TPL form. (This value must be noted approximately five (5) minutes after leaving the dredging site, while being towed, to account for any shifting / settling of the material in the container vessel).

PART B - While Underway to Open-Water Placement Site:

B1 Container vessel draft is being monitored with container vessel monitoring software to detect sudden or gradual changes in draft.

B2 In the vicinity of the Verrazano-Narrows Bridge, radio and backup radios aboard the container vessel (if a scowman is used) have been checked and both are fully functional.

B3 If the DMI is also a NMFS certified marine mammal/endangered species observer, observation and appropriate reporting is conducted.

B4 Container vessel draft and/or bin level varies by less than one (1) foot, or by less than 12 points of pressure (draft only), from the value at the dredging site.

B5 Container vessel does not appear to be listing.

B6 Water behind container vessel has been observed, if possible, to ensure that no turbid water plumes are present.

B7 A fixed reference position, such as a channel marker, has been used to ensure that the transport vessel DGPS and Container vessel DGPS positions agree.

B8 Marine weather and sea conditions present and forecast to be present at the placement location are periodically monitored. The transport vessel captain, after consultation with the DMI, may decide to return to the dredging site based on an updated marine forecast.

PART C - In the Vicinity of the Designated Placement Location:

C1 Water depths were continuously monitored (a reading observed at least every 5 seconds) with the transport vessel fathometer while navigating anywhere within the placement area boundary (transport vessel crew must also monitor water depths).

C2 All water depths observed anywhere within the placement grid were at a depth of at least fifty (50) feet.

C3 If depths less than fifty (50) feet were observed in the placement grid, the latitude, longitude and depth have been recorded in the TPL form comments section.

C4 Container vessel radio control equipment operates without any problems.

C5 Placement was initiated in the targeted grid cell and was coordinated with transport vessel crew.

C6 Container vessel draft and/or bin level varies by less than 1.5 feet, or by less than twenty (20) points of pressure (draft only), from the value at the dredging site.

C7 Container vessel draft information immediately prior to container vessel door opening has been recorded on the TPL form.

C8 TPL form was completed using the container vessel monitoring software, or by hand if container vessel monitoring system malfunctions, within 30 minutes of container vessel door opening.

C9 Container vessel monitoring equipment, transportation vessel navigation equipment, and all other equipment related to placement of dredged material worked without any problems.

C10 All activities associated with placement of dredged materials appeared to be conducted in a safe manner.

C11 Nothing occurred that might have resulted in incorrect placement of dredged material.

C12 If a marine mammal or sea turtle was observed, the appropriate NMFS form was completed.

C13 Any item in the checklist that received a "NO" answer was noted in the comments section of the TPL (letter and number).

C14 TPL form submitted within two (2) hours of container vessel door, or hopper bin, opening, for HARS placement.

C15 A copy of the TPL form, with checklist "NO" answer documentation in the comments section, has been signed by the DMI and placed in a file/folder to become part of a permanent record of the trip.

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New York District

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New York, New York 10278-0090
and
U.S. Environmental Protection Agency – Region 2
290 Broadway
New York, New York 10007-1866

REGION 2

Date: 17 July 2018

Subject: HARS Remediation Activity Placement Grid

Project Name: Maintenance Dredging of New York and New Jersey Channels – Ward Point Bend Channel Federal Navigation Project

Proposed Volume: Up to 270,000 cubic yards (CY)

Contract Number: TBA

The U.S. Army Corps of Engineers, NY District, requests approval and concurrence by the USEPA – Region 2 for placement of dredged material at the Historic Area Remediation Site (HARS). The HARS placement grid for this project (Figures 1-3) is designed for a placement of up to 270,000 CY of HARS-suitable dredged material (on a total container vessel basis). This 1400 ft. x 1400 ft. grid is comprised of 100 ft. x 100 ft. grid cells. The grid is at least 1,800 feet from the nearest HARS border and accommodates STFate model distance limitations. The material will help remediate portions of the HARS by increasing the extent of dredged material placed within Priority Remediation Area (PRA) # 7.

Prepared by: Ryan P. Corbett, Technical Manager,
CENAN-OP-SD

CORBETT.RYAN.P.1536765154 Digitally signed by CORBETT.RYAN.P.1536765154 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=CORBETT.RYAN.P.1536765154 Date: 2018.07.18 10:19:08 -04'00'

Supervisory Authorization: Oksana Yaremko, Chief,
CENAN-OP-SD

Acting Chief for OY, VEGA.KELLY.LOUISE.1237379132 Digitally signed by VEGA.KELLY.LOUISE.1237379132 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=VEGA.KELLY.LOUISE.1237379132 Date: 2018.07.18 10:36:59 -04'00'

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Date: 7 - 19 -2018

The USEPA – Region 2 has reviewed the placement grid(s) and placement requirements.

[X] USEPA approves of the locations as submitted.

[ ] USEPA has modified the locations as indicated.

Reviewed by: Kathryn Drisco

Dredging, Sediments, and Ocean Section

X

Supervisory Authorization: Charles LoBue, Chief,

Dredging, Sediments, and Ocean Section

X

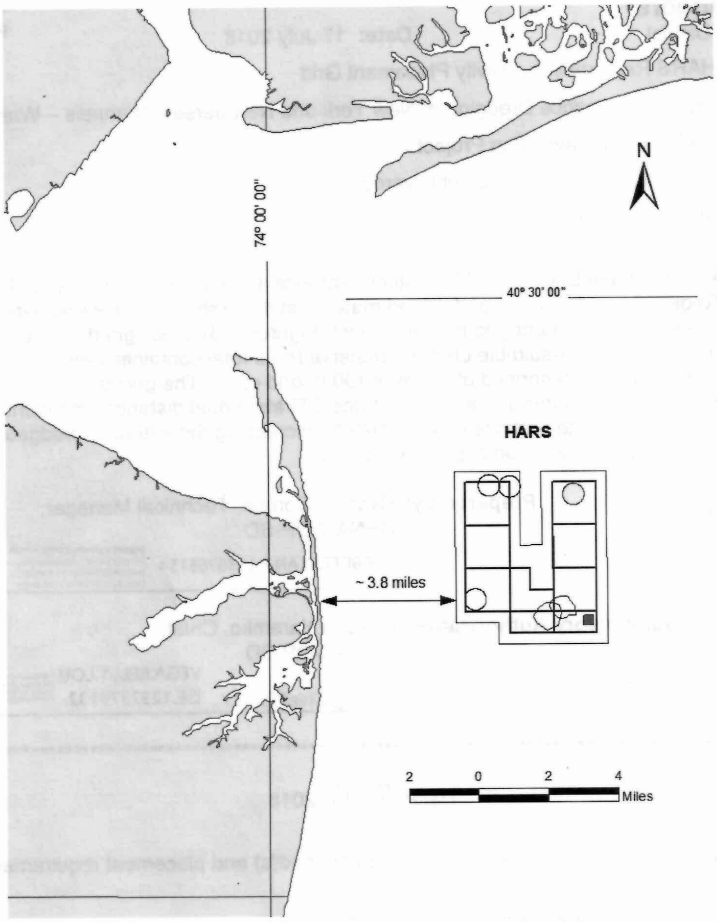

Figure 1. Location of the Historic Area Remediation Site (HARS), offshore of New Jersey. The nine (9) HARS priority remediation areas (PRAs) are located inside of the HARS buffer zones. Circles indicate historic shipwreck buffer zones. Capping project areas are depicted by the two overlapping polygons at the southern end of the HARS. Dredged material must not be placed in HARS buffer zones, shipwreck buffer zones, capping project areas, or anywhere outside of the nine HARS PRAs. The black rectangular box within PRA # 7 shows the approximate location of the HARS placement grid for the Maintenance Dredging of New York and New Jersey Channels – Ward Point Bend Channel Federal Navigation Project.

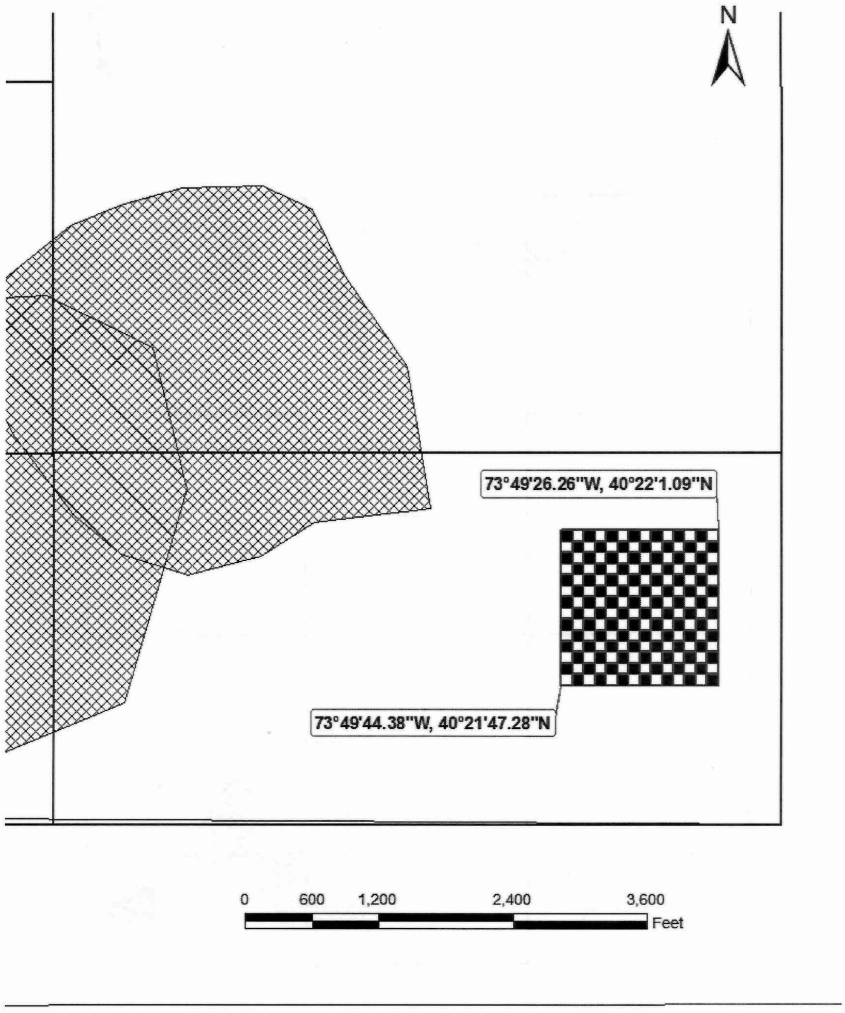

Figure 3. Detailed Location of the Placement Grid within HARS PRA # 7 to be used for the Maintenance Dredging of New York and New Jersey Channels – Ward Point Bend Channel Federal Navigation Project. Placement must only be made, going from north to south, while initiating placement of dredged material over open (un-shaded) grid cells; *initiation of placement over the black shaded grid cells must be minimized to the maximum extent practicable, unless otherwise specified during the course of this project*. Capping projects in view are cross-hatched.

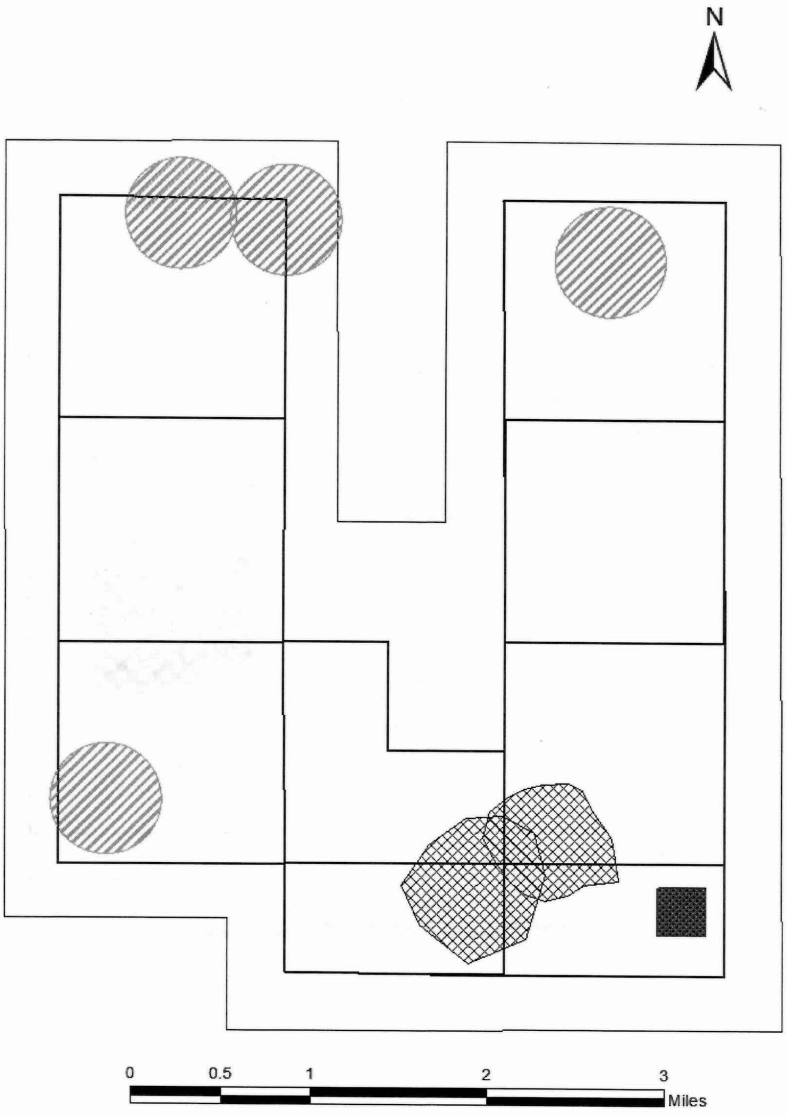

Figure 2. Location of the Placement Grid within HARS PRA # 7 for the Maintenance Dredging of New York and New Jersey Channels – Ward Point Bend Channel Federal Navigation Project. Capping Projects are cross-hatched, and shipwrecks are hatched in black.