Isles of Shoals North Ocean Dredged Material Disposal Site

Site Management and Monitoring Plan

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TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF TABLES

LIST OF FIGURES

ACRONYMS AND KEYWORDS

cm	centimeters
CFR	Code of Federal Regulations
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
DAMOS	Disposal Area Monitoring System
DPS	Distinct Population Segment
DQM	Dredging Quality Management
EFH	Essential Fish Habitat
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FEA	Final Environmental Assessment
GoMOOS	Gulf of Maine Ocean Observation System
IOSN	Isles of Shoals North Disposal Site
ITM	Inland Testing Manual
km	kilometers
m	meter
LPC	Limiting Permissible Concentration
ME DMR	Maine Department of Marine Resources
MPRSA	Marine Protection, Research, and Sanctuaries Act
NEPA	National Environmental Policy Act
nmi	nautical miles
NERACOOS	Northeast Regional Association of Coastal Ocean Observation Systems
NERDT	New England Regional Dredging Team
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
ODMDS	Ocean Dredged Material Disposal Site
QA	quality assurance
QAPP	Quality Assurance Project Plan
RIM	Regional Implementation Manual
SMMP	Site Management and Monitoring Plan
SMP	Special Management Practice
SPI/PV	Sediment Profile/Plan View Imaging
TOC	total organic carbon
USACE-NAE	U.S. Army Corps of Engineers, New England District
USCG	U.S. Coast Guard
USFWS	U.S. Fish and Wildlife Service

1.0 INTRODUCTION

The primary statute governing the ocean disposal of dredged material in the United States is the Marine Protection, Research, and Sanctuaries Act (MPRSA), 33 U.S.C. §§ 1401, et seq. The MPRSA applies to the transportation and disposal of dredged material in the waters of the Gulf of Maine *seaward* of the baseline from which the territorial sea of the United States is measured.

Section 102(c) of the MPRSA, 33 U.S.C. § 1412(c), authorizes the U.S. Environmental Protection Agency (EPA) to designate sites where ocean disposal of dredged material may be permitted. *See also* 33 U.S.C. § 1413(b) and 40 CFR § 228.4(e). Ocean dredged material disposal sites (ODMDS) designated by EPA under the MPRSA are managed by EPA and subject to detailed management and monitoring protocols to prevent the occurrence of unacceptable adverse effects to the marine environment and human health. *See* 33 U.S.C. § 1412(c)(3). Those management and monitoring protocols are described in a Site Management and Monitoring Plan (SMMP) developed jointly by EPA and the U.S. Army Corps of Engineers (USACE). *See id.*

The Region 1 office of EPA (EPA Region 1) is designating the Isles of Shoals North Dredged Material Disposal Site (IOSN) as an ODMDS under Section 102(c) of the MPRSA, effective 30 days after the publication of the Final Rule in the Federal Register (EPA Region 1, 2020). EPA is designating the site to help meet the long-term needs for dredged material disposal in southern Maine, New Hampshire, and northern Massachusetts (*see* Figure 1). In conjunction with the site designation, EPA Region 1 and the U.S. Army Corps of Engineers, New England District (USACE-NAE) have developed this SMMP for the IOSN. Section 102(c)(3) requires that "the Administrator and the Secretary shall provide opportunity for public comment" in developing SMMPs for each EPA-designated dredged material disposal site. EPA Region 1 provided an opportunity for public comment on the SMMP at the same time as the Draft Environmental Assessment (in which the SMMP was Appendix G) and Proposed Rule for the site designation.

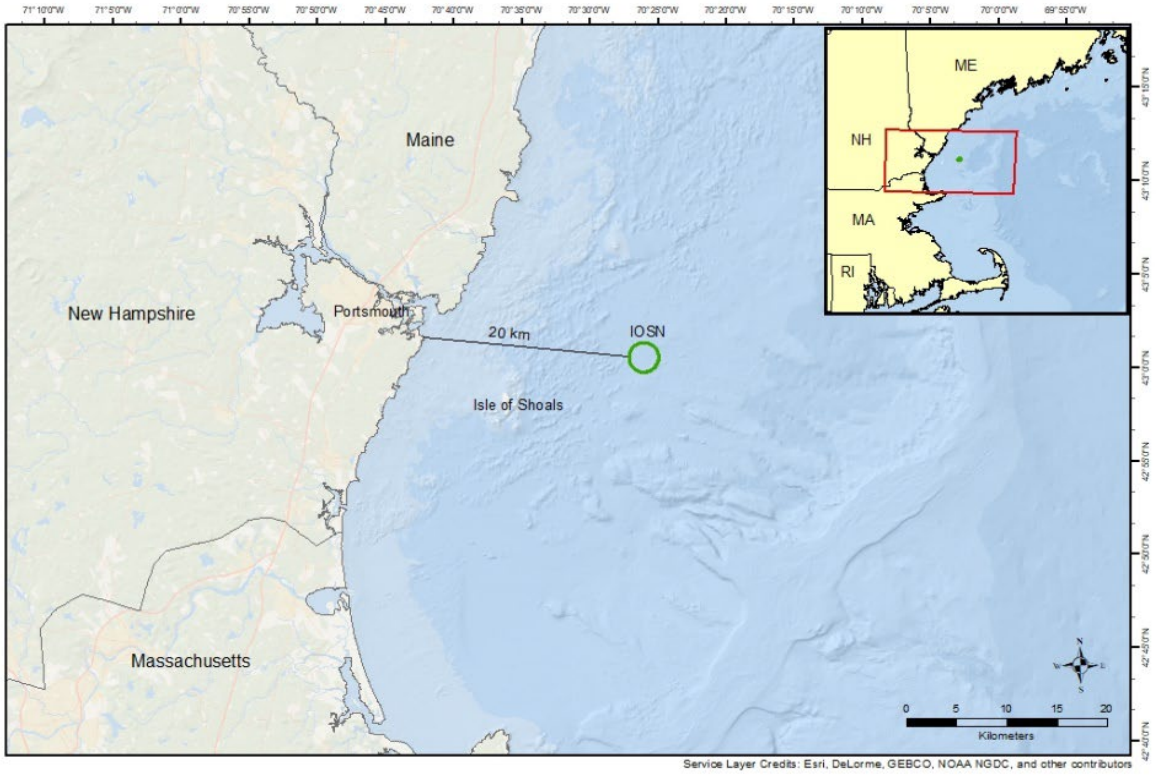


Figure 1 - Location of the Isles of Shoals North Ocean Dredged Material Disposal Site

The MPRSA further requires that SMMPs include a schedule for review and revision of the plan within 10 years after its adoption and then no less frequently than every 10 years thereafter. EPA Region 1 and the USACE-NAE will review the plan annually and update the plan as needed but no later than 10 years from the date this SMMP becomes effective.

EPA Region 1 and the USACE-NAE will evaluate the data collected through the SMMP monitoring program annually. These data will also be periodically evaluated by other federal agencies, such as the National Marine Fisheries Service (NMFS), and by state agencies, to determine whether additional monitoring or modifications in site usage, management, or dredged material testing protocols are warranted.

2.0 REGULATORY FRAMEWORK AND AUTHORITIES

This SMMP is intended to describe a management framework and monitoring program that minimizes any potential for adverse impacts to the marine environment from dredged material

disposal at the IOSN and is capable of detecting adverse impacts should they occur so appropriate management action can be taken. To this end, the SMMP identifies actions, provisions, and practices necessary to manage the operational aspects of dredged material transportation and ocean disposal, and a monitoring plan to ensure the environment is protected. This is consistent with the SMMP requirements of Section 102(c)(3) of the MPRSA and the requirements of the Ocean Dumping Regulations.

The actions, provisions, and practices identified in this SMMP apply for all dredged material disposal activities at the site, including monitoring and management activities by the federal agencies. Example template provisions for USACE-NAE to include in subsequently issued permits or the transportation and disposal requirements for a federal project are included in Appendix A. References in this document to matters that "will be required" refer to implementation in a subsequent proceeding to authorize disposal of dredged material, whether in a permit, a contract, other federal project specifications for the transportation and disposal of dredged material, or by the USACE directly. This SMMP does not itself impose binding requirements or obligations, though it does identify binding rights and obligations that EPA anticipates will be established by other, later final agency actions. The site designation regulation at 40 CFR 228.15(b)(7) requires compliance with the disposal requirements identified in this SMMP. Matters that "will be required" will be implemented through the application of provisions to USACE-NAE issued permits or specific transportation and disposal requirements for federal projects, examples of which are presented in Appendix A. The issuance of this SMMP does not determine the rights or obligations of any third party, but EPA can ensure implementation of the disposal requirements as necessary through EPA's concurrence actions. All MPRSA Section 103 ocean disposal permits or contract specifications will assure implementation of the SMMP.

2.1 Management

Management of the disposal site involves: regulating the quantity and physical/chemical characteristics of dredged material that may be disposed at the site; establishing disposal controls and conditions; and monitoring the site environment to verify that permit terms are being met and that potentially unacceptable conditions that could result in significant adverse impacts are not occurring from past or continued use of the disposal site.

In addition, this SMMP also incorporates the following six requirements for ocean disposal site management plans that are described in MPRSA § 102(c)(3)(A) – (F):

1. Consideration of the quantity of the material to be disposed of at the site, and the presence, nature, and bioavailability of the contaminants in the material [Section II C, *infra*];
2. A baseline assessment of conditions at the site [Section III, *infra*];
3. A program for monitoring the site [Section IV, *infra*];
4. Special management conditions or practices to be implemented at each site that are necessary for protection of the environment [Section V.A, *infra*];
5. Consideration of the anticipated use of the site over the long term, including the anticipated closure date for the site, if applicable, and any need for management of the site after closure [Section VI, *infra*]; and
6. A schedule for review and revision of the plan calling for review and revision not less frequently than 10 years after initial adoption of the plan and every 10 years thereafter [MPRSA § 102(c)(3); Section VII, *infra*].

This SMMP is consistent with the Ocean Dumping Regulations calling for EPA to periodically assess conditions at designated disposal sites. Recognizing and correcting any potential adverse condition *before* it causes an unacceptable adverse impact to the marine environment or other uses of the ocean or presents a navigational hazard to any type of vessel traffic is a central objective of this SMMP.

The practices that will be applied to address these management goals at the IOSN include the following: coordination among federal and state agencies; testing of material to ensure suitability for ocean disposal at the site; review of general and specific permit conditions as well as federal project authorizations; review of allowable disposal technologies and methods; implementation of inspection, surveillance and enforcement procedures; periodic environmental monitoring at the site and surrounding area; and information management and record keeping.

2.2 Monitoring

Under 40 CFR § 228.10(b), the following types of potential effects should be considered when

evaluating impact at a disposal site:

- Movement of materials into sanctuaries or onto beaches or shorelines [228.10(b)(1)];
- Movement of materials toward productive fishery or shellfishery areas [228.10(b)(2)];
- Absence from the disposal site of pollutant-sensitive biota characteristic of the general area [228.10(b)(3)];
- Progressive, non-seasonal, changes in water quality or sediment composition at the disposal site when these changes are attributable to dredged material disposed of at the site [228.10(b)(4)];
- Progressive, non-seasonal, changes in composition or numbers of pelagic, demersal, or benthic biota at or near the disposal site when these changes can be attributed to the effects of dredged material disposed of at the site [228.10(b)(5)];
- Accumulation of material constituents (including without limitation, human pathogens) in marine biota at or near the site (*i.e.,* bioaccumulation [228.10(b)(6)]); and
- Any non-compliance with MPRSA permit conditions (information about any non-compliance should be referred to enforcement authorities, as appropriate).

The monitoring approach defined in this SMMP focuses on those factors that provide an early indication of potential unacceptable effects. The plan also incorporates by reference ongoing regional monitoring programs in the Gulf of Maine that can provide additional information. The evaluation of potential impacts from dredged material disposal at the IOSN will be accomplished in part through comparisons of the monitoring results to historical (*i.e.,* baseline) conditions, recent conditions at the site and surrounding area, sediment benchmarks (such as ERLs and ERMs), and nearby reference locations.

If site monitoring demonstrates that the disposal activities are causing unacceptable impacts to the marine environment as defined under 40 CFR § 228.10(b) (and described in Section 6 of this SMMP), the EPA and USACE-NAE will place appropriate limitations on site usage to reduce the impacts to acceptable levels. Such responses may range from limitations on the amounts and types of dredged material permitted to be disposed, or limitations on disposal methods, locations, or schedules, to withdrawal of the site's designation (*i.e.,* de-designation).

3.0 MANAGEMENT PLAN

All dredged material projects using the IOSN must be authorized under MPRSA Section 103. The IOSN will be managed in a manner that ensures the following site management goals are met:

- Only suitable material meeting the requirements of the Ocean Dumping Regulations will be allowed at the IOSN disposal site;
- Ensure compliance with permit conditions and federal project authorizations;
- Avoid or minimize loss of sediment from the disposal site;
- Avoid or minimize conflicts with other uses of the ocean in this area;
- Maximize the retention of site capacity;
- Avoid or minimize any adverse environmental impact from sediments disposed at the site; and
- Recognize and correct conditions that could lead to unacceptable impacts.

EPA Region 1 will manage the IOSN and will coordinate closely with USACE-NAE and other agencies as appropriate. The effectiveness of the management approach depends on having efficient planning processes, consistent compliance and enforcement, a robust yet flexible monitoring plan, and an effective communication structure that includes timely receipt and review of information relevant to the site management goals. To support this approach, EPA Region 1 and the USACE-NAE utilize the New England Regional Dredging Team (NERDT) to share information and provide input on site management and monitoring issues. The NERDT is a federal-state interagency technical workgroup that meets 3-4 times per year to share information and coordinate activities on a wide range of issues related to dredging and dredged material management, including the management and monitoring of ODMDS like the IOSN. In addition, EPA Region 1 and USACE-NAE have quarterly meetings at which they review monitoring data, establish monitoring objectives, and plan future monitoring surveys for ocean disposal sites throughout New England coastal waters.

Management of the IOSN will include the following practices:

- Evaluating the suitability of material for disposal in accordance with the MPRSA;

- Specifying disposal conditions, location, and timing in MPRSA permits and federal projects, as appropriate;
- Requiring compliance with all MPRSA permit conditions and conditions in federal authorizations;
- Requiring disposal to occur at specified target coordinates within the IOSN (to be determined on an annual basis);
- Utilizing tracking instrumentation on all scows placing material at the IOSN in accordance with the USACE Dredging Quality Management (DQM) system to ensure compliance by allowing the determination of actual disposal locations;
- Reviewing on an annual basis disposal coordinates and setting targets with the intent of minimizing environmental impacts and maximizing long-term site capacity;
- Limiting the buildup of material in height above the bottom so that disposal mounds do not become either a hazard to navigation or likely to be mobilized by storm events;
- Conducting disposal site monitoring in a consistent, systematic manner; and
- Specifying site de-designation (*i.e.*, closure) conditions and dates when it becomes appropriate.

3.1 Special Management Practices

In addition, Special Management Practices may be required for individual projects using the IOSN and include but are not limited to the following:

- Specification of the volume of dredged material that can be disposed of at specific locations within the site and the total volume of dredged material that can be disposed of at the site;
- Specifications of the approved disposal methods, locations, or times; and
- Requirement for additional monitoring focused on a specific aspect of a project.

A central goal of this SMMP is that any potential unacceptable conditions will be recognized and corrected before they cause an adverse impact to the marine environment or present a navigational hazard. Both EPA Region 1 and USACE-NAE will cooperate to ensure effective enforcement of all disposal requirements. The USACE-NAE will provide EPA Region 1 with summary

information on each project at two stages of the dredging and disposal process. A Summary Information Sheet will be provided when dredging operations begin, and a Summary Report will be submitted when dredging operations have been completed.

The following list describes Special Management Practices that may be required for all dredging projects using the IOSN with examples of some of the practices presented in Appendix A:

- Between 120 and 30 days (with a preference toward the longer end of this range) prior to initiation of dredging and dredged material disposal operations, the USACE-NAE should provide the Maine Department of Marine Resources (ME DMR), New Hampshire Fish and Game (NH F&G), and the Massachusetts Division of Marine Fisheries ("the state fisheries agencies") the following: (1) a brief description of the dredging and dredged material disposal operations as approved by the USACE, or as concurred upon by a coastal state pursuant to Section 307 of the CZMA in the case of USACE federal navigation projects; and (2) a map of the haul route.
- If there is a proposed change in the haul route after provision of the foregoing notice, the USACE-NAE shall: (1) notify the state fisheries agencies as soon as practicable, and in any event prior to initiation of in-water disposal operations; and; (2) provide a map of the proposed new haul route and the reason for the proposed change. The USACE should consult with state fisheries agencies regarding steps that may be needed to avoid and minimize potential gear conflicts, including but not limited to supplemental notice regarding the proposed haul route change prior to initiation of disposal operations.
- At least ten (10) working days before the start date, the U.S. Coast Guard (USCG) First District, Aids to Navigation Office, shall be notified of the location and estimated duration of the dredging and disposal operations.
- At least ten (10) working days before the start date, the USCG Captain Sector Northern New England, shall be notified of the location and estimated duration of the dredging and disposal operations.
- USCG Captain Sector Northern New England shall be notified at least two hours prior to each departure from the dredging site.

- The DQM system must be operational on each disposal scow and record each disposal event. This information is automatically uploaded to a USACE national database accessible by USACE-NAE staff.
- Prior to the initiation of disposal activity, and any time disposal operations resume after having ceased for one month or more, the permittee or the permittee's representative must notify the USACE-NAE.
- The permittee must notify the USACE-NAE upon completion of dredging for the season by completing and submitting the form that the USACE-NAE will supply for this purpose.
- Except when directed otherwise by the USACE-NAE, all disposal of dredged material shall adhere to the following: The permittee shall release the dredged material within the site at a set of coordinates specified by the USACE-NAE. All disposal is to occur at the specified coordinates with the scow moving at less than three (3) knots. This requirement must be followed except when doing so would create unsafe conditions because of weather or sea state, in which case disposal within a specified distance (generally less than 107 meters [m] or 350 feet [ft]) of the specified coordinates with the scow moving only fast enough to maintain safe control is permitted. Disposal is not permitted if these requirements cannot be met due to weather or sea conditions, and special attention needs to be given to predicted conditions prior to departing for the dumpsite.
- EPA Region 1 and the USACE-NAE (and/or their designated representatives) reserve all rights under applicable law to free and unlimited access to and/or inspection of: (1) the dredging project site, including the dredge plant, the towing vessel and scow, at any time during the project; (2) all records, including logs, reports, memoranda, notes, etc., pertaining to a specific dredging project (federal or non-federal); and (3) towing, survey monitoring, and navigation equipment.
- If dredged material regulated by a specific permit or federal authorization issued by the USACE-NAE is released in locations or in a manner not in accordance with the terms or conditions of the permit or authorization, the master/operator of the towing vessel shall immediately notify the USACE-NAE of the incident, as required by the permit or authorization, and provide the USACE-NAE with the relevant DQM data export. The USACE-NAE shall copy EPA Region 1 of such notification as soon as possible, but no

later than the next business day. In addition, the towing contractor shall make a full report of the incident to the USACE-NAE and EPA Region 1 within ten (10) days.

- From February 1 through May 31 of any year, disposal vessels including tugs, barges, and scows transiting between the dredge site and the IOSN shall operate at speeds not to exceed five (5) knots after sunset, before sunrise, or in daylight conditions where visibility is less than one (1) nautical mile (name) (1.8 kilometers [km]). Disposal shall not be permitted if these requirements cannot be met due to weather or sea conditions. In that regard, the permittee and contractor should be aware of predicted conditions before departing for the disposal site. The intent of this condition is to reduce the potential for vessel collisions with endangered species, including right whales.
- From February 1 through May 31 of any year, a marine mammal observer must be present aboard disposal vessels transiting between the dredging site and the IOSN during daylight hours. The disposal vessel captain, or a crewmember assigned by the captain, may be the observer for that trip with written approval from NMFS. The name of the observer must be recorded in the logbook.

  The captain, assigned crewmember, or another NMFS-approved observer shall:

  a. Monitor the Right Whale Sightings Advisory System as well as other communication media (i.e., NOAA weather radio, USCG NAVTEX broadcasts, Notices to Mariners, and U.S. Coast Pilots) for general information regarding North Atlantic right whale sighting locations;
  b. Report any interactions with listed species as soon as possible (within 24-hours) to NMFS at (866) 755-NOAA or USCG via CH-16, and immediately report any injured or dead marine mammals or sea turtles to NMFS at (866) 755-NOAA; and
  c. Ensure that a separate NMFS Marine Mammal Observation Report is completed for every whale sighting and that this report is submitted to NMFS and to the USACE-NAE Marine Analysis Section within one week of the trip date (it is encouraged to provide this report within two days of returning to port).

  The vessel captain shall:

  a. Look out for turtles and whales at all times;
  b. Employ the tug's searchlight in darkness or otherwise limited visibility for

the benefit of the observer when traveling to, within, or from the disposal site;

c. Avoid harassment of or direct impact to whales and turtles except when precluded by safety considerations;
d. Ensure that the disposal vessels do not approach whales and turtles closer than 30 m (100 ft) (see additional condition below for approaching right whales);
e. Ensure that the disposal vessels adhere to NMFS regulations (50 CFR 222.32) for approaching right whales, which restrict approaches within 457 m (1,500 ft) of a right whale; and
f. Ensure that dredged material is not released if whales are within 457 m (1,500 feet) or turtles are within 183 m (600 ft) of the specified disposal point.

These conditions may be modified on a project-by-project basis based on factual changes or when deemed necessary as part of the individual permit review process.

3.2 Modifications to the Management Plan

Based on the findings of the monitoring program (Section 6), modifications to site use could be required. In such a case, EPA Region 1 and the USACE-NAE will develop corrective measures such as, but not limited to, the following:

- Stricter definition and enforcement of disposal permit conditions and federal authorizations;
- Implementation of more conservative evaluation procedures for determining whether sediments proposed for dredging are suitable for ocean disposal at IOSN;
- Implementation of special management practices to prevent loss of sediment to the surrounding area;
- De-designation of the site as an available ODMDS (*i.e.*, to prevent any additional disposal at the site);
- Modifications to the use of marine mammal observers during disposal operations;
- Implementation of dredging windows;

- Any additional measures deemed necessary to further ensure compliance with the Endangered Species Act (ESA) and the Essential Fish Habitat (EFH) provisions of the Magnuson-Stevens Fishery Conservation and Management Act; and
- Additional, more detailed monitoring.

In addition to identifying management practices for the IOSN, the SMMP also must include a monitoring plan, which is provided in Section 6.0. EPA Region 1 and the USAE-NAE will make the results of the monitoring program available through coordination and outreach to state and federal agencies, scientific experts, and the public. To ensure communications are appropriate and timely, site management activities and monitoring findings will be disseminated through a combination of scientific reports and peer-reviewed publications, participation in the NERDT, and public meetings and fact sheets.

4.0 BASELINE ASSESSMENT

MPRSA 102(c) (3)(A) requires that the SMMP include a summary of baseline conditions at the site. Baseline conditions are reported in the Final Environmental Assessment (FEA) for the site designation (EPA Region 1, 2020) This section provides a brief site description and overview of sensitive resources at the IOSN.

4.1 Site Characteristics

The IOSN is located in the Gulf of Maine, approximately 20 km (10.8 nmi) east of Portsmouth, New Hampshire, 17.7 km (9.55 nmi) southeast of Kittery, Maine, and 11.2 km (6.04 nmi) north of Eastern Island, the closest of the Isles of Shoals (Figure 1). The site is defined as a 2,600 m (8,530 ft) diameter circle on the seafloor with its center located at 70° 26.995' W and 43° 1.142' N. Water depths at IOSN range from approximately 90 m (295 ft) at the western boundary to 100 m (328 ft) in the eastern portion of the site as the seafloor slopes from west to east. The surficial sediments at the site are predominately soft, fine-grained silts and clays. The seafloor within the site is generally a smooth surface with topographic highs present outside the western, northern, and southeastern, boundaries of the site (Figure 2).

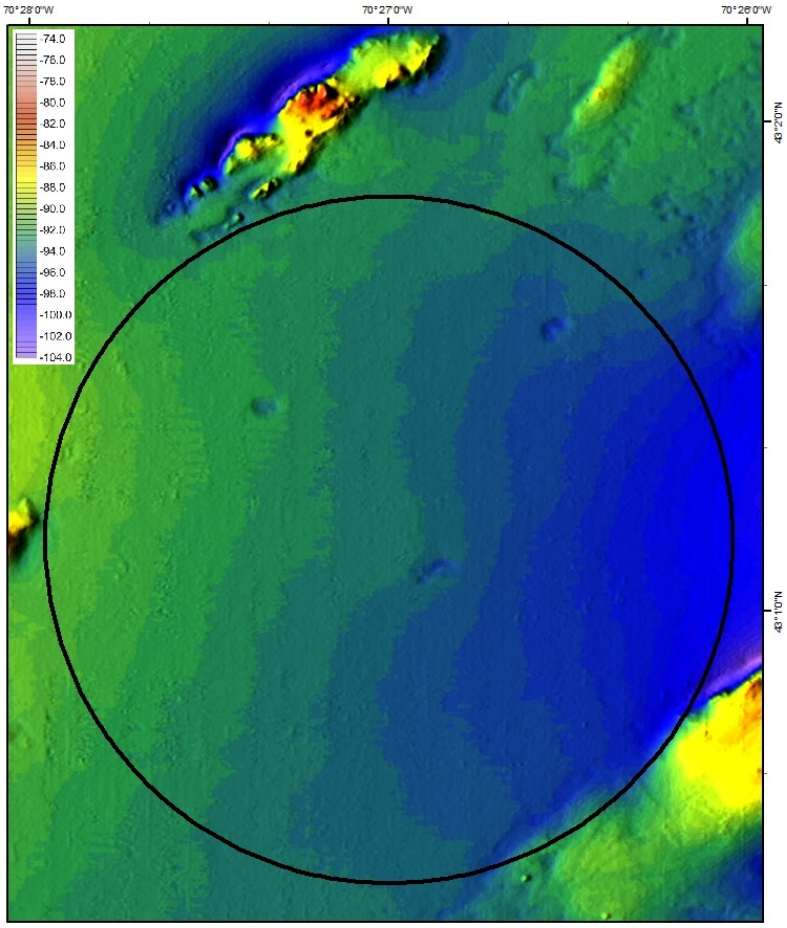


Figure 2 – Bathymetry of the IOSN (USACE-NAE DAMOS 2015, Meters MLLW)

4.2 Expected Site Usage and Capacity

Proposed improvement dredging of the Portsmouth Harbor and Piscataqua River Federal Navigation Project would be the primary source of dredged material for disposal at the IOSN in the next decade. This project is expected to produce a volume of approximately 576,000 cubic meters (754,000 cubic yards) of dredged material, although a portion of this material is expected to be used beneficially (and not ocean disposed). Planned maintenance dredging of federal navigation projects in Cape Porpoise, Maine; Pepperell Cove, Maine; Rye Harbor, New Hampshire and other harbors may also utilize the site over the next ten years. State and private dredging projects in New Hampshire and Maine, which are generally smaller, also may use the IOSN if practicable alternatives to ocean disposal are not available.

Because of its depth (over 90 m [295 ft]) and size (5.3 km² [1.5 nmi²]), the estimated capacity of the IOSN (tens of millions of cubic meters) is far in excess of the potential site use over the next

20 years so a potential closure date for the IOSN due to exceedance of site capacity has not been considered. A more defined working site capacity will be established following initial disposal of material at the site and tracking of its buildup/spread on the seafloor (allowing for determination of internal boundary buffers). The remaining capacity will be updated periodically as additional projects use the IOSN and subsequent bathymetric surveys are performed.

4.3 Sediment and Water Quality

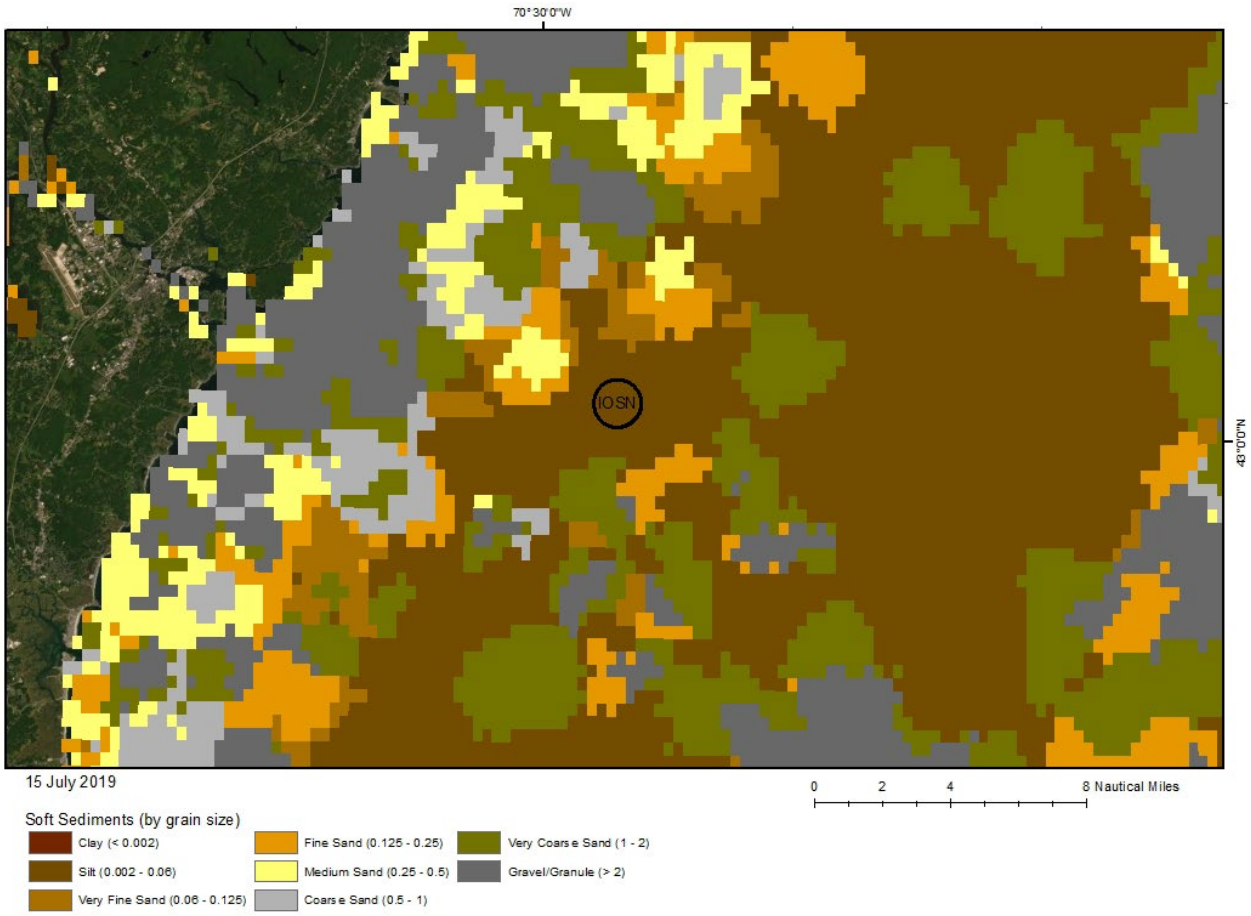
All dredged material projects proposed for disposal at the IOSN will be evaluated on a project-specific basis under the chemical and biological testing framework outlined in the EPA's Ocean Dumping Regulations (*see* 40 CFR Part 227) and guidance developed by EPA and the USACE (EPA/USACE, 1991). Modeling is performed to further evaluate the potential for water column effects as part of the dredged material suitability determination.

In general, the seafloor in the vicinity of the IOSN is a fairly uniform, smooth bottom made up of fine-grained sediments. Surficial sediments at the site were sampled at eight locations within the site in November 2010 by the USACE-NAE using a 0.4 m^2 grab sampler. All sampling locations, with the exception of a single station, were composed of 93% or more of silts and clays (with the remaining fraction sand). The sediment at the remaining station was composed of 80% silts and clays and 20% sands. Grain size curves of all samples can be found in Appendix A of the FEA (EPA Region 1, 2020). Surficial sediments were sampled again in the fall of 2019 at six locations within the site, and results indicate no change in sediment characteristics (USACE-NAE, in preparation). A review of data from the Northeast Ocean Data Portal (https://www.northeastoceandata.org) supports the findings that the sediments within the IOSN

are primarily silts. Figure 3 illustrates the sediments within the IOSN and the surrounding Gulf of Maine.

Figure 3 – Surficial Sediment Types of the Gulf of Maine Including the IOSN

(Northeast Ocean Data Portal, https://www.northeastoceandata.org)



In September of 2015, the USACE-NAE Disposal Site Monitoring System (DAMOS) Program performed a survey of the IOSN (Guarinello et al, 2016) that employed hydroacoustic data collection and a Sediment Profile/Plan View Imaging (SPI/PV) monitoring technique that involves deploying an underwater camera system to photograph a plan view of the seafloor as well as a cross-section of the sediment-water interface. Twenty locations within the site were sampled. The DAMOS monitoring survey further supported that the IOSN is a low energy, depositional environment dominated by fine-grained soft sediments and identified robust, mature benthic communities. Acoustic backscatter data, coupled with SPI results, confirmed the predominantly soft and fine-grained nature of the sediments. The SPI data also revealed a

healthy soft-bottom benthic ecosystem with no evidence of low dissolved oxygen or sedimentary methane within the sediments of the IOSN (Guarinello et al, 2016).

Additional characterization of IOSN sediment was performed in October 2019 with the collection of six samples within the site. Results of the sediment chemistry analysis were consistent with the location of the IOSN being far removed from potential contaminant sources. Most organic compounds were below analytical detection limits, and all constituents (organic and inorganic) were below ERL concentrations with the exception of arsenic and nickel, which were found at concentrations slightly above their respective ERLs consistent with New England background sediment concentrations (USACE-NAE, in preparation).

Given its exposed, open ocean location, the water column at the IOSN is expected to behave in a manner typical of northeastern continental shelf regions, with isothermal conditions less than 6°C during the winter, giving way to stratified conditions with maximum surface temperatures on the order of 18°C, and a strong thermocline between 20 and 30 m (65 and 100 ft) during the summer months. The water column overturns during the fall, returning to isothermal conditions. Although this typical water column structure is persistent over the long term, there are anomalous perturbations that can cause significant variations, particularly in the winter months (EPA Region 1, 2020).

Current patterns in the vicinity of the IOSN are typified by coastal-parallel, non-tidal southerly drift generated by the overall circulation of the Gulf of Maine. The southerly flow is affected by tidally induced currents (averaging 15 centimeters/second [cm/sec] [0.5 ft/sec]) that generate inshore, and offshore movements and local topography that may create local eddies. Strong northeast storms can generate southwesterly flows with speeds of 30-40 cm/sec [1-1.3 ft/sec]. Bottom currents are influenced by topographic features in the region which disrupt the vertical coherence of the current structure. Near bottom currents in the region are generally less than 10 cm/sec (0.3 ft/sec) and highly variable in direction (USACE, 1989).

Gulf of Maine water quality in the vicinity of the IOSN is discussed in the FEA for the ODMDS designation (EPA Region 1, 2020). The data was compiled from previous studies of the CADS (USACE, 1989), data from EPA coastal nutrient trend monitoring (EPA Region 1,

2011), and data from Northeastern Regional Association of Coastal Ocean Observing Systems (NERACOOS) ocean observing system buoys in the Gulf of Maine (NERACOOS, 2017). In general, pH, turbidity, and dissolved oxygen levels in the region are typical of open ocean environments with excellent water quality. Nutrient (ammonia, nitrates, and phosphorous) concentrations varied seasonally and reached a peak in winter months (USACE, 1989).

4.4 Living Resources

Benthos

The results of the benthic community analysis performed in 2010 indicated that, while not extremely diverse, the macroinvertebrate fauna at the IOSN comprise a mix of short-lived opportunistic species and longer-living stable climax community species (Larsen, 2011). Sampling of the benthic community identified 40 species representing just four phyla. The assemblage was noteworthy for its lack of oligochaetes, nearly ubiquitous elsewhere, and the absence of echinoderms and colonial species. Polychaetes were the overwhelmingly dominating taxa within the community in terms of numbers of species and individuals. Density was relatively low, while the species richness, diversity and evenness were also at low to modest levels (Larsen, 2011). One species, the polychaete Paraonis gracilis, was the numerical dominant at eight of the nine stations sampled. This well-developed benthic community was supported by the SPI/PV survey performed in 2015 which identified Stage 3 infauna across the site and a consistent, deep apparent redox potential discontinuity (Guarinello, et al., 2016).

Fish and Shellfish Resources

The area in which the IOSN is located supports a variety of pelagic and demersal fish species. The habitat at the disposal site is not a rare or especially unique habitat for the Gulf of Maine, consisting of a nearly flat, primarily silt/clay bottom.

Fish community data collected jointly by ME DMR and NH F&G were used to describe the communities at the IOSN. The Maine-New Hampshire (MENH) Inshore Trawl Survey samples areas off of coastal New Hampshire and Maine in the spring (typically the first week of May) and the fall (typically the last week of September) (ME DMR, 2016 – See Appendix E in the EA). Sampling in the vicinity of the IOSN has been conducted since the fall of 2000, and there have been 136 trawl tows made in proximity to the disposal site from 2000 through 2015. A

total of 65 spring tows were performed, and a total of 71 tows were made in the fall. A total of 91 species were caught in all tows, with the spring tows averaging 21 species per tow and the fall tows averaging 23 species per tow. Table 1 lists all fish species caught from the trawl tows in the vicinity of the IOSN. The dominant fish species by weight in the MENH fall trawls were spiny dogfish, silver hake, and Atlantic Herring. The dominant fish species by weight in the MENH spring trawls were American plaice and silver hake (EPA Region 1, 2020).

The USACE-NAE also sampled the area within the IOSN on May 24, 2016, and February 20, 2017 (See Appendix D in the EA). Six trawl transects were established within the site, and for each transect a 15-minute trawl was performed at speed of approximately 2.6 knots. In general, species composition of the fish community was similar to that reported by USACE (1989) and from the MENH data set (ME DMR, 2016).

Table 1 – Fish species identified from the Maine-New Hampshire (MENH) Inshore Trawl Survey in the vicinity of the IOSN during the spring and fall (2000-2015)

Common Name	Scientific Name	Common Name	Scientific Name
Acadian Redfish	*Sebastes fasciatus*	Little Skate	*Raja erinacea*
Alewife	*Alosa pseudoharengus*	Longhorn Sculpin	*Myoxocephalus octodecemspinosus*
Alligatorfish	*Aspidophoroides monopterygius*	Lumpfish	*Cyclopterus lumpus*
American Plaice	*Hippoglossoides platessoides*	Moustache Sculpin	*Triglops murrayi*
American Sand Lance	*Ammodytes americanus*	Northern Pipefish	*Syngnathus fuscus*
American Shad	*Alosa sapidissima*	Northern Puffer	*Sphoeroides maculatus*
Atlantic Cod	*Gadus morhua*	Northern Sea robin	*Prionotus carolinus*
Atlantic Halibut	*Hippglossus hippoglossus*	Ocean Pout	*Macrozoarces americanus*
Atlantic Herring	*Clupea harengus*	Pearlsides	*Maurolicus muelleri*
Atlantic Mackerel	*Scomber scombrus*	Pollock	*Pollachius virens*
Atlantic Silverside	*Menidia*	Rainbow Smelt	*Osmerus mordax*
Atlantic Torpedo	*Torpedo nobiliana*	Red Hake	*Urophycis chuss*
Barndoor Skate	*Raja laevis*	Scup	*Stenotomas chrysops*

Bigeye Scad	*Selar crumenopthalmus*	Sea Raven	*Hemitripterus americanus*
Black Sea Bass	*Centropristis striata*	Silver Hake	*Merluccius bilinearis*
Blueback Herring	*Alosa aestivalis*	Silver Rag	*Ariomma bondi*
Bluefish	*Pomatomas saltatrix*	Smooth Skate	*Raja senta*
Bristled Longbeak	*Dichelopandalus leptocerus*	Snakeblenny	*Lumpenus lumpretaeformis*
Buckler Dory	*Zenopsis conchifera*	Spiny Dogfish	*Squalus acanthias*
Butterfish	*Peprilus triacanthus*	Spotted Hake	*Urophycis regia*
Cunner	*Tautogolabrus adspersus*	Spotted Tinselfish	*Xenolepidichthys dalgleishi*
Daubed Shanny	*Lumpenus maculatus*	Thorny Skate	*Raja radiata*
Fourbeard Rockling	*Enchelyopus cimbrius*	White Hake	*Urophycis tenuis*
Fourspot Flounder	*Paralichthys oblongus*	Windowpane	*Scophthalmus aquosus*
Goosefish	*Lophius americanus*	Winter Flounder	*Pseudopleuronectes americanus*
Greenland Halibut	*Reinhardtius hippoglossoides*	Winter Skate	*Raja ocellata*
Grubby	*Myoxocephalus aenaeus*	Witch Flounder	*Glyptocephalus cynoglossus*
Gulf Stream Flounder	*Citharichthys arctifrons*	Wrymouth	*Cryptacanthodes maculatus*
Haddock	*Melanogrammus aeglefinus*	Yellowtail Flounder	*Limanda ferruginea*

The ME DMR Lobster Monitoring Program has routinely collected lobster population data since 1985, with the sampling occurring primarily from May through November and occasionally in the winter months as allowed. Each lobster management zone is sampled three times monthly from May through November with trips spread throughout the zone. Zone G is the southwestern most lobster management zone, spanning from the Presumpscot River (near Portland, Maine) south to the New Hampshire border, and is the zone in which the IOSN is located. Using a subset of data from Zone G that was relevant to the location of the IOSN, the ME DMR Lobster Monitoring Program calculated a mean catch of 0.39 legal lobsters per trap (± 0.09 lobsters) during the December through April timeframe, which was comparable to the overall Zone G winter catches (EPA Region 1, 2020). The mean catch in the May through November timeframe ranged between one and two (1-2) legal-size lobsters per trap (ME DMR, 2016 – See Appendix E in the EA).

USACE-NAE also collected lobster abundance data in and around the IOSN in December 2016 and January 2017 to assess the winter lobster community in the area. A total of six deployment/retrieval events were conducted. The mean catch ranged from 0.6 to 2.15 legal lobsters per trap and from 1.1 to 4.9 shorts (i.e., lobsters under the legal size) per trap (EPA Region 1, 2020). The mean number of lobsters per trawl generally decreased from December through January. Appendix D in the FEA contains all the lobster data collected during these surveys.

Endangered and Threatened Species

There are a number of species found in Gulf of Maine waters that are currently listed as threatened or endangered under the Endangered Species Act. They are summarized below.

North Atlantic Right Whale *(Endangered)*

The North Atlantic right whale (*Eubalaena glaciala*) is one of the most endangered large whales in the world. The range of the North Atlantic right whale occurs from Nova Scotia and Newfoundland (Sergeant, 1966; Mitchell, 1974; Sutcliffe and Brodie, 1977; Hay, 1985; Brilliant et al, 2015), into the lower Bay of Fundy (Arnold and Gaskin, 1972; Kraus and Prescott, 1981, 1982; Reeves et al., 1983; Davies et al, 2019) and throughout the Gulf of Maine south of cape Cod Bay and the Great South Channel (Watkins and Schevill, 1976, 1979, 1982; Davis et al., 2017; Leiter et al., 2017; Hayes et al., 2018) in the spring and summer. In the winter, right whales have historically occurred from cape Cod Bay (Watkins and Schevill, 1976; Meyer-Gutbrod et al, 2018) south to Georgia and Florida (Moore, 1953; Kraus, 1991) and into the Gulf of Mexico (Moore and Clark, 1963; Schmideley, 1981). However, in recent years right whales have expanded their winter distributions father into northern waters likely in response to calanoid copepod distributions (Hayes et al., 2018).

Fin Whale *(Endangered)*

Fin whales (*Balaenoptera physalus*) are the most cosmopolitan and abundant of the large baleen whales (Reeves and Brownell, 1982). They also are the most widely distributed whale, both spatially and temporarily, over the shelf waters of the northwest Atlantic (Leatherwood et al., 1976) occurring as far south as Cape Lookout, North Carolina and penetrating far inside the Gulf of St. Lawrence. In the shelf waters of the Gulf of Maine the frequency of fin

whale sightings generally increases from spring through the fall (Hain et al., 1981; CETAP, 1982; Powers et al., 1982; Chu, 1986). The areas of Jeffery's Ledge, Stellwagen Bank, and the Great South Channel have the greatest concentrations of whales during spring through fall. There is a decrease in on-shelf sightings of fin whales in winter, however, fin whales do overwinter in the Gulf of Maine.

Leatherback Sea Turtle *(Endangered)*

Leatherback sea turtles (*Dermochelys coriacea*) have been reported in New England waters in July through early November. Inshore seasonal movements may be linked to those of the jellyfish *Cyanea capillata*, which periodically occur in the IOSN area, and, therefore, could be used by leatherbacks for foraging. They could also pass through the area while migrating or seeking prey. The population of leatherbacks has been declining worldwide, but specific status in the United States is currently unknown.

Shortnose Sturgeon *(Endangered)*

Shortnose sturgeon (*Acipenser brevirostrum*) occur along the U.S. Atlantic coast. Available information on shortnose sturgeon indicates that they make coastal migrations within the Gulf of Maine (i.e. between the Merrimack and Kennebec Rivers) and make at least occasional short visits to Great Bay in New Hampshire (NMFS 2016). Based on patterns of detections by acoustic receivers in Great Bay, it is thought that shortnose sturgeon visit Great Bay at least during the spring and fall; although there is no known spawning in the nearby Piscataqua River. Migrating shortnose sturgeon may be present in the nearshore areas of the Gulf of Maine; however, no tagged shortnose sturgeon have been detected at a buoy (GoMOOS buoy B01) deployed in the vicinity of the IOSN site. The general area of the IOSN site may serve as a migratory corridor for shortnose sturgeon.

Atlantic Sturgeon *(Threatened)*

The marine range for Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus)* includes all marine waters, coastal bays, and estuaries from Labrador, Canada to Cape Canaveral, Florida. The Gulf of Maine distinct population segments (DPS) of Atlantic sturgeon is currently listed as federally threatened. An Atlantic sturgeon was detected as recently as June 2012 in Great Bay, New Hampshire and acoustic receivers in the vicinity of the Isles of Shoals (GoMOOS

buoy E01) have detected tagged Atlantic sturgeon. The general area of the IOSN site may serve as a migratory corridor for Atlantic sturgeon.

Atlantic salmon *(Endangered)*

Seaward migrating juvenile Gulf of Maine DPS Atlantic salmon (*Salmo salar)* have been recorded by acoustic telemetry moving southward toward the vicinity of the IOSN. Atlantic salmon have been detected in the vicinity of GoMOOS Buoy E01; however, they have not been detected in the buoy closest to the IOSN (B01) since its deployment in 2005. Even if Atlantic salmon were to move into the area, it is unlikely that a highly mobile species residing in the water column over the site such as salmon would be affected by periodic disposal events.

5.0 DISPOSAL HISTORY

The IOSN is a new ODMDS with no known record of disposal in its immediate vicinity. Hydroacoustic data and SPI imagery from the 2015 baseline survey of IOSN and surrounding area revealed the potential for limited past disposal to the northeast of IOSN but not within the current site boundaries (Guarinello et al., 2016).

6.0 MONITORING

EPA Region 1 and the USACE-NAE share responsibility for monitoring ODMDS in New England, including the IOSN. The regional monitoring program uses a tiered monitoring framework (Germano *et al.,* 1994) that is consistent with the guidance for SMMPs (EPA and USACE, 1996). In addition to dedicated site surveys, data collected by other agencies and organizations also will be used to assess the IOSN (e.g., MENH Inshore Trawl Survey, ME DMR Lobster Monitoring Program, and NERACOOS). Collectively, the data will be used to address the following overall site monitoring objectives:

- Assess whether disposal activities are occurring in compliance with permit/authorization and site restrictions;
- Support evaluation of the short-term and long-term fate of materials based on MPRSA site impact evaluation criteria; and
- Support assessment of potential adverse environmental impact from dredged material disposal at the site.

This SMMP provides a general framework for the monitoring program and guides future sampling efforts at the disposal site. Specific details about those efforts (*e.g.,* sampling design, statistical comparisons) will be developed in project-specific survey plans. Similarly, the schedule for the monitoring surveys will be governed by the frequency of disposal at the IOSN, results of previous monitoring surveys, and funding resources. The data collected under this monitoring plan will be evaluated on an ongoing basis to determine whether modifications to the site usage or designation are warranted. Monitoring data will also be used to revise this SMMP within the next 10 years. At that point, the results of the focused monitoring (described below) and any trend assessment monitoring deemed useful for revision of the SMMP will be collated and used to update and revise the SMMP for IOSN to improve management of the site.

EPA Region 1 and USACE-NAE jointly assess compliance with permit conditions and authorizations for federal projects. EPA Region 1 will be responsible for determining if an unacceptable impact has occurred from dredged material disposal at the IOSN. However, any such determinations will be made in consultation with other agencies and will be based on monitoring data and any other pertinent information. EPA Region 1 also is responsible for determining the need for and requiring any modifications to site use or de-designation of the site.

6.1 Organization of the Monitoring Program

The monitoring program is comprised of two components: compliance monitoring (typically short-term) and environmental monitoring (both short- and long-term). Although the specific objectives of the components differ, much of the actual monitoring overlaps. Compliance monitoring includes collection of data relevant to the specific conditions in permits and authorizations (*e.g*., where, when, and how much material can be disposed). Environmental monitoring for the disposal site is developed around the following four fundamental premises that establish the overall monitoring approach from a data acquisition perspective as well as the temporal and spatial scales of the measurement program:

- Testing information from projects previously authorized to use the site for dredged material disposal can provide key information about the quality and characteristics of material that has been disposed at the site;

- Lack of benthic infaunal community recovery in areas of the ODMDS with recently disposed material provides an early indication of potential adverse impact;
- Some aspects of the impact evaluation required under MPRSA Section 102(c)(3) can be accomplished using data from regional monitoring programs (*e.g.,* fisheries impact); and
- Measurement of certain conditions at the site can be performed at a lower frequency (*e.g.,* long-term dredged material deposit stability) or only in response to major environmental disturbances such as the passage of major storms.

The environmental monitoring is further organized around five management focus areas that are derived from the types of potential effects required for evaluation under MPRSA [40 CFR § 228.10(b)] as described in Section 2:

- **Management Focus 1: Movement of dredged material.** This focus combines the requirements under 40 CFR 228.10(b)(1) (Movement of materials into sanctuaries, or onto beaches or shorelines) and 40 CFR 228.10(b)(2) (Movement of materials towards productive fishery or shellfishery areas) into one focus;
- **Management Focus 2: Absence of pollutant-sensitive biota.** Addresses 40 CFR 228.10(b)(3) (Absence from the disposal site of pollutant-sensitive biota characteristic of the general area);
- **Management Focus 3: Changes in water quality.** Addresses 40 CFR 228.10(b)(4) (progressive, non-seasonal, changes in water quality or sediment composition [assumed to include sediment chemistry] at the disposal site when these changes are attributable to materials disposed of at the site);
- **Management Focus 4: Changes in composition or numbers of biota.** Addresses 40 CFR 228.10(b)(5) (Progressive, non-seasonal, changes in composition or numbers of pelagic, demersal, or benthic biota at or near the disposal site when these changes can be attributed to the effects of materials disposed at the site);
- **Management Focus 5: Accumulation of material constituents in biota.** Addresses 40 CFR 228.10(b)(6) (Accumulation of material constituents [including without limitation, human pathogens] in marine biota at or near the site [*i.e.,* bioaccumulation]).

A tiered approach, based on a series of null hypotheses, is used to monitor compliance and address concerns under each Management Focus. Tier 1 evaluates a series of hypotheses addressing "leading indicators" that provide early evidence of unacceptable environmental responses or conditions. Examples include documentation of whether recolonization is proceeding as expected or whether mounds are deposited as planned and that no post-deposition movement is occurring. Should the hypotheses under Tier 1 be satisfied, the findings would be evaluated and decisions to conduct Tier 2 activities made. The specific conditions (triggers) that will initiate Tier 2 or Tier 3 monitoring are described below and summarized in Appendix B. Based on the type of event/action that has occurred, EPA and USACE-NAE, with advice from other state and federal agencies, will work to implement the appropriate management as described below and summarized in Appendix B.

The measurement program under Tier 1 focuses on both individual dredged material mounds and the overall site conditions. New mound construction and surrounding areas will be evaluated within one to two years of completion, and the entire site will be evaluated as needed. While specific monitoring activities are defined under each tier, the actual monitoring conducted in any given year is dependent on annual budget allocations. Thus, prioritization of monitoring by organizational focus and findings of the monitoring program must be done annually during the interagency planning meeting.

Tiers 2 and 3 provide for progressively more detailed and focused studies to confirm or explain unexpected or potentially significant adverse conditions identified under Tier 1. For example, if Tier 1 monitoring under Management Focus 2 indicates that the benthic community was not recovering on recently deposited sediments, successive tiers would enable examination of potential causes by incorporating additional investigation of sediment characteristics and quality. However, if the results from the Tier 1 data do not suggest impact, Tier 2 activities would not be invoked.

The following sections describe the monitoring approach that will be applied to each management focus. Each subsection provides the following:

- Intent of the data gathered under the focus area;
- Statement of relevant questions and hypotheses to be addressed within each tier;
- Summary of the measurement approach, triggers, and tools to be used under each

successive tier.

6.2 Monitoring Elements

Compliance Monitoring

Compliance monitoring includes evaluation of information and data relevant to the conditions in specific permits and authorizations and may be collected separately from the environmental data. The hypothesis that will be addressed is:

> *H_0 0-1: Disposal operations are not consistent with requirements of issued permits/authorizations.*

This hypothesis will be evaluated by review of the record of towed scow track and disposal location provided by the USACE DQM system. This information is supplemented by multibeam acoustic surveys that can provide information on the location of recently disposed dredged material. Any variances identified will be discussed by the EPA and USACE-NAE on a project-specific basis to determine the potential magnitude of effect and the appropriate action which could range from consultation with the relevant parties regarding desired improvements to revocation of permit/authorization for performing the work.

Management Focus 1: Movement of the Dredged Material

This management focus addresses two concerns relative to the disposal of dredged material at the IOSN. The first is site management and compliance. The second is movement of the material after disposal. The questions that will be addressed include:

- Is the material deposited at the correct location?
- Are mounds constructed consistent with the site designation?
- Are mounds stable and dredged material retained within the disposal site?

The latter question directly addresses management concerns about material moving into sanctuaries, or onto beaches or shorelines, or towards productive fishery or shellfishery areas.

Tier 1

The IOSN is a non-dispersive, or containment, site; therefore, significant movement of

materials out of the site is not expected. Loss of mound material could mean that the material is being lost inappropriately and may potentially impact areas outside of the site, if transported beyond the site's boundary. For the purpose of Tier 1, this question is addressed through two hypotheses.

H_0 1-1: Changes in elevation for any mound are not greater than 0.3 m (1.0 ft) over an area greater than 50 by 50 m (164 by 164 ft) following initial consolidation after termination of disposal at a given target:

This hypothesis will be tested by determining the dimensions of disposal mounds created in a given dredging season and performing periodic monitoring of the mound using precision bathymetry techniques. The bathymetric baseline data for new or modified mounds will be collected after one year of consolidation. Bathymetric surveys of mounds (historic and recently completed) and the entire site will also be performed periodically. Information on mound size and height will be compared with previous data to determine if loss of material has occurred. Further study of the characteristic of the mound and surrounding area will be conducted under Tier 2, if large scale (50 by 50 m or 164 by 164 ft) mound changes of more than 0.3 m (1 ft) in height within any five-year interval.

H_0 1-2: Major storms (greater than 10-year return frequency) do not result in erosion and loss of material from disposal mounds at the IOSN.

This hypothesis tests whether major storms have eroded mounds. Although the depth of the IOSN is such that significant erosion of mounded dredged material is not expected, this hypothesis will be tested by determining the dimensions of disposal mounds within six months following the passage of storms with a ten-year return frequency or greater. Dimensions will be determined using precision bathymetry techniques. The decision to conduct post-storm surveys will be made jointly by EPA and the USACE-NAE. If a mound changes in height by more than 0.3 m (1.0 ft) from the previous survey, the site and surrounding area will be examined as defined under Tier 2.

Tier 2

Significant loss of material during disposal or from the deposited mound may result in changes to the benthic community structure either within or beyond the site boundaries (primarily due to burial). Change in bathymetry and benthic community structure immediately outside of the site would be indicative of potential unacceptable transport. Tier 2 investigates whether significant erosion of mound height determined from Tier 1 results in the relocation of material outside of the site boundaries.

H_0 1-3: Material lost from disposal mounds at the IOSN site does not increase the (a) bathymetry more than 15 cm (0.5 ft) over an area larger than 50 by 50 m(164 by 164 ft) and (b) the biological indices measured with sediment profile imaging are not significantly lower than the reference site in bathymetrically changed areas.

This hypothesis will be tested by determining changes in bathymetry and sediment characteristics within 1 km (0.54 nmi) beyond the site boundary. The survey design will consider the expected direction of transport based on the predominant current direction and velocity (*e.g.,* it may not be necessary to survey the entire area within 1 km [0.54 nmi] of the site).

Precision bathymetry will be used to define substantive changes in bathymetry and topography (greater than 15 cm [0.5 ft]). Sediment profile imagery will be used to evaluate changes in sediment characteristics and the benthic community. Comparison of sediment profile imagery data from areas of concern to reference areas will be used to determine whether the transported material has a potential significant adverse biological effect.

Changes in bathymetry across the mound apex or apron of more than 0.3 m (1.0 ft) or development of large areas of predominately muddy sediments not previously documented may be an indication of substantial transport of material from the site. If such changes are documented, Tier 3 characterization of sediment quality or further characterization of benthic communities may be required.

Tier 3

The premise of this tier is that significant transport of material beyond the site boundary

could affect the benthic productivity of the area. Therefore, characterization of sediment quality may be required.

H_0 1-4: Material transported beyond the IOSN boundaries does not result in significant decreases in sediment quality.

Sediment chemistry, toxicity, and benthic community structure will be measured at representative locations (determined through interagency coordination) from the area where the benthic community is depressed and at the IOSN reference sites to test this hypothesis.

Chemical and toxicity testing and analysis will be conducted using methods required by the Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters (RIM) (EPA Region 1/USACE-NAE, 2004) or subsequent approved documents. Benthic community sampling and analysis methods will be the same as those conducted during site designation studies. Statistical comparisons and numbers of samples will be determined during project-specific survey planning.

Data from the area of concern will be compared statistically to data collected concurrently from the IOSN reference sites and from previously collected baseline data within IOSN to determine if the quality of transported dredged material is unacceptable. The determination of unacceptable conditions will be based on all three measures (*i.e.,* sediment quality, benthic community analysis, and toxicity).

Management Focus 2: Absence from the Disposal Site of Pollutant-Sensitive Biota Characteristic of the General Area

The premise underlying this management focus is that the infaunal community recovers rapidly after disposal ceases. Therefore, the absence, or slower-than-expected recovery of the benthic infaunal community indicates a potential biological impact at the mound and, by implication, the ability of the site to support higher trophic levels. The long history of disposal site monitoring in New England has resulted in an excellent understanding of the rate at which benthic infauna recover from disturbances such as those caused by dredged material disposal as well as the types of communities that are expected to

recolonize the mounds (SAIC 2002; Wiley., 1992, 1995; Germano *et al.,* 1994; Germano *et al.,* 1993). Thus, the questions that the monitoring program addresses are directed at determining if benthic recovery is proceeding as expected and if pollutant sensitive organisms are returning and growing in the areas were dredged material has been disposed at the site. For Tier 1, these questions include:

- Do opportunistic species return to the where dredged material has been disposed and the surrounding area within a growing season?
- Are the infaunal assemblages consistent with similar nearby sediments, the baseline, or expected recovery stage?
- Are benthic communities and populations similar to surrounding sediments?

If these questions are answered in the affirmative, the biological community is recovering as expected, and significant adverse impact from the disposal operations is not demonstrated. If the questions are answered in the negative, investigation into potential causes is conducted under Tier 2 and/or specific management actions may be taken as described in the summary table in Appendix B.

Tier 1

This tier focuses on the biological recovery of the site surface by sampling for specific, opportunistic, benthic infaunal species and the recolonization stage relative to nearby sediments.

H_0 2-1: Stage 2 or 3 assemblages (deposit-feeding taxa) are not present on the disposal mound one year after cessation of disposal operations.

This hypothesis will be tested with SPI on the disposal mounds created in a given dredging season and by periodic imaging of older mounds. This evaluation includes estimates of grain size classes, which is a key variable affecting the types of organisms observed in the images. The initial SPI survey should be conducted within 12-16 months after mound completion. Evaluation of selected historic (inactive) mounds and imaging of the IOSN reference stations will be incorporated into each survey of active mounds. Sampling of historic mounds can be sequenced across years depending on budgets and the conclusions of the previous data review at the annual interagency coordination

meeting. SPI surveys will periodically include sampling for confirmatory benthic community assessment and sediment chemistry.

Significant adverse impact will be determined from comparison of the SPI data on the active and historic mounds to that of the reference stations. If the comparison of the mound data to the reference areas is consistent with the expected successional sequence, the biological community on the mounds would be considered to be recovering as expected and significant adverse impact from the disposal operations not demonstrated. If there is significant departure from the successional expectation in the SPI data between the mounds and reference sites, and the grain size information from the images or reference condition cannot explain the difference, further investigation into the potential causes of the difference is conducted under Tier 2.

Tier 2

This tier is executed if differences in the benthic recolonization data on a dredged material mound cannot be explained by differences or changes in grain size. The hypotheses are designed to determine if the observations made under Tier 1 are localized (specific to a focused disposal area within the site) or regional, and to determine the effect of different sediment grain size distributions on the biological observations.

H_0 2-2: The absence of opportunistic species and Stage 2 or 3 assemblages is not confined to the disposal area within the site.
H_0 2-3: The range in sediment grain-sizes in the area of disposal is not different from the ambient seafloor.

These hypotheses examine whether or not the differences observed in Tier 1 extend beyond the area of focused disposal and whether the grain size distribution within and outside the site can explain the biological observations. If diminished recolonization (successional) stage data is widespread and substantial movement of material is not observed under Tier 1 or 2 of Management Focus 1, or if poor water quality conditions (*e.g.,* sustained low dissolved oxygen levels) are known to have occurred in the region (Management Focus 3), assignment of the dredged material disposal as the cause is

questionable. However, if the differences are widespread and cannot be attributed to other factors, an investigation of cause would be initiated under Tier 3 of this Management focus.

These hypotheses will be tested with SPI with periodic confirmatory sediment sampling for benthic community assessment and chemical analyses. The full suite of information developed from the SPI will be used to evaluate the similarity or differences of the areas sampled. This evaluation includes estimates of grain size classes, which is a key variable affecting the types of organisms observed in the images. The data will be used to address the above hypotheses. If the results find the effect is widespread and that grain size distributions cannot explain the biological observations, additional cause and effect studies defined under Tier 3 may be conducted.

Tier 3

Tier 3 is conducted if the benthic recolonization data developed under Tier 2 indicate that potential impacts are widespread (*i.e.,* encompass areas within and beyond the site boundaries). This tier attempts to determine if the Tier 2 findings are the result of contaminants in the sediments or sediment toxicity. Tier 3 studies will only be conducted after a review and concurrence by EPA and the USACE-NAE.

H_0 2-4: The toxicity of sediment from the disposal site is not significantly greater than the reference sites.
H_0 2-5: The benthic community composition and abundance is not equal to that at reference sites.

Sampling and analysis of the sediments for benthic infaunal enumerations and community composition will be conducted to evaluate the status of the infaunal community and compare the community to measures of sediment quality. Sediment chemistry and toxicity will be measured at representative locations from within the IOSN, the surrounding area, and at references sites.

Chemical and toxicity measures will be conducted as defined in the RIM (EPA Region 1/USACE-NAE, 2004) or subsequent approved documents. Data from the area of

concern will be compared statistically to data collected concurrently from the IOSN reference sites to determine if the quality of site sediment is unacceptable.

Management Focus 3: Changes in Water Quality

The premise underlying this management focus is that water quality in Bigelow Bight where the site is located in the Gulf of Maine is very good with a high degree of mixing and very limited sources of contamination. As a result, dredged material disposed at the site is not expected to impact oxygen levels of the overlying water column or cause other significant impacts to water quality. Moreover, dredged material plume studies indicate the suspended solids resulting from dredged material disposal have a very short duration in the water column in the water depths representative of the IOSN, and suspended solids reach ambient levels within minutes to hours following a disposal event. This fact, coupled with required testing of dredged material that is used as an input for predictive modeling of potential water column impacts ensures that residual material meets water quality criteria within an initial mixing period (within four hours within the site and always outside the site), and minimizes any long-term, cumulative impact to the water column.

Tier 1

Tier 1 monitoring will consist of tracking available existing coastal water quality monitoring programs to identify any longer-term trends within Bigelow Bight that might be relevant to the IOSN. Additionally, although not a concern for most projects, some projects may be required to prove that they are not exceeding Limiting Permissible Concentration (LPC) criteria at the site boundary during dredged material disposal. Thus, a measurement program to document whether short-term changes in water quality during disposal operations (Ho3-0) occurs is not proposed under Tier 1 but may be required as part of an MPRSA permit or project authorization.

H_0 3-0: The LPC is not exceeded at the site boundary for four hours after a dredged material disposal event.

Specifics of this monitoring, as well as what follow up Tier 2 and Tier 3 monitoring would encompass would be developed through interagency coordination if something

unforeseen indicates a need to monitor water column plumes from disposal operations at IOSN, and would be based on the results of dredged material testing.

Management Focus 4: Changes in Composition or Numbers of Pelagic, Demersal,or Benthic Biota at or Near the Disposal Site

Similar to the water column, significant impacts to pelagic or demersal species is not expected given the limited time dredged material is suspended in the water column and the relatively small footprint of benthic habitat that is affected on an annual basis. Similar to the approach for water quality, tracking of ongoing coastal studies of pelagic and demersal species will be performed to assess trends that may be relevant to the IOSN site.

As noted in the FEA supporting the site designation, benthic biota within the immediate footprint of disposal are directly impacted, but studies have demonstrated a rapid recovery of the benthic community. Hence, site monitoring will follow the tiered structure described above as part of Management Focus 2 tracking the benthic recovery of the site.

Management Focus 5: Accumulation of Material Constituents in Marine Biota at or Near the Site

The intent of this management focus is to evaluate whether significant potential for bioaccumulation results from disposal of dredged material at the IOSN site. Because bioaccumulation of contaminants is a phenomenon, it may not result in the impairment or death of organisms in and of itself. However, because bioaccumulation may result in transfer and possible biomagnification of certain chemicals throughout the food chain, which may pose potential unacceptable risks to marine organisms and humans that are not addressed through the evaluation of benthic community recovery, measurements for potential bioaccumulation are precautionary and prudent.

Such bioaccumulation data can serve several purposes. The first is to help understand whether transfer of chemicals from sediments to organisms could be contributing to a significant adverse biological response (*e.g.,* failure of a benthic infaunal community to thrive). The second is to estimate potential risks posed from bioaccumulation of

contaminants at the site. Taken together, this information provides assurance as to the adequacy of the dredged material testing program in preventing unsuitable material from being disposed at the site.

Tier 1

The premise of this tier is that bioaccumulation potential at the IOSN, and thus risk, does not increase after the sediments are deposited.

H_0 5-1: Bioaccumulation potential of sediments collected from the IOSN is not significantly greater than the range of bulk chemical values measured in permitted projects.

This hypothesis will be tested by periodically collecting sediments from within the IOSN and its reference areas and measuring the level of contaminants in the sediments. If statistically significant increases in sediment chemistry above permitted dredged material project data and/or baseline data are found, theoretical bioaccumulation calculations will be performed. These may be performed in association with any sampling for sediment chemical analysis. If the bioaccumulation modeling indicates a significant increase in potential bioaccumulation relative to baseline conditions or reference areas, more specific studies that directly measure bioaccumulation may be conducted under Tier 2.

Tier 2

Direct evidence of bioaccumulation from sediments disposed at the IOSN may be obtained by comparing bioaccumulation in organisms collected from within and near (reference stations) the disposal site. The study may include collection of representative infaunal organisms from these locations and comparing the level of chemicals in their tissues or testing sediments under controlled laboratory conditions (*i.e.,* bioaccumulation bioassays) or both. The specific study questions and sampling design will be developed and approved by EPA and the USACE-NAE before any study is conducted. If significant increases in bioaccumulation are determined to exist in the sediments from the site, ecological and human health risk models may be run to examine the significance of the increase. If risks increase significantly, studies described under Tier 3 would be

implemented as well as the management actions described in the summary table in Appendix B.

Tier 3

This tier tests for transfer of bioaccumulated compounds at the site into higher trophic levels.

H_0 5-2: Bioaccumulation of material constituents in higher tropic levels that reside at or near the site does not result from disposal of dredged material at the IOSN site.

Proving the source of contaminants measured in higher trophic level species is a difficult and complex task. Therefore, careful experimental design is required to make a cause and effect link to the sediments deposited at the IOSN site. The specific study design will be developed and approved by EPA, which has management responsibility for the IOSN, before any study is conducted.

6.3 Monitoring Methods

This section describes equipment and approaches typically used to evaluate dredged material disposal sites in the northeast United States. Use of consistent techniques increases comparability with future and historic data; however, monitoring methods used at the IOSN site are not limited to these technologies. New technology and approaches may be used as appropriate to the issues and questions that must be addressed. The applications of equipment and survey approach must be tailored to each individual monitoring situation, as warranted.

Mound Erosion

Loss of deposited dredged material (erosion) at the site will be investigated using precision multibeam bathymetry. Today's survey techniques and equipment have matured to the point that surveys provide full bottom coverage, and comparative surveys can detect changes in the bathymetry of a dredged material deposit or mound of approximately 6 inches (15 cm) or less. Co-collected side scan sonar and acoustic backscatter provide additional insight into the physical characteristics of surficial sediment and processes affecting them. SPI/PV systems (Rhoads and Germano, 1982; Germano *et al.*, 1994) may also be used and are useful for defining broad areas

where grain size may have changed or identifying thin layers of dredged material, respectively (Rhoads, 1994). Specific survey requirements and application of these measurement tools will be defined for each tier and situation investigated. Evidence of mound erosion will need to be evaluated carefully to distinguish between actual erosion and mound consolidation.

Biological Monitoring

Benthic recovery in the IOSN will be measured by combined SPI/PV imagery (Rhoads and Germano, 1982; Germano et al., 1994). EPA and the USACE-NAE will establish monitoring stations at each of the reference sites, and at each station a minimum of three photos will be taken with the SPI/PV camera. Stations are typically randomly located within a specified area of interest to increase the statistical power of comparison between the affected site and reference areas. Image analyses will provide the following information:

- Sediment grain size;
- Sediment surface boundary roughness;
- Sea floor disturbance;
- Apparent Redox Potential Discontinuity;
- Depth of camera penetration (inferring sediment strength);
- Sediment methane; and
- Infaunal successional stage.

SPI/PV imagery will be periodically supplemented with sampling for benthic community structure to corroborate the SPI/PV interpretations.

Water Quality

Should site specific monitoring be required for measuring water quality, methodologies will be developed through interagency coordination.

Sediment Quality

Grab samples of the sediments will be collected and analyzed for grain size, total organic carbon, and selected contaminants such as trace metals (*e.g.,* mercury, lead, zinc, arsenic, iron,

cadmium, copper), total PCBs, total PAH, and pesticides (EPA/USACE-NAE, 2004). The number of stations and locations will be defined during survey planning and will be sufficient to enable characterization of within and among station variability.

Bioaccumulation Measurements

Measurement of bioaccumulation will include collection of representative benthic infaunal species within the site and at reference locations. At least two types of organisms (filter feeders and sediment feeders) will be obtained and genus level species aggregated into field replicates. Sufficient biomass to enable quantifications of compounds that can bio-accumulate will be obtained from grab samples (or other appropriate sample collections device). Tissue will be prepared and analyzed using methods consistent with EPA/USACE-NAE (2004). The number of stations and locations will be defined during survey planning and will be sufficient to enable characterization of within and among station variability. Between three and five replicate samples should be obtained from each station sampled including each of the reference stations. Laboratory-based bioaccumulation testing will follow the requirements outlined in EPA/USACE-NAE (2004).

6.4 Quality Assurance

An important part of any monitoring program is a quality assurance/quality control (QA/QC) regime to ensure that the monitoring data are reliable. Laboratories are required to submit Quality Assurance (QA) sheets with all analyses on a project-specific basis. Monitoring activities will be accomplished through a combination of EPA Region 1 and USACE-NAE resources (*e.g.,* employees, vessels, laboratories) and contractors. Documentation of QA/QC is required by both agencies for all monitoring activities (*i.e.*, physical, chemical, and biological sampling and testing). QA is documented in the form of Quality Assurance Project Plans (QAPP) and/or Monitoring Work Plans. QAPPs are required for all EPA Region 1 and USACE-NAE monitoring activities. EPA and the USACE-NAE will utilize the analytical methods, detection limits, and QA procedures that are described in the RIM) EPA Region 1/USACE-NAE, 2004). Additional sources of information include the Ocean Testing Manual (OTM, or Green Book, EPA/USACE, 1991).

7.0 ANTICIPATED SITE USE

MPRSA § 102(c)(3)(D) and (E) requires that the SMMP include consideration of the quantity of the material to be disposed of in the site and the presence, nature, and bioavailability of the contaminants in the material, as well as the anticipated use of the site over the long term. The IOSN is designated for the disposal of dredged material only. No other types of material may be disposed of at the site.

Projected dredging volumes for the southern Maine, New Hampshire, and northern Massachusetts coastline include a mix of large and small federal navigation projects and many small private dredging projects (from marinas, boatyards, and harbors). A complete list of federal dredging projects that may use the IOSN is provided in the FEA (EPA Region 1, 2020). A large fraction of the potential dredging volume is from the planned improvement of the Portsmouth Harbor and Piscataqua River Federal Navigation Project. This project is anticipated to yield approximately 576,000 cubic meters (754,000 cubic yards) of dredged material, some portion of which would be disposed of at the IOSN (a portion of this material may be used beneficially and not proposed for ocean disposal).

Dredging and dredged material disposal at the IOSN will be accomplished using a bucket dredge to fill split hull or pocket scows for transportation to the disposal site. These types of equipment are expected to be the primary mode of any ocean disposal at the IOSN, although disposal is not specifically limited to this equipment.

National guidance for determining whether dredged material is suitable for ocean disposal is provided in the OTM or Green Book (EPA/USACE, 1991). The RIM, which builds on and is consistent with the Green Book, provides specific testing and evaluation methods for dredged material projects at the IOSN and elsewhere in New England. The quality of MPRSA-regulated material will be consistent with EPA's Ocean Dumping Regulations (40 CFR Part 227), as implemented under the Green Book and the RIM.

Because of its depth (90 m [295 ft]) and size (5.3 km² [1.5 nmi²]), the potential capacity of the IOSN is far in excess of the potential site use over the next 20 years, and its use does not pose a hazard to navigation.

8.0 REVIEW AND REVISION OF THE PLAN

MPRSA 102 (c)(3)(F) requires that the SMMP include a schedule for its review and revision, which should be consistent with the requirement that SMMPs be reviewed and, as necessary, revised no less than every 10 years after adoption of the plan, and every 10 years thereafter. EPA Region 1 and the USACE-NAE have agreed to review this plan annually as part of an annual agency planning meeting. A more comprehensive, formal review and revision of this SMMP will take place every 10 years unless the agencies agree to do so more frequently at an annual agency planning meeting. Based on that schedule, and the designation of the IOSN in 2020, EPA Region 1 and the USACE-NAE would then expect to undertake the next review and revision within 10 years of the effective date of this SMMP. EPA Region 1 and the USACE-NAE will coordinate with the USFWS, NMFS, and other federal and state agencies through the NERDT and other established regional networks for these reviews.

Section 102(c)(3) requires that "the Administrator and the Secretary shall provide opportunity for public comment" in developing SMMPs for each EPA-designated ODMDS. EPA Region 1 made this SMMP available for public comment concurrent with the public comment period for the Proposed Rule and DEA, and EPA Region 1 and the USACE-NAE will provide an opportunity for public comment for future SMMP revisions.

In addition to the SMMP review and revision process, EPA Region 1 and the USACE-NAE will continue to inform and involve the public regarding the monitoring program. The USACE-NAE monitoring reports are available at the USACE-NAE website (http://www.USACE-NAE .usace.army.mil/Missions/Disposal-Area-Monitoring-System-DAMOS/Disposal-Sites/), and information on the SMMP may be found at the EPA Region 1 website (http://www.epa.gov/ocean-dumping/).

9.0 FUNDING

The costs involved in site management and monitoring will be shared by EPA Region 1 and the USACE-NAE. This version of the SMMP will be in effect until it is revised (no more than 10 years from the effective date of this SMMP) or the site is de-designated.

Those monitoring efforts conducted by other agencies and programs will depend solely on funds allocated to those programs by those agencies or other supporting agencies.

The timing and scope of monitoring surveys and other related activities will be determined by funding levels, the frequency of disposal at the site, and the results of previous monitoring.

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Appendix A

Template for Generic Special Conditions for MPRSA Section 103 Permits

Isles of Shoals North Ocean Dredged Material Disposal Site

MPRSA section 102(c)(3) directs EPA in conjunction with the USACE to develop site management and monitoring plans (SMMP) for dredged material disposal sites and such plans are implemented through MPRSA permits issued by USACE or through federal projects subject to the same criteria, evaluation factors, procedures and requirements as permits. EPA in conjunction with USACE developed the template language below for inclusion in permits, though the template language is intended to be included on a case-by-case basis. Neither the SMMP nor this Appendix impose requirements on a permittee or federal contractor supporting a federal project. Instead, the terms of any particular permit or authorization would impose (or not) requirements specific to the permitted activity. The USACE is not obligated to impose any particular permit term based on the template language; the language is provided to facilitate USACE permit development and to provide notice to third parties. For any future permit, EPA's concurrence review would confirm that appropriate terms are included to assure adequate implementation of the SMMP.

A. Definitions:

1. ***"Permit"*** and ***"permittee"*** as used here mean USACE ocean dumping permits issued to others under Section 103 of the MPRSA, and to USACE itself and its contracts or other authorizations for USACE dredging projects (see MPRSA section 103(e) and 40 CFR Part 220.2).

2. ***"Towing vessel"*** is any self-propelled tug or other marine vessel used to transport (tow or push) the "disposal vessel" (see #3 following) for any portion of the transit to IOSN.

3. ***"Disposal vessel"*** is any barge, scow, or self-propelled vessel (such as a hopper dredge) that carries dredged material during transit and from which the dredged material is discharged, typically by opening doors in the bottom of the hull or by splitting the hull.

4. ***"Transit"*** or ***"transport"*** to the disposal site begins as soon as dredged material loading into the disposal vessel is completed and a towing vessel begins moving the disposal vessel to the disposal site.

5. ***"Surface Disposal Zone" or "SDZ"*** is circle with the center coordinates and radius defined for each project within which the disposal vessel must discharge all of the dredged material.

B. <u>Disposal Operations:</u>

1. Year-round, disposal vessels including tugs, barges, and scows transiting between the dredge site and the disposal site shall operate at speeds not to exceed 10 knots. For unanticipated conditions, a vessel may operate at a speed necessary to maintain safe maneuvering speed instead of the required 10 knots. The intent of this condition is to reduce the potential for vessel collisions with endangered turtles, fish, and whales.

2. A marine mammal/turtle observer with written approval from the National Marine Fisheries Service (NMFS) (https://www.fisheries.noaa.gov/new-england-mid-atlantic/careersandopportunities/protected-species-observers), hereafter referred to as the "endangered species observer", and contracted and paid for by the [CORPS PM, CHOOSE ONE: permittee or 9 contractor], must be present aboard disposal vessels for transportation and disposal activities to and from the disposal site. The name of the endangered species observer must be recorded in the logbook and is required to be on lookout for marine mammals and sea turtles for the duration of the trip.

3. The captain or endangered species observer shall:

a. Check communication media for the latest information regarding North Atlantic right whale sighting locations. These media may include, but are not limited to, the Whale Alert app (https://www.fisheries.noaa.gov/resource/tool-app/whale-alert-smartphone-app, https://portal.nrwbuoys.org/ab/dash/ or https://www.nefsc.noaa.gov/psb/surveys). Check communication media before the initial disposal operation to determine the potential presence of whales in the area.

b. Lookout for turtles and whales and advise the captain of turtle or whale sightings.

c. Report any interactions (i.e., vessel strikes, captures, etc.) with any ESA-listed species as soon as possible (within 24-hours) to the NMFS Marine Animal Response Hotline at (866) 755NOAA or USCG via CH-16 and immediately report any injured or dead marine mammals or sea turtles to NMFS at (866) 755-NOAA.

d. Every three months after the initial dredge action for as long as the dredging and disposal continues and at the end of a disposal operation, submit a report by email to _____and incidental.take@noaa.gov, summarizing the vessel route taken, number of trips, sightings of ESA-listed species, and any action taken to avoid interactions with ESA-listed species.

4. The vessel captain shall:

a. Lookout for turtles and whales.

b. Avoid transit and disposal when visibility is lessened (e.g., at night, fog) to an extent that would preclude an endangered species observer from spotting a whale within 1,500 feet or a sea turtle within 600 feet. Disposal shall not be permitted if these requirements cannot be met due to weather or sea conditions. In that regard, the permittee and contractor should be aware of predicted conditions before departing for the disposal site. The intent of this condition is to reduce the potential for vessel collisions with endangered species, including right whales.

c. Avoid harassment of or direct impact to turtles and whales except when precluded by safety considerations.

d. Ensure that the disposal vessel adheres to the enclosed NMFS regulations for approaching right whales, 50 CFR 224.103(c), which restrict approaches within 1,500 feet (500 yards) of a right whale and specify avoidance measures for vessels that encounter right whales.

e. Ensure that dredged material is not released if whales are within 1,500 feet or turtles are within 600 feet of the specified disposal point. The captain must check in with the endangered species observer prior to releasing the dredged material. If whales or turtles are within these distances and appear to be moving away from the specified disposal point, within these distances and appear to be remaining stationary, or outside these distances but appear to be moving towards the specified disposal point, the vessel captain

shall wait until they have cleared 10 the specified disposal point by these distances and are not moving towards it, and then proceed with disposal at the specified disposal point.

5. This special condition addresses NMFS concerns under the Magnusson-Stevens Act, there shall be no dredging from _____, inclusive in order to minimize adverse impacts to a number of vulnerable species: _____.

6. The First Coast Guard District, Local Notice to Mariners Office, (617) 223-8356, and Aids to Navigation Office, (617) 223-8347, shall be notified at least ten working days in advance of the intended start date of the location and estimated duration of the dredging and disposal operations.

7. The U.S. Coast Guard, Sector Northern New England, (207) 767-0320, shall be notified at least ten working days in advance of the intended start date of the location and estimated duration of the dredging and disposal operations.

8. Except when directed otherwise by the Corps for site management purposes, disposal of dredged material is not permitted unless the following requirements can be met:

a. Dredged material shall be released at a specified set of coordinates within the disposal site provided in the Dredge and Disposal Approval Letter with the scow moving at a speed of 3 knots or less.

b. Disposal shall occur with the scow within ___ feet of the disposal coordinates provided in the Dredge and Disposal Approval Letter.

c. If following the requirements in (a) and (b) above is unsafe, e.g., due to weather or sea conditions, disposal with the scow moving only fast enough to maintain safe control is permitted. In that regard, special attention needs to be given to predicted conditions prior to departing for the disposal site. If disposal occurs without complying with (a) or (b) above, you, your representative, or the captain of the disposal vessel, must notify the Corps DQM contact immediately (see contact information below). Leave a voice message with the relevant information if no one answers. Information provided shall include disposal coordinates, permit number, volume disposed, date and time of disposal, circumstances of incident, disposal vessel name, name of caller, and phone number of the caller. In addition, a detailed written report with supporting documentation shall be provided to the Corps within 48 hours following any noncompliant event.

9. National Dredging Quality Management (DQM) Program Requirements:

a. Discharges of dredged material involving open-water disposal and confined aquatic disposal cells require monitoring by the contractor, which must be performed using the DQM system software and hardware system developed by the Corps. Please address questions regarding certification to the Corps New England District DQM contact (see contact information below).

b. You are required to follow the DQM specifications, including the DQM information transfer protocol, located at http://dqm.usace.army.mil. The Corps must have certified each disposal vessel used for this project within a year of the disposal activity and you must send the DQM Certification and the Annual System Quality Assurance Verification

to the Corps with the Dredge and Disposal Request Form. You are responsible for ensuring that the DQM system is operational throughout the project and that project data are submitted to the National DQM Support Center in accordance with the specifications provided at the aforementioned website. Disposal may not take place if any component of the DQM system is inoperable unless otherwise authorized by the Corps New England District DQM contact (see contact information below). An alternative recording of the absent data stream must be maintained if any of the DQM-certified telemetry ceases operation during a disposal trip. The breakdown of any DQM-certified telemetry must be reported to the DQM contact and repaired within 48 hours to keep the scow fully compliant with permit conditions. Unless weather, safety or sea state conditions prevent it, the hull doors must be fully closed on split hull scows before the vessel leaves the disposal site.

c. The DQM system used by the permittee must be capable of providing the information necessary for the Scow Monitoring Profile Specification. The permittee must provide the Corps with a: (i) "Weekly Summary Report Form" at the end of each week that dredging and disposal activities are conducted for the duration of the project; and (ii) "Seasonal/Final Completion of Dredging with Open-Water Disposal Report Form" upon completion of dredging and disposal for the season and project. These will be provided to you with the Dredge and Disposal Approval Letter that authorizes the initiation or continuation of disposal operations. You must make the data collected by the DQM system available to the Corps upon request.

d. Prior to the initial dredge/disposal action, or any time dredging/disposal resumes after ceasing for 30 days or more, you or your representative must submit the enclosed Dredge and Disposal Request Form at least 10 working days before dredging or disposal is expected to begin or resume. Dredging/disposal must not begin or resume until the Corps issues a Dredge and Disposal Approval Letter. The letter will include the approved start and end dates and "disposal point coordinates that may differ from those specified for other projects using the same disposal site or even from those specified earlier for this project. You must contact us (see contact information below) as early as possible to request an extension if you anticipate not completing dredge or disposal operations before the approved end date.

10. Unless otherwise stated, all submittals related to these special conditions for dredging and disposal shall be emailed to the DQM contact at: _____.

11. You must complete and return the enclosed Work Start Notification Form to this office at least two weeks before the anticipated starting date. This authorization presumes that the work as described above and as shown on your plans noted above is in waters of the U.S. Disposal operations must not begin or resume until you submit the enclosed Disposal Request Form and the Corps issues an Open-Water Disposal Approval Letter that provides a specified set of coordinates for dredged material release within the disposal site. See the special conditions above.

12. The time limit for completion of the open-water disposal authorized by is _____ years from the date of this letter. There shall be no open-water disposal after that completion date without

further authorization in writing from the Corps. The time limit for completing other authorized work (if any) is provided in the following paragraph. This authorization expires on _____. This authorization does not obviate the need to obtain other Federal, State, or local authorizations required by law. This authorization becomes valid only after the _____ issues or waives Water Quality Certification (WQC) as required under Section 401 of the Clean Water Act.

C. Additional Project-Specific Conditions

Additional project-specific conditions or modifications to the Standard permit conditions specified above may be required by EPA and USACE if they determine these conditions are necessary to facilitate safe use or accurate monitoring of the disposal site, or to prevent potential harm to the environment. These can include any conditions that EPA or USACE determine to be necessary or appropriate to facilitate compliance with the requirements of the MPRSA, such as timing of operations or methods of transportation and disposal.

D. Alternative Permit/Project Conditions

Project-specific alternatives or modifications to the Standard and/or Project-Specific permit conditions specified above may be authorized in advance by EPA and USACE at their discretion, at the request of the permittee. In such cases the permittee must demonstrate to the satisfaction of EPA and USACE:

- that the alternative conditions are sufficient to accomplish the specific intended purpose of the original permit condition;
- that they will not increase the risk of harm to the environment or the health or safety of persons; and
- that they will not impede monitoring of compliance with the MPRSA, regulations promulgated under the MPRSA, or the permit or authorization issued under the MPRSA.

Appendix B

Site Monitoring Strategies, Thresholds for Action, and Management Options Summary Table

Isles of Shoals North Ocean Dredged Material Disposal Site

SMMP Appendix B - Site Monitoring Strategies, Thresholds for Action, and Management Options - Updated 17SEP2020						
Site Management Goal	**Monitoring Approach**	**Tier**	**Rationale**	**Frequency**	**Threshold for Action**	**Management Options if Threshold Exceeded**
I. Prevent buildup of material from causing a hazard to navigation	track individual disposal events in DQM or equivalent system	1	with pre-defined volume limits for each set of target coordinates, buildup of material can be estimated based on number/volume of loads disposed	- daily to weekly depending on the project	- estimated buildup of material reaches/exceeds pre-defined limit	a) if pre-defined capacity has been met, disposal is directed to the next target location b) if pre-defined capacity was inadvertently exceeded, proceed to tier 2
	multibeam bathymetric survey	2	map entire seafloor in and surrounding the target area	- as needed based on tier 1 - periodically based on overall site usage	a) buildup of material is within 5 ft of specified minimum depth limit b) buildup of material has exceeded minimum depth limit	a) discontinue use of surrounding disposal targets to minimize potential for additional accumulation b) discontinue use of surrounding disposal targets and proceed to tier 3
	notifications + multibeam bathymetric survey + grab sample from shallowest points	3	Coast Guard and local port authority notifications of potential issue; performance of depth differencing to determine potential depth increase due to consolidation/scour; backscatter/grab evaluation to assess surficial material type	- potentially multiple events to further track consolidation/scour	- based on discussions with Coast Guard and local port authority	a) notice to mariners b) surface buoy marking of shallow area c) removal of material to increase depth d) potential closure of the site or a portion of the site
II. Prevent movement of dredged material into sanctuaries, onto beaches or shorelines, or toward productive fishery or shellfish areas	track individual disposal events in DQM or equivalent system	1a	pre-defined disposal targets will be set to meet internal site buffer requirement	- daily to weekly depending on the project	disposal tracking indicates material disposed too close to site boundary	enforcement discussion with contrator and proceed to tier 1b
	multibeam bathymetric survey	1b	map entire seafloor in and surrounding the target area and perform depth differencing to confirm containment of material within the site	- periodically based on overall site usage and major storm events	- depth differencing reveals buildup of material approaching or beyond the site bounday	review disposal tracks, material type, and hydrodynamic conditions with potential modification of disposal conditions and proceed to tier 2
	SPI survey	2	map thin-layer deposition beyond site boundary	- as needed	- buildup of dredged material is trending toward a resource area and/or to a thickness to cause ecological impacts	a) modification of site use (relocation of disposal target and disposal timing) b) temporary discontinuing of site use while performing tier 3
	transport study, benthic community assessment	3	map the current structure, suspended sediment plume dynamics, and benthic impacts outside the site	- as needed	- potential for impacts to identified resource areas	a) permanent modification of disposal evaluation and site use approaches b) potential closure of the site or a portion of the site
III. Prevent dimishment of sediment quality that limits recovery of the benthic community following cessation of disposal operations	track sediment quality of all projects disposed at the site	1a	only material determined to be suitable for ocean disposal can be disposed at the site, understanding that there will be variations in the composition of sediment for each project	- each project	- not applicable	data should be easily available for review should tier 1b indicate a slower than expected benthic recovery
	SPI/PV survey of disposal target/surrounding area and reference site(s)	1b	provides assessement of benthic recovery that can be averaged across multiple stations	- periocally based on overall site usage	- one or more measured benthic health measurements indicates the benthic community is recovering slower than expected	thorough review of all projects that disposed material over the area of interest and proceed to tier 2
	sediment sampling for benthic infauna and chemistry	2	a) confirmation of the issue identified by the SPI/PV survey and inference on potential cause b) periodic check of the overall health of the site and identification of potential negative trends	a) as needed based on tier 1b results b) periodically as a check of overall health of the site (at a minimum in preparation for SMMP update)	- confirmation that the benthic community is not recovering as expected - unexpected elevated sediment concentrations	a) additional disposal of dredged material over the area of concern b) re-evaluation of suitability determinations for the material of concern with potential modification of evaluation approach for future projects c) proceed to tier 3

SMMP Appendix B - Site Monitoring Strategies, Thresholds for Action, and Management Options - Updated 17SEP2020						
Site Management Goal	**Monitoring Approach**	**Tier**	**Rationale**	**Frequency**	**Threshold for Action**	**Management Options if Threshold Exceeded**
	benthic infauna collection for tissue analysis, potential sediment collection for biological testing	3	provide additional insight into the cause of the slowed recovery and to interpretation of the previous suitability determination results	- as needed	- confirmation of unacceptable biological effects	a) additional disposal of dredged material over the area of concern b) potential modification of the suitability determination approach for future projects c) continued monitoring of the area to track recovery d) potential closure of the site or a portion of the site
IV. Prevent progressive, non-seasonal changes in water quality and changes in composition or numbers of pelagic and demersal species	track available existing coastal water quality monitoring and fisheries programs	1a	identify longer-term trends or changes in regional water quality and species abundance relevant to IOSN	- participation in notification distribution lists for needed data and regional updates - annual review of reported data - attendance at relevant symposia	- unexplained trend or change in water quality or fisheries data	a) review of record of material disposed at the site for potential trends or anomalies b) evaluate benefit of performance of tier 1b
	document that LPC are not exceeded at the site boundary	1b	may be required for a specific project to confirm modeling predictions that were performed as part of the suitability determination	- as needed for a specific project	- exceedence of LPC at the site boundary	a) modification of disposal requirements for the specific project (e.g. volume, timing) b) re-assessment of model input parameters
	to be determined	2 & 3	if there is the potential for a link between changes to water quality or fisheries and disposal activities, a technical advisory committee will be formed to develop tier 2 and 3 monitoring	- to be determined	- to be determined	to be determined with potential closure of the site or a portion of the site
V. Prevent diminishment of sediment quality that causes unacceptable accumulation of contaminants in benthic infauna and potential ecological and human health risks	track sediment quality and biological testing of all projects disposed at the site	1a	only material determined to be suitable for ocean disposal can be disposed at the site, understanding that there will be variations in the composition of sediment for each project	- each project	- not applicable	data should be easily available for review with the number of projects and types of material defining the frequency of performance of tier 1b
	sediment sampling for chemical analysis with calcuation of theoretical bioaccumulation potential	1b	provides a check on the testing performed as part of the suitability determination	- periodically, at a minimum frequency in preparation for SMMP revision	- significant increase in bioaccumulation potential relative to baseline or reference	a) review of record of material disposed at the site for potential trends or anomalies b) performance of tier 2
	collection of infauna for analysis of tissue concentrations and/or collection of sediment for bioaccumulation bioassays	2	provides an actual value for base of food chain tissue concentrations	- as needed	- significant increase in bioaccumulation potential relative to baseline or reference	a) review and potential revision of evaluation thresholds that are used in the suitability determination b) potential changes to timing and target placement for disposal
	to be determined (expected to incorporate risk modeling)	3	assessment of risk associated with measured bioaccumulation	- as needed	- accepted risk thresholds	a) review and revision of evaluation thresholds that are used in the suitability determination b) changes to timing and target placement for restoration of impacted area c) potential closure of the site or a portion of the site