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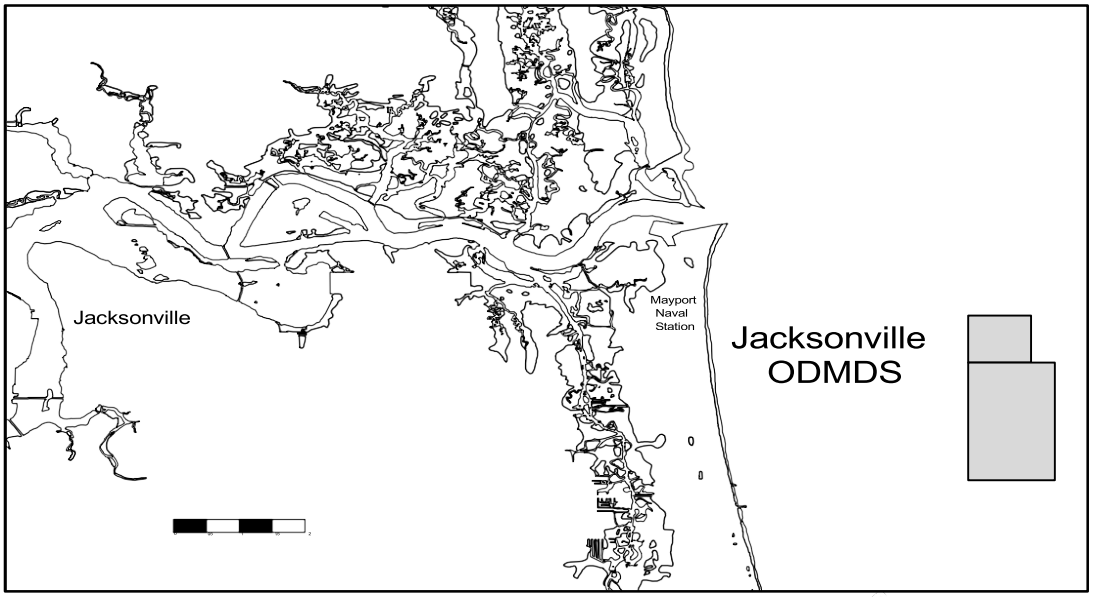
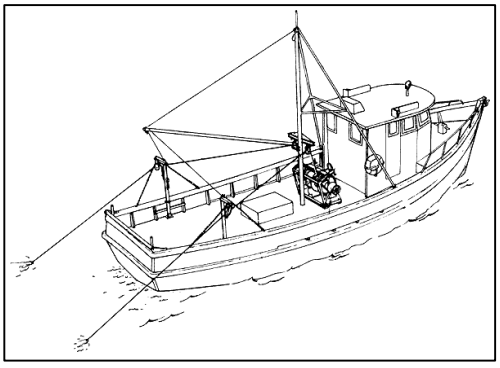
US Army Corps of Engineers®

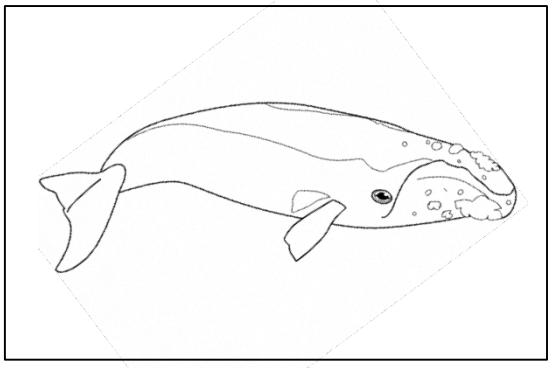
JACKSONVILLE OCEAN DREDGED MATERIAL DISPOSAL SITE

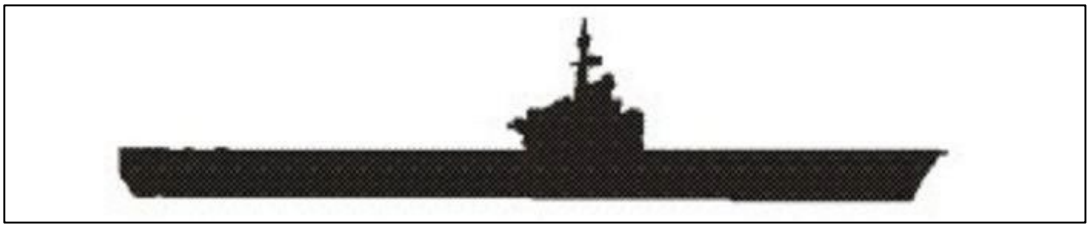
SITE MANAGEMENT AND MONITORING PLAN

August 2025









The following Site Management and Monitoring Plan (SMMP) for the Jacksonville Ocean Dredged Material Disposal Site (ODMDS) has been revised to comply with Section 102(c)(3) of the Marine Protection, Research, and Sanctuaries Act (MPRSA) of 1972, as amended (33 U.S.C. Section 1412(c)) and has been approved by the following officials of the U.S. Environmental Protection Agency (EPA) Region 4 and the U.S. Army Corps of Engineers (USACE), Jacksonville District. This SMMP supersedes all prior Jacksonville ODMDS SMMPs.

Kevin J. McOmber

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Kevin J. McOmber, P.E.
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Jacksonville, Florida

This plan is effective from the date of the last signature for a period not to exceed 10 years. The plan shall be reviewed and revised more frequently if site use and conditions at the site indicate a need for revision.

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1 INTRODUCTION

The Marine Protection, Research, and Sanctuaries Act (MPRSA), also referred to as the Ocean Dumping Act, regulates the transportation and the dumping, of any material into ocean waters. The MPRSA applies to all ocean waters that are seaward of the baseline from which the territorial sea is measured. Under the MPRSA, no permit or authorization may be issued for ocean dumping where such dumping will unreasonably degrade or endanger human health or the marine environment. Most material dumped in the ocean today is dredged material (i.e., sediments) removed from the bottom of water bodies to maintain navigation channels and berthing areas.

In the case of dredged material, the U.S. Army Corps of Engineers (USACE) is responsible for issuing ocean dumping permits and authorizing or conducting Federal projects involving ocean dumping of dredged material (33 U.S.C Section 1413, MPRSA Section 103). The USACE applies the U.S. Environmental Protection Agency (EPA) marine protection criteria established pursuant to Section 102 of the MPRSA when evaluating permit or authorization requests for (and implementing Federal projects involving) the transportation of dredged material for the purpose of dumping it into ocean waters. MPRSA permits and Federal projects involving the ocean dumping of dredged material are subject to the EPA's review and written concurrence. The EPA may concur, with or without conditions, or decline to concur (i.e., non-concur) on the issuance of a permit or implementation of a Federal project. If the EPA concurs with conditions, the final permit or the terms of the Federal project authorization must include those conditions. If the EPA declines to concur on an ocean dumping permit or Federal project, USACE cannot issue the permit or authorize or conduct the transportation to and disposal of dredged material in the ocean associated with the Federal project. In accordance with USACE regulations at 33 C.F.R. Section 325.6, MPRSA permits for Federal projects involving the transportation of dredged material for the purpose of dumping into ocean waters will specify a completion date for the disposal not to exceed three years from the date of permit issuance.

Under MPRSA Section 102, the EPA is responsible for the designation of all ocean disposal sites and the management of such designated sites. The EPA's ocean dumping regulations at 40 C.F.R. Section 228 establish procedures for the designation and management of ocean disposal sites. The EPA bases the designation of an ocean disposal site on environmental studies of a proposed site, environmental studies of regions adjacent to the site, and historical knowledge of the impact of disposal on areas with similar physical, chemical, and biological characteristics to the site. All studies for the evaluation and potential selection of dredged material disposal sites are conducted in accordance with the marine protection criteria published in 40 C.F.R. Section 228.5 and 228.6. EPA-designated ocean dumping sites are published at 40 C.F.R. Section

228.15. Unless otherwise specifically noted, site management authority for each site set forth in 40 C.F.R. Section 228.15 is delegated to the EPA Regional office under which the site entry is listed. Management of a site consists of regulating times, rates, and methods of disposal; regulating quantities and types of materials disposed; developing and maintaining effective ambient monitoring programs for the site; conducting disposal site evaluation and designation studies; and recommending modifications in site use and/or designation (40 C.F.R. Section 228.3(a)).

The EPA shares the responsibilities of conducting management and monitoring activities at the EPA-designated ocean dredged material disposal sites (ODMDSs) with USACE. Under MPRSA Section 102(c), the EPA, in conjunction with USACE, is responsible for developing a site management and monitoring plan (SMMP) for each designated ODMDS. The objective of each SMMP is to ensure that dredged material ocean disposal activities will not unreasonably degrade the marine environment or endanger human health or economic potentialities, or other uses of the ocean. The SMMP provisions are an integral part of managing all disposal activities at an ocean disposal site. This SMMP provides a framework for site monitoring and management as required by the MPRSA. Preparation of this SMMP has been informed by the Guidance Document for Development of Site Management Plans for Ocean Dredged Material Disposal Sites (EPA and USACE, 1996).

This SMMP may be modified during its term if the EPA in conjunction with the USACE determines that such changes are warranted, including as a result of information obtained from monitoring or other factors. This SMMP will be reviewed and revised as needed, or no later than 10 years of issuance, whichever is sooner. The MPRSA provides that the SMMP shall include, but is not limited to:

- A baseline assessment of conditions at the site;
- A program for monitoring the site;
- Special management conditions or practices to be implemented at each site that are necessary for the protection of the environment;
- Consideration of the quantity of the material to be disposed of at the site and the presence, nature, and bioavailability of contaminants in the material;
- Consideration of the anticipated long-term use of the site including the anticipated closure of the site, if applicable, and any need for continued management after closure of the site; and
- A schedule for review and revision of the plan (which shall be reviewed and revised at least every 10 years).

The provisions in this SMMP apply to all dredged material disposal activities at the Jacksonville ODMDS, including monitoring and management activities by the federal agencies. References in

this SMMP to conditions that "should be required" refer to implementation in a subsequent proceeding to authorize disposal of dredged material, whether in a permit, in a contract or other Federal project specification for the transportation and disposal of dredged material, or by USACE directly. Other than the regulatory text copied below, this SMMP does not itself impose binding requirements or obligations, though terms and conditions from the SMMP will be incorporated into other documents (e.g., permits and Federal project documents that authorize transportation and disposal of dredged material at the ODMDS) that will then impose binding rights and obligations on persons responsible for the authorized transportation and disposal.

Matters that "should be required" are implemented through the regulatory permit process and incorporated into permit applications. If the translation of terms by USACE warrants further clarification, the EPA can ensure proper implementation of these provisions through its permit concurrence authority.

1.1 DEFINITIONS

For the purposes of this document, the following definitions apply:

"*Authorization document"* means any permit issued pursuant to the MPRSA and/or authorizations from the Corps for the transportation and/or ocean disposal of dredged material, including but not limited to transportation-related or disposal-related conditions in contract documents and/or specifications.

"*Site user"* means a person utilizing a permit issued by the Corps of Engineers under Section 103 of the MPRSA and any person carrying out any Federal dredging and ocean disposal projects reviewed under Section 103(e) of the MPRSA or under a Dredged Material Permit as defined as defined in 40 C.F.R. Section 220.2(h).

"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.

"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.

"Disposal Release Zone" is the area identified within the ODMDS in which dumping of dredged material must occur in order for it to stay within the boundaries of the site, within which the disposal vessel must discharge all of the dredged material.

"Towing vessel" is any self-propelled tug or other marine vessel used to transport (tow or push) the "disposal vessel" for any portion of the transit to the ODMDS.

1.2 ROLES AND RESPONSIBILITIES

An interagency SMMP team was established to assist the EPA and USACE in developing the first Jacksonville ODMDS SMMP in 1997. The team consists of the following agencies and their respective representatives:

- USACE Jacksonville District
- State of Florida (Coastal Management Program)
- EPA Region 4
- U.S. Navy (Naval Station Mayport)
- Port of Jacksonville
- National Marine Fisheries Service (NMFS)
- U.S. Coast Guard

The EPA and USACE will continue to consult with these Florida and Federal agencies, as appropriate, to assess the need for future revisions to the Jacksonville ODMDS SMMP. The other agencies have, in the past, assisted the EPA and USACE with deciding appropriate disposal practices, monitoring techniques, the level of monitoring, the significance of results, and potential management options.

The EPA and USACE work together to implement the site monitoring program for the Jacksonville ODMDS. Specific responsibilities of the EPA and USACE are as follows:

EPA: The EPA is responsible for designating, modifying, and de-designating/cancelling ODMDSs under MPRSA Section 102, managing these sites by regulating site use, developing and implementing site monitoring programs (including compliance monitoring), evaluating environmental effects of disposal of dredged material at the sites, reviewing for concurrence on dredged material suitability determinations, and reviewing for compliance with the MPRSA marine protection criteria, conditions, and restrictions for MPRSA Section 103 permits or Federal projects authorizing the ocean dumping of dredged material.

Under MPRSA Sections 1411 and 1415(a) , the EPA has broad authority to assess civil penalties and seek injunctive remedies for unauthorized transport of material for the purpose of dumping it into ocean waters, including deviations from transportation-related and disposal-related conditions required by a regulation establishing the ODMDS or deviations from transportation and disposal-related conditions required by a Dredged Material Permit (as defined in 40 C.F.R. Section 220.2(h)) or construction contract.

USACE: The USACE is responsible for evaluating dredged material suitability and compliance with the MPRSA criteria, conditions, and restrictions, issuing MPRSA Section 103 permits and project authorizations, and, in conjunction with the EPA, regulating site use and developing and implementing site monitoring programs (including compliance

monitoring) through development and use of the SMMP. The USACE also has a contract remedy process to enforce conditions related to ocean disposal with a contractor for a federal project. The USACE contract remedies are separate and distinct from statutory remedies under the MPRSA.

The SMMP provisions apply to all dredged material transportation to and disposal at the site, including monitoring and management activities by the federal agencies. In addition to the SMMP provisions, USACE includes provisions in subsequently issued permits or in contracts that include the transportation and disposal requirements for a federal project. The EPA can ensure implementation of the provisions as necessary through their inclusion as conditions in the EPA's Section 103 concurrence actions. The agencies may adjust the provisions to individual projects, as necessary. All MPRSA Section 103 ocean disposal permits or contract specifications shall ensure compliance with the conditions of this SMMP.

2 SITE DESCRIPTION

The following sections 2.1 through 2.5 are a summary of site-specific information used in the development of this SMMP.

2.1 SITE HISTORY AND DESIGNATION

The Jacksonville ODMDS and vicinity has been used for the ocean disposal of dredged material since 1952. Prior to 1970 and in the early 1970's, material was disposed in an area 0.5 nautical miles (nmi) east of the original Jacksonville ODMDS; in the late 1970's material was disposed south of the original site. The Environmental Impact Statement for Jacksonville Harbor, Florida Ocean Dredged Material Disposal Site Designation was published in February 1983 and the 1nm^2 site was officially designated in 1984.

A SMMP was first developed for the Jacksonville ODMDS in June 1997. It was revised in 2007 and further modified in 2010. After years of use to support Jacksonville Harbor and the Mayport Naval Station, it was determined that additional ODMDS capacity would be required for ocean dumping of dredged material. In 2014 the Final Environmental Impact Statement for Designation of an Ocean Dredged Material Disposal Site Offshore of Jacksonville, Florida was published. As a result, in 2015 the Jacksonville ODMDS was expanded south to encompass areas of historical disposal and provide capacity for suitable dredged material for the next 50 years, increasing the site area to 4.56 nmi^2. The 2015 SMMP incorporated the expanded boundaries of the ODMDS.

This revised SMMP provides the framework for future site management and monitoring as required by the MPRSA. All MPRSA Section 103 ocean disposal permits or contract specifications will be conditioned as necessary to assure consistency with the SMMP. Appendix B summarizes the history of disposal at the ODMDS.

2.1.1 Final Rule Text in 40 C.F.R. 228.15(h)(9)

The official Jacksonville ODMDS designation is published at 40 C.F.R. Section 228.15(h)(9), as follows:

> Jacksonville, FL Dredged Material Site.
>
> (i) *Location:* 30° 21.514′ N., 81° 18.555′ W.; 30° 21.514′ N, 81° 17.422′ W.; 30° 20.515′ N., 81° 17.422′ W.; 30° 20.515′ N, 81° 17.012′ W.; 30° 17.829′ N., 81° 17.012′ W.; 30° 17.829′ N, 81° 18.555′ W.
>
> (ii) *Size:* Approximately 3.68 nautical miles long and 1.34 nautical miles wide (4.56 square nautical miles); 3,861 acres (1,562 hectares).
>
> (iii) *Depth:* Ranges from approximately 28 to 61 feet (9 to 19 meters).
>
> (iv) *Primary use:* Dredged material.
>
> (v) *Period of use:* Continuing use.
>
> (vi) *Restrictions:* (A) Disposal shall be limited to dredged material from the Jacksonville, Florida, area;
>
> **(B)** Disposal shall be limited to dredged material determined to be suitable for ocean disposal according to 40 C.F.R. 227.13;
>
> **(C)** Disposal shall be managed by the restrictions and requirements contained in the currently-approved Site Management and Monitoring Plan (SMMP);
>
> **(D)** Monitoring, as specified in the SMMP, is required.

2.2 SITE LOCATION

The site is located 4.4 nmi offshore and encompasses a total area of 4.56 nmi^2. The northern, historic ODMDS (Zone A) measures 1.0 nmi by 1.0 nmi and the expanded portion to the south measures an additional 2.68 nmi by 1.34 nmi (Figure 1).

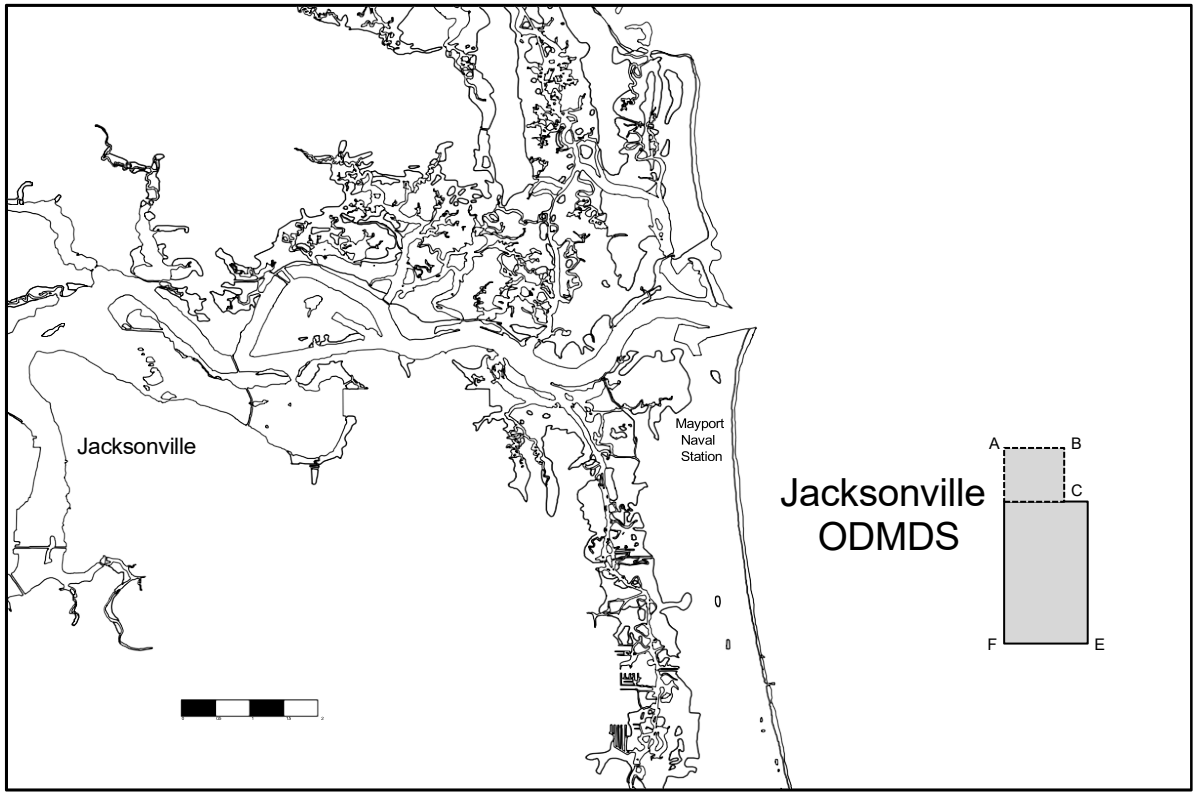

Figure 1. Jacksonville ODMDS Location Map

The site is centered at approximately 30°19.289'N latitude and 81°17.739'W longitude (NAD 83) or state plane coordinates 2176969.70 ft N and 562883.97 ft E (NAD83). The site coordinates are listed in Table 1.

Table 1. Jacksonville ODMDS Location

Vertices[1]	Geographic[2] (NAD83)		State Plane[3] (FL East 0901 Ft NAD83)	
NW Corner (A)	30°21.514 'N	81°18.555 'W	2,190,464N	558,631E
Upper NE Corner (B)	30°21.514 'N	81°17.422 'W	2,190,449 N	564,587E
Interior Corner (C)	30° 20.515' N	81° 17.422'W	2,184,393 N	564,571 E
Lower NE Corner (D)	30°20.515 'N	81°17.012 'W	2,184,388 N	566,727 E
SE Corner (E)	30°17.829 'N	81°17.012 'W	2,168,107 N	566,686 E
SW Corner (F)	30°17.829 'N	81°18.555 'W	2,168,128 N	558,570 E

[1]Figure 1
[2]Degrees, Decimal Minutes
[3]State Plane Florida East (feet)

2.3 SITE USE

Since 1995, Naval Station Mayport has utilized the Jacksonville ODMDS on an annual to biannual basis for the disposal of maintenance dredged material. Similarly, the ODMDS has been used for material removed throughout the Jacksonville Harbor as well as connected shipyards, since the time of site designation. The Jacksonville Harbor Federal Navigation Project alone has necessitated the disposal of approximately 12.9 million cubic yards (mcy) in the Jacksonville ODMDS since 2015. It is expected that both the Naval Station Mayport and the Jacksonville Harbor Federal Navigation Project will continue to utilize the Jacksonville ODMDS. As upland disposal alternatives become increasingly limited, the volume from the Jacksonville Harbor Federal Navigation Project is expected to increase and additional permitted projects may identify a need for ocean disposal.

Maintenance dredged material volumes from Naval Station Mayport are expected to average 1.2 mcy annually. Maintenance dredged material volumes from the Jacksonville Harbor Navigation Federal Project (Cuts 3 to 42) are expected to average 550,000 cubic yards annually. It is expected that most of this material will be placed in the nearshore placement area, Buck Island, or the Jacksonville ODMDS.

Over the next ten years, 10 to 15 mcy of dredged material is expected to be disposed in the ODMDS. The capacity of the expanded Jacksonville ODMDS is estimated to be 65 mcy (USACE 2023).

2.4 PAST MONITORING ACTIVITIES

Baseline assessments and monitoring provide an important record of changes or impacts that have occurred during the use of the site. Bathymetric surveys are typically required to be conducted before and after each disposal event and are listed in Appendix C. Other monitoring activities completed at Jacksonville ODMDS are outlined in Table 2. Data collected during these surveys are used to inform future monitoring activities and site disposal activity.

Table 2. Monitoring surveys conducted at the Jacksonville ODMDS.

Date	Survey Title	Conducted by	Purpose	Conclusion
1972-1973	*Environmental Investigation of a Dredged Spoil Disposal Site near Mayport, Florida*	Naval Oceanographic Office	Evaluation of environmental effects of disposal of dredged material with elevated levels of metals.	No permanent impairment of the benthic biological community when relative abundance and diversity of benthic macro fauna in the ODMDS are compared to control stations.
1977-1978	*Environmental Investigation of a Dredged Material Disposal Site Near Mayport, Florida*	Naval Oceanographic Office	Effects (sediment chemistry, bathymetry) of disposal of material from Mayport Harbor.	Significant change in bathymetry (depth decreased from 43 feet to 34 feet), noticed movement of material to the south, and significant difference found in heavy metal concentration in sediments inside the site than outside.
1986	*Disposal Site Monitoring at the Jacksonville ODMDS*	EPA Region 4	Benthic infaunal survey.	No significant benthic infaunal difference between control and disposal stations.
1995, March	*Jacksonville ODMDS Sidescan Sonar Survey*	EPA Region 4	Look for presence of natural resources and presence of man-made obstructions on the bottom.	No natural resources found; significant amounts of man-made obstructions in north half of site and to the north of the site.
1995, March	*Aerial Mapping of Sediment Chemistry at the Jacksonville ODMDS*	EPA Region 4 & Center for Applied Isotope Studies	Conduct sediment mapping of site to determine location of dredged material and to provide baseline for future surveys.	Two primary areas containing fine-grained sand associated with dredged material were found: one in the east-central sector of the ODMDS and the other along the southernmost portion of the survey area (½ mi south of the site). One area of coarse-grained dredged material was found consisting of a defined mound within the ODMDS boundaries.

Date	Survey Title	Conducted by	Purpose	Conclusion
1995, July	*Status & Trends Survey of the Jacksonville*	EPA Region 4 & Barry Vittor and Associates	Baseline for future surveys *ODMDS* (Includes assessment of the macroinfaunal communities within and outside of the ODMDS, sediment grain size, sediment chemistry and water quality)	Comparisons of the stations mean densities and mean number of taxa showed that the only significant differences observed are more likely to be related to the grain size distribution differences seen and not related to the presence or absence of disposed dredged material. Benthic community indices showed that all stations were extremely diverse with an equitable distribution of taxa when compared to known infaunal assemblages from the same general coastal region. In general, metal concentrations (especially lead, copper and zinc) were higher within than outside the ODMDS. Concentrations were lower in 1995 than in 1978. Organics, Pesticides, and PCBs were not detected.
1997, March	*Post Disposal Aerial Mapping of Sediment Chemistry at the Jacksonville ODMDS*	EPA Region 4 & Center for Applied Isotope Studies	Determine location and any migration of dredged material	General indication of increase in surficial fines especially in the western portion of the site as indicated by slurry densities and aluminum concentrations.
1998, June	*Post Disposal Status & Trends Survey of the Jacksonville ODMDS*	EPA Region 4 & Barry Vittor and Associates	Monitor for any adverse effects following re-initiation of site use. (Includes assessment of the macroinfaunal communities within and outside of the ODMDS, sediment grain size, sediment chemistry and water quality)	In general, all stations were extremely diverse with an equitable distribution of taxa relative to other benthic infaunal assemblages in the region. There was no predictable pattern in community indices or biomass between stations within and outside the ODMDS. Copper and zinc concentrations remain elevated within the ODMDS, but to a lesser degree than in 1995. Dissolved oxygen levels throughout the water column were lower (3-5mg/l) in 1998 than in 1995 (6mg/l).

Date	Survey Title	Conducted by	Purpose	Conclusion
2006-2007	*Ocean Current and Wave Measurements at the Jacksonville Ocean Dredged Material Disposal Sites*	EPA Region 4	Determine wave and current climate for water quality modeling and capacity modeling.	Currents in the vicinity of the Jacksonville ODMDSs tend to have a significant tidal component with predominate currents flowing to the north-northwest and south-southeast. Waves in the vicinity of the Jacksonville ODMDS are out of the east-southeast.
2008	*Jacksonville Ocean Dredged Material Disposal Site Capacity Report*	USACE Jacksonville District	Evaluate capacity of Jacksonville ODMDS	The Jacksonville ODMDS can accommodate the 2.0 million cy of new work from the proposed deepening of the federal channel, cut 3; the Mayport entrance channel; and Mayport turning basin. The remaining ODMDS capacity would allow 8 to 10 years or 6.4 to 8.0 million cy of additional in situ maintenance material without violating the minimum depth or 5-cm contour criteria.
2008	*Jacksonville Ocean Dredged Material Disposal Site Long Term Fate Analysis*	USACE Jacksonville District	LTFATE analysis was required to modify the SMMP to decrease the buffer zone	The analysis indicates that a 500-foot buffer would be adequate to ensure that no significant sediment deposition occurs outside the Jacksonville ODMDS.
2009, June	*Trend Assessments Survey of the Jacksonville ODMDS*	EPA Region 4	Monitor for any adverse effects. (Includes assessment of the macroinfaunal communities within and outside of the ODMDS, sediment grain size, sediment chemistry and water quality)	Higher taxa richness, diversity and density outside of ODMDS, but not a significant difference between stations inside and outside of the ODMDS. TBT detected in sediments in and to the south of the ODMDS. Other metal concentrations in sediment continue to decrease.
2009, October	*Jacksonville ODMDS Reconnaissance Survey (Sidescan Sonar & Video)*	EPA Region 4 & USACE Jacksonville District	Determine suitable location for a new ODMDS	Naturally occurring hardbottom occurs to the north of the channel. Scattered rubble fields occur around the existing ODMDS.

Date	Survey Title	Conducted by	Purpose	Conclusion
2010, March	*Jacksonville ODMDS Reconnaissance Survey (Sidescan Sonar & Video)*	EPA Region 4 & USACE Jacksonville District	Determine suitable location for a new ODMDS. Search zone was expanded.	Live bottom consisting of transverse ark reefs were observed in the southeast extension survey area. Potential reef feature east of the ODMDS was confirmed to not exist.
2010, March	*Spring Site Designation Study*	EPA Region 4 & USACE Jacksonville District	Collect baseline physical, chemical, and biological data on candidate disposal sites.	
2010, September	*Fall Site Designation Study*	EPA Region 4 & USACE Jacksonville District	Collect baseline physical, chemical, and biological data on candidate disposal sites.	
2012, April & 2013, April	*Post Mayport Sediment Profile Imaging Survey*	EPA Region 4	Map disposal footprint and evaluate impacts from disposal.	1.The dredged material footprint is centered over the disposal site with dredged material extending beyond the ODMDS boundaries to the north-northwest and south-southeast. 2. The main physical change in sediments at the Jacksonville ODMDS following dredged material disposal was a shift toward finer sediment texture. 3. The normal “equilibrium” infaunal community at the Jacksonville ODMDS appears to consist primarily of low to moderate numbers of Stage I or II surface-dwelling suspension feeders that are pre-adapted to energetic sandy environments. 4. Dredged material disposal from the Mayport Deepening Project resulted in deposition of silt/clay sediments, which also increased the number of Stage II and Stage III infauna at the site.

Date	*Survey Title*	Conducted by	Purpose	Conclusion
2012, April	*Sidescan Sonar of the Jacksonville ODMDS*	EPA Region 4	Map disposal footprint	Acoustic reflections indicate finer grained material throughout the site with the exception of the northeast portions of the ODMDS. Some indication of fine-grained material along the southeast border of the ODMDS. No indication of debris within the ODMDS as seen in previous surveys.
2013, August	*Post Mayport Disposal Impact Assessment - Sediment Profile Imaging Survey*	EPA Region 4	To obtain final post disposal Sediment Profile Images of the ODMDS and map disposal footprint and evaluate impacts from disposal.	1. The dredged material footprint is centered over the disposal site with dredged material extending beyond the ODMDS boundaries to the N/NW and S/SE. 2. The main physical change in sediments at the Jacksonville ODMDS following dredged material disposal was a shift toward finer sediment texture. 3. Based on the results of this study, EPA will propose revising the disposal buffer in the SMMP, increasing its size from 500 feet to 1000 feet on the north and south borders.
2018, July	*Trend Assessments Survey of the Jacksonville ODMDS*[1]	EPA Region 4	Monitor for any adverse effects (Includes assessment of the macroinfaunal communities within and outside of the ODMDS, sediment grain size, sediment chemistry and water quality). This is the first trend assessment survey (40 C.F.R. 228.13) in the expanded ODMDS.	Significantly higher taxa density within the ODMDS, compared with stations outside of the ODMDS, indicative of a healthy community. Otherwise, similar results for other parameters observed within / outside of the ODMDS. Analytical results indicate that there are no elevated levels of any analytes tested. Results to be used as a baseline for future studies.
April 2023	Side-scan Sonar and Video Survey of D1 and D2	EPA Region 4 & TetraTech	Marine remote sensing survey to determine if any live bottom areas or habitats have begun to form in Zones D1 and D2.	Minimal recruitment of epifauna was observed on the hardbottom substrate surveyed. No areas identified for further assessment or spatial separation from dredged material disposal activities at this time.

2.5 SITE CHARACTERIZATION

2.5.1 Physical Characterization

Materials placed in the Jacksonville ODMDS have historically consisted of rock, gravel, shell hash, silts, soft clays, and sand mixtures. The original 1 nmi^2 ODMDS (Zone A) contains dredged materials that are extremely variable in composition. Since capacity in Zone A is limited, Jacksonville District typically reserves this area for the Mayport dredging project material. The expanded Jacksonville ODMDS is divided into placement zones to accommodate dredged sediment based on origin and type, as described in Section 3.3. The western third of the expanded ODMDS is designated as Disposal Zone B and is limited to silty and other fine-grained material; the center third of the Jacksonville ODMDS, Disposal Zone C, is limited to sandy material; and the eastern third, Disposal Zone D, is utilized for the disposal of rock and boulder material. During EPA's 2018 Trend Assessment Survey of the Jacksonville ODMDS (excluding Zone D) and surrounding area, sediment particle size was consistently observed as fine to medium sand.

As of 2024, the ODMDS had a depth range of approximately 9 to 19 meters (29.5 to 62 feet) for Zone A to Zone D3, respectively, and an approximate remaining capacity of 72.45 mcy.

Predominant currents in the area flow to the southwest in the fall and winter and northeast during spring and summer. Larger waves in the area are predominantly from the east and occur in the winter. It is possible that some southerly transport of dredged material occurs in the fall and winter due to wave induced re-suspension (EPA, 2009). Long-term fate modeling has also indicated a southerly transport of material (USACE, 2010). SPI surveys following the Mayport Deepening Project showed deposited dredged material extending beyond the ODMDS boundaries in excess of five (5) cm to the north-northwest and south-southeast (Newfields, 2014). Based on the latest bathymetric surveys in February 2024, minor sediment migration appears still to be present, although well within the outermost ODMDS boundaries.

Anticipated Materials. Based on evaluation of currently permitted projects, it has been determined that between twenty (20) and sixty (60) percent of dredged material to be placed in the ODMDS consists of silt and sandy silt. The deepening projects, completed 2022, contributed to approximately 2.2 mcy of rock and large grain sized material placed in the ODMDS, Zone D1. Dredged material will be considered for beneficial uses to the maximum extent practicable.

2.5.2 Chemical Characterization

Sediment analyses in the late 1970's showed higher concentrations of certain heavy metals (Ni, Cu, Zn, Pb, and Cr), Kjeldahl nitrogen (the sum of organic nitrogen, ammonia, and ammonium), and organic carbon in sediments within the disposal site versus outside the site.

Sediment analysis as part of the 1995 benthic survey showed that, in general, metal concentrations within the ODMDS remained elevated compared to outside of the ODMDS. However, concentrations within the ODMDS have decreased since 1978 and based on the 1998 and 2009 studies, continue to decrease. Sediment testing within the ODMDS and surrounding area in 2018 showed metal concentrations below detectable levels or below the Threshold Effects Level values listed in the NOAA SQUIRT tables (EPA 2019; Buchman 2008). Similarly, pesticides, PCBs, and butyltins were either at or below the Method Reporting Limits values or were not detected in the sediment. Some low-level concentrations of semi-volatile organic compounds were detected both within and outside of the ODMDS; however, these were not at a prevalence or concentration of concern.

2.5.3 Biological Characterization

Surveys were conducted by the EPA in 1986 and 1995. Results of the macroinfaunal community analyses indicated no difference between disposal and control stations, and no difference could be found which could be related to active disposal. The sampling stations from the 1995 survey were composed primarily of sand, with silt/clay content of less than 10%. Station 4, in the center of the disposal pile, had the highest silt/clay fraction, and interestingly also had the highest gravel fraction (21%). Comparisons of the stations' mean densities and mean number of taxa showed that the only significant differences observed are more likely to be related to the grain size distribution differences seen and not related to the presence or absence of disposed dredged material. Benthic community indices showed that all stations were extremely diverse with an equitable distribution of taxa when compared to known infaunal assemblages from the same general coastal region. Numerical classification of the 12 stations tended to group the stations relative to the coarser grain size fractions. A 1998 study showed that communities remain diverse, and no significant changes were observed either temporally or spatially. In 2009, few differences could be found when comparing the various study parameters between stations located inside and outside the ODMDS. Sediment monitoring studies in 2013 and 2018 both observed higher macroinvertebrate taxa richness, diversity, and density outside the ODMDS; however, there was not a significant difference between stations outside and inside the ODMDS boundaries (EPA 2013; EPA 2019).

2.5.4 Discussion of Critical Amenities

Areas of rubble and patches of hardbottom, along with worm tube and mollusk aggregations, are sited within and beyond the northeast boundary of the Jacksonville ODMDS, as discussed within the 2014 Final Environmental Impact Statement for Designation of an Ocean Dredged Material Disposal Site Offshore of Jacksonville, Florida. Within a mile east of the ODMDS there are sand borrow areas used by Duval County for beach renourishment projects, and a commonly used shrimp trawling area lies to the west of the ODMDS. Metal containers identified by sidescan survey within the ODMDS are sited in the middle-west of the site and a

man-made feature, possibly a boat wreck/sink, lies just beyond the southern ODMDS boundary. The site is located within North Atlantic right whale critical habitat.

3 SITE MANAGEMENT

Appropriate management of an ODMDS assures that disposal activities do not unreasonably degrade or endanger human health, welfare, the marine environment, or economic potentialities as directed under MPRSA Sections 102 and 103(a). The primary objectives for management of an ODMDS include, but are not limited to:

- Protecting the marine environment, such that:
    - No unacceptable physical, chemical, or biological impacts occur inside or outside the disposal site; and
    - Adequate site monitoring is conducted to detect environmental impacts.
- Ensuring that disposed material (1) meets the suitability requirements of the MPRSA regulations (40 C.F.R. Parts 220 through 228), and (2) is consistent with national and regional guidance for the evaluation of dredged material proposed for ocean dumping.
    - Under MPRSA Section 103, evaluation of any proposed dumping of dredged material into ocean waters must apply the EPA marine protection criteria established pursuant to Section 102 of the MPRSA. To apply the criteria, the Ocean Testing Manual, sometimes referred to as the Green Book (EPA and USACE, 1991), and the Southeast Regional Implementation Manual (SERIM; EPA and USACE, 2008) provide guidance for sampling, testing, and analysis of water, sediment, and biological tissue to evaluate the environmental acceptability of dredged material proposed for ocean disposal. The regulations prohibit the ocean dumping of uncharacterized materials (40 C.F.R. Section 227.5(c)).
- Identifying management conditions to be implemented by the EPA and USACE, as well as conditions that should be required in permits, authorizations, and documents establishing the terms of a Federal project applicable to transportation and dumping in ocean waters.
    - For Federal projects, the EPA should specify in the MPRSA concurrence letters that the EPA concurrence itself is conditioned on incorporation of the EPA concurrence conditions into any USACE federal contract documents.
- Maintaining a long-term disposal alternative for dredged material,while encouraging beneficial use of dredged material where practicable.
- Identifying a schedule or condition triggering a review or renewal of this SMMP.

SMMP sections 3.1 through 3.4 summarize the disposal operation conditions that will be considered for management of the Jacksonville ODMDS as described in 40 C.F.R. Section 228.15(h)(9). Enforceable conditions for dredged material disposal operations at the

Jacksonville ODMDS are included in USACE-issued permits and transportation and dumping authorization documents for Federal projects. The conditions intended to be enforceable are identified in this SMMP as necessary under MPRSA Section 103(a) or 103(e) and should be included as conditions in the EPA's concurrence if the permit or authorization documents do not already require such conditions.

Water quality compliance determinations will be made using a numerical model, such as the Short-Term FATE (STFATE) model, for evaluation of mixing. The general goal of the model is to increase the accuracy, reliability, and cost-effectiveness of dredged material management activities in a timely manner (EPA and USACE, 1991). The STFATE model input parameters listed in Appendix A are specific to the Jacksonville ODMDS. This model is used to predict the movement of dredged material disposed in open waters and may result in increasing or lessening operational restrictions or the need for confined release zones to protect the environment and ensure regulatory compliance. Water-column bioassays will also be used to account for contaminants without water quality criteria, and to assess synergistic effects. Only material determined to be suitable and in compliance with the marine protection criteria established pursuant to Section 102 of the MPRSA (40 C.F.R. Part 227) through the verification process by the USACE and EPA Region 4 is appropriate for transportation and disposal in the ODMDS.

The USACE develops conditions for dredging projects involving disposal of dredged materials that are permitted by USACE (Federal and non-federal), as well as requirements for USACE-authorized federal dredging projects, regardless of whether Government owned and operated dredging equipment or contracted equipment is used. The EPA may also specify or confirm additional project-specific conditions in its concurrence.

Conditions and reporting requirements derived from the disposal site regulation and this SMMP become enforceable when included in MPRSA Section 103 permits, and in transportation and disposal-related authorizations for Federal projects, including USACE federal contract documents or other Federal project specification documents.

Violations of the MPRSA by a permittee or dredging contractor—including violations of conditions established in an MPRSA permit or Federal project authorization—are subject to compliance action including suspension of disposal operations or possible assessment of substantial administrative, civil, or criminal penalties, or other injunctive remedies, as appropriate.

3.1 CRITERIA COMPLIANCE PROCESS

The USACE uses the marine protection criteria established pursuant to Section 102 of the MPRSA when evaluating permit requests for applications and when implementing Federal projects involving the transportation of dredged material for the purpose of dumping it into ocean waters. Dumping of dredged material in the ocean must comply with the criteria, and the EPA reviews the demonstrations of compliance when reviewing permits and project authorizations for written concurrence, which may include conditions that must be incorporated into the permit or project authorization documents.

In the case of Federal navigation projects, USACE implements substantive MPRSA requirements directly in USACE projects involving transportation and ocean disposal of dredged materials, including through USACE contractors. Federal projects, though not required to have a permit, must adhere to the same criteria, factors to be evaluated, procedures, and requirements that apply to permits, including the process for evaluation of the project. Federal projects must receive the EPA's concurrence prior to authorization of transportation and disposal of dredged materials, and authorizing documents must contain any conditions included in the EPA's concurrence. The EPA and USACE will coordinate early in the contracting process so the USACE can incorporate any EPA concurrence conditions into project authorization documents.

Ocean dumping of dredged materials from non-federal projects requires an ocean dumping permit issued by USACE pursuant to MPRSA Section 103. A summary of the permitting process can be found at: https://www.epa.gov/marine-protection-permitting/mprsa-dredged-material-permits.

3.2 DREDGED MATERIAL CHARACTERIZATION

Prior to any disposal of dredged material at the Jacksonville ODMDS, the EPA and USACE must evaluate the project applying the marine protection criteria established pursuant to Section 102 of the MPRSA (40 C.F.R. Part 227) and USACE must specifically authorize the disposal under MPRSA Section 103. It is important that the EPA and USACE agree on the sampling and analysis plan for each project *prior* to any sampling of proposed dredged material. This includes how dredging projects will be subdivided into project segments for sampling and analysis.

Guidance for a process to determine the suitability of dredged material proposed for disposal at the Jacksonville ODMDS is described in the Green Book and the SERIM referenced in Section 3, Site Management.

Steps include the following:

1) Case-specific evaluation of proposed material against the exclusion criteria (40 C.F.R. Section 227.13(b));
2) Determination of the need to test non-excluded material, taking into consideration the time since previous testing and the potential of sediment contamination since last verification;
3) Conducting required testing to determine the suitability of the material for ocean disposal; and
4) Review and evaluation of testing data results by USACE and the EPA to determine suitability.

Additional reviews by stakeholders including the public, States and other Federal Agencies would also be conducted through the USACE permitting or authorization processes.

Only material that the USACE and the EPA have determined to be suitable and in compliance with the criteria (40 C.F.R. Part 227) may be considered for transportation and disposal in the Jacksonville ODMDS. Documentation will be in the form of a MPRSA Section 103 Evaluation, as outlined in Appendix C of the SERIM. Water quality compliance determinations will be made using the STFATE (ADDAMS) model and the input parameters provided in Appendix A of this SMMP. No disposal activities may occur at the site until the EPA reviews the testing data results and transmits its written concurrence that the material is acceptable for disposal at the site. The EPA concurrence will be valid for three years from the date of the EPA signature.

Additional information describing the types of material disposed at the site (source location, sediment type, etc.) are discussed in section 2.5 of this document.

3.3 Dredged Material Transportation and Disposal

3.3.1 Transportation of Dredged Material

No specific disposal route is required for this site.

3.3.2 Disposal Locations

The regulation at 40 C.F.R. Section 227.28 define the “release zone” for dredged material into the ODMDS to be 100 meters inside ODMDS boundaries. For added protection at the Jacksonville ODMDS, all disposals will be initiated at least 500 feet from the east and west boundaries and 1,000 feet from the north and south boundaries of the ODMDS. Implementation of the buffer zone requirements ensures that the dredged material is deposited within the site boundaries and increases the likelihood that no material will leave the site as it falls to the seabed. Disposal will be completed (i.e., doors closed) prior to leaving the ODMDS release zone boundaries.

The EPA and USACE may establish release zones within the site to maintain compliance with the marine protection criteria established pursuant to Section 102 of the MPRSA (40 C.F.R. Section

227.28). At the Jacksonville ODMDS, disposal shall occur in one of the release zones based on sediment type as described below and shown in Figure 2. The zone to be used will be determined at the time of project approval. The zone will be proposed by the USACE or other user and included as part of the MPRSA Section 103 Evaluation, detailed below. Zones will be selected to prevent mounding above -25 feet mean lower low water (MLLW).

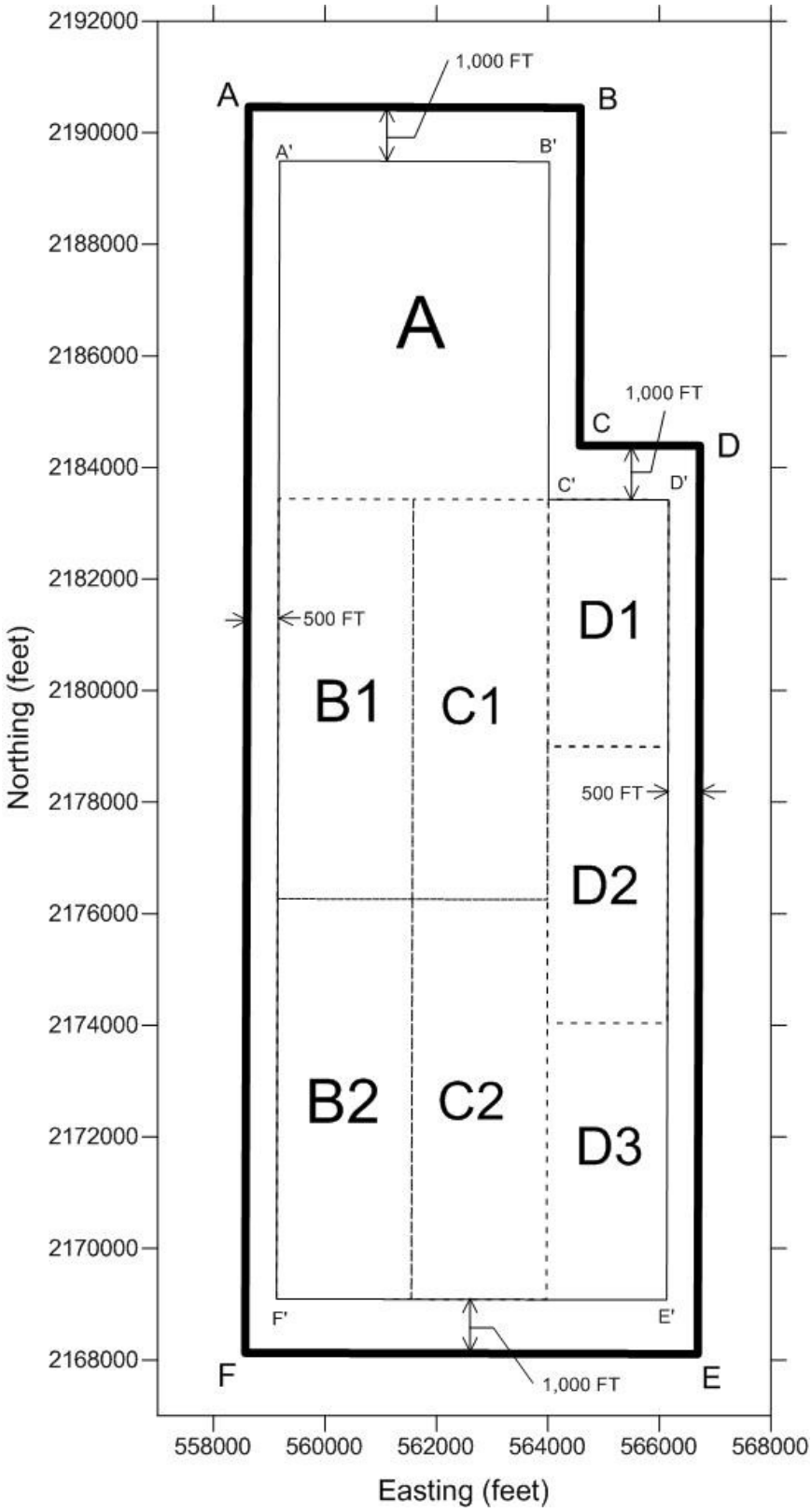

Figure 2. Disposal Release Zones

Table 3. Approximate area, depth, and capacity of each disposal release zone.

Release Zone	Approximate Area (nmi^2)	Depth (m)	Approximate Capacity[1] (mcy)
Zone A	0.79	14.0	11.6
Zone B-1	0.47	16.2	10.8
Zone B-2	0.47	16.2	14.6
Zone C-1	0.47	16.8	10.9
Zone C-2	0.47	17.1	17.7
Zone D-1	0.26	18.3	0.750
Zone D-2	0.30	18.3	2.4
Zone D-3	0.29	18.3	3.7

[1] In situ volume estimated based on 100:1 mound slope for unconsolidated material. Does not account for consolidation or erosion of disposal mound. Approximate capacity based on hydrographic survey No. 23-154, Zones B2, C2, D1, D2, D3, 24 Apr., 3-5 May 2023; Zones B1, C1, 17-19 July 2023; and Zone A, 19 July, 31 July, 2 Aug. 2023.

Release Zone A: Original ODMDS. Dredged materials that are extremely variable in composition. Material can continue to be disposed within the original ODMDS (Zone A). No more than 1.2 mcy of material should be authorized for disposal in release Zone A in any one calendar year.

Table 4. Release Zone A Corner Coordinates.

	Geographic (NAD83)		State Plane (FL East 0901 Ft NAD83)	
NW Corner	30°21.349'N	81°18.460'W	2,189,463 N	559,128 E
NE Corner	30°21.349'N	81°17.517'W	2,189,450 N	564,084 E
SW Corner	30°20.350'N	81°18.460'W	2,183,407 N	559,112 E
SE Corner	30°20.350'N	81°17.517'W	2,183,395 N	564,069 E

Disposal shall be initiated within the disposal release zone. More specific release zones may be defined within this disposal zone on a per-project basis to better distribute dredged material throughout the area and to avoid shallow areas within Zone A.

Release Zone B: Fines. Predominately fine-grained material should be disposed in release Zone

B. Project specific subzones should be designated for each project with the intent of disposing in the smallest area possible to minimize the amount of benthic habitat that is affected. Zone B-1 should be used until a depth of -30 feet MLLW is reached prior to moving to Zone B-2.

Table 5. Disposal Zone B-1 Corner Coordinates.

	Geographic (NAD83)		State Plane (FL East 0901 Ft NAD83)	
NW Corner	30°20.350 'N	81°18.460 'W	2,183,407 N	559,112 E
NE Corner	30°20.350 'N	81°17.989 'W	2,183,401 N	561,590 E
SW Corner	30°19.172 'N	81°18.460 'W	2,176,267 N	559,092 E
SE Corner	30°19.172 'N	81°17.989 'W	2,176,260 N	561,572 E

Table 6. Disposal Zone B-2 Corner Coordinates.

	Geographic (NAD83)		State Plane (FL East 0901 Ft NAD83)	
NW Corner	30°19.172 'N	81°18.460 'W	2,176,267 N	559,092 E
NE Corner	30°19.172 'N	81°17.989 'W	2,176,260 N	561,572 E
SW Corner	30°17.994 'N	81°18.460 'W	2,169,127 N	559,073 E
SE Corner	30°17.994 'N	81°17.989 'W	2,169,120 N	561,553 E

Release Zone C: Sand. Predominately sand and shell should be disposed in release Zone C. Disposal practices that disperse the material over a large area are encouraged. Project specific subzones should be specified for each project with the intent of dispersing the material over a large area. Zone C-1 should be used until a depth of -30 feet MLLW is reached prior to moving to Zone C-2.

Table 7. Disposal Zone C-1 Corner Coordinates.

	Geographic (NAD83)		State Plane (FL East 0901 Ft NAD83)	
NW Corner	30°20.350 'N	81°17.989 'W	2,183,401 N	561,590 E
NE Corner	30°20.350 'N	81°17.517 'W	2,183,395 N	564,069 E
SW Corner	30°19.172 'N	81°17.989 'W	2,176,260 N	561,572 E
SE Corner	30°19.172 'N	81°17.517 'W	2,176,254 N	564,051 E

Table 8. Disposal Zone C-2 Corner Coordinates.

	Geographic (NAD83)		State Plane (FL East 0901 Ft NAD83)	
NW Corner	30°19.172 'N	81°17.989 'W	2,176,260 N	561,572 E
NE Corner	30°19.172 'N	81°17.517 'W	2,176,254 N	564,051 E
SW Corner	30°17.994 'N	81°17.989 'W	2,169,120 N	561,553 E
SE Corner	30°17.994 'N	81°17.517 'W	2,169,114 N	564,032 E

Release Zone D-1 and D-2: Rock. Material consisting predominately of rock or portions of projects consisting of rock should be disposed in release Zones D-1 and D-2. These areas had previously been identified by the USACE as suitable for supporting rock placement. Project specific subzones shall be identified for each project starting in the northern portion of Zone D-1. Zone D-2 cannot be utilized until after the nearby Duval County Shore Protection Borrow Area B2 has been depleted. This is to ensure that disposal activities do not adversely impact this borrow area.

Table 9. Disposal Zone D-1 Corner Coordinates.

	Geographic (NAD83)		State Plane (FL East 0901 Ft NAD83)	
NW Corner	30°20.350 'N	81°17.517 'W	2,183,395 N	564,069 E
NE Corner	30°20.350 'N	81°17.107 'W	2,183,389 N	566,225 E
SW Corner	30°19.625 'N	81°17.517 'W	2,179,000 N	564,058 E
SE Corner	30°19.625 'N	81°17.107 'W	2,178,995 N	566,214 E

Table 10. Disposal Zone D-2 Corner Coordinates.

	Geographic (NAD83)		State Plane (FL East 0901 Ft NAD83)	
NW Corner	30°19.625 'N	81°17.517 'W	2,179,000 N	564,058 E
NE Corner	30°19.625 'N	81°17.107 'W	2,178,995 N	566,214 E
SW Corner	30°18.810 'N	81°17.517 'W	2,174,057 N	564,045 E
SE Corner	30°18.810 'N	81°17.107 'W	2,174,051 N	566,201 E

Release Zone D-3: Sand or Rock.

Depending on future needs, sand or rock can be disposed in release Zone D-3.

Rock: Material consisting of predominantly rock should be disposed in release Zone D-3 after Zones D-1 and D-2 have been exhausted. Disposal shall occur as described for Zones D-1 and D- 2.

Sand: Material consisting of predominantly sand and shell should be disposed in release Zone D-3 after Zones C-1 and C-2 have been exhausted. Disposal of sand will occur first in the southern portion of the zone and work northward.

Table 11. Disposal Zone D-3 Corner Coordinates.

	Geographic (NAD83)		State Plane (FL East 0901 Ft NAD83)	
NW Corner	30°18.810 'N	81°17.517 'W	2,174,057 N	564,045 E
NE Corner	30°18.810 'N	81°17.107 'W	2,174,051 N	566,201 E
SW Corner	30°17.984 'N	81°17.517 'W	2,169,114 N	564,032 E
SE Corner	30°17.984 'N	81°17.107 'W	2,169,108 N	566,189 E

3.3.3 Disposal Methods

For enforcement and compliance assurance purposes, the permit or authorization documents should specify a requirement for “closed doors,” requiring both physically closed doors and a properly functioning hull status monitor indicating that the doors are closed. The monitoring plan and disposal authorization documents should also specify methods to prevent mounding of dredged materials from becoming an unacceptable navigation hazard.

No specific disposal technique is required for this ODMDS. However, to protect North Atlantic right whales, disposal vessel (either hopper dredge or tug and scow) speed and operation will be restricted in accordance with the 2020 South Atlantic Regional Biological Opinion for Dredging and Material Placement Activities in the Southeast United States (2020 SARBO) that was issued by the National Marine Fisheries Service to conclude ESA Section 7 consultation of impacts associated with dredging (to include maintenance dredging); dredged material placement (to include in an ODMDS); and transportation of materials between dredging and material placement locations (or successor SARBO), or an other relevant Biological Opinion for specific projects not covered by the SARBO. In addition, the disposal vessel’s captain should be aware of and follow the measures in the North Atlantic right whale Conservation Plan in Appendix F of the 2020 SARBO that includes requirements to observe, avoid and report North Atlantic right whale in the area, with required distances that must be maintained and vessel speed requirements if a North Atlantic right whale has been spotted or reported in the area as

defined in Appendix F. In addition, the disposal vessel's captain should be aware of the North Atlantic right whale Conservation Plan in Appendix F of the 2020 SARBO that includes requirements to observe, avoid and report North Atlantic right whales in the area, with required distances that must be maintained and vessel speed requirements if a North Atlantic right whale has been spotted or reported in the area as defined in Appendix F. In addition, the disposal vessel's captain should be aware of vessel approach restrictions in 50 C.F.R. Section 224.103(c), which prohibit approaching within 500 yards of a right whale by vessel, aircraft, or any other means. Additional requirements in the SARBO must be followed to avoid or minimize adverse effects to ESA-listed species or designated critical habitat (e.g., sea turtles, Atlantic sturgeon, shortnose sturgeon, Nassau grouper, whales, and corals).

Dredged material shall not be leaked or spilled from disposal vessels during any portion of the transit to the ODMDS. Transit to the ODMDS begins as soon as dredged material loading into the disposal vessel is completed and the vessel begins moving to the ODMDS. All appropriate measures to avoid spillage during transit must be taken. Appropriate measures may include but are not limited to the following: up-to-date U.S. Coast Guard and/or American Bureau of Shipping certification of all disposal-related vessels; maintenance (inspection and/or replacement) of gaskets on barge doors; minimization of excess free liquids in barge loads; pre-transit testing of barge door hydraulics; and pre-transport verification of appropriate weather and sea state conditions.

3.3.4 Disposal Times

At present no restrictions have been determined to be necessary for disposal related to seasonal variations in ocean current or biotic activity. Timing of disposal operations will be in accordance with the most recent SARBO. As monitoring results are compiled, should any such restrictions appear necessary, disposal activities will be scheduled to avoid adverse impacts. During the winter, precautions necessary to protect whales, as described in the next paragraph, are required. Additionally, if new information indicates that endangered or threatened species are being adversely impacted, restrictions may be imposed.

Transportation of dredged material shall only be allowed when weather and sea state conditions, and scow loading level, will not interfere with safe transportation and will not create risk of spillage, leak or other loss of dredged material during transit. No disposal trips shall be initiated when the National Weather Service has issued a gale warning for local waters.

3.3.5 Disposal Vessel Tracking

Disposal Monitoring. For all disposal activities, an electronic tracking system (ETS) must be utilized. The ETS will provide surveillance of the transportation and disposal of dredged material. The ETS will be maintained and operated to continuously track the horizontal location and draft condition (nearest ±0.1 foot) of the disposal vessel (i.e., hopper dredge or disposal scow) from the point of dredging to the disposal site and return to the point of dredging. Data shall be collected at least every 0.25 nautical miles or every four (4) minutes during travel to and from the ODMDS and every twelve seconds or every 30 feet of travel, whichever is smaller, while the hull status is open within the ODMDS. In addition to the continuous tracking data, the

following trip information shall be electronically recorded for each disposal cycle:

a. Load Number
b. Disposal Vessel Name and Type (e.g., scow)
c. Estimated Volume of Load
d. Description of Material Disposed
e. Source of Dredged Material
f. Date, Time and Location at Initiation and Completion of Disposal Event

It is expected that disposal monitoring will be conducted utilizing the Dredging Quality Management (DQM) system for Civil Works projects [see https://dqm.usace.army.mil], although other systems are acceptable. Disposal monitoring and ETS data will be reported to EPA Region 4 on a weekly basis utilizing the eXtensible Markup Language (XML) specification and protocol per Section 3.4 and delivered as an attachment to an email (DisposalData.R4@epa.gov).

EPA Region 4 and the USACE Jacksonville District shall be notified within 24 hours if disposal occurs outside of the ODMDS or specified disposal zone or if any apparent leaking or spilling of dredged material occurs as indicated by a loss of disposal vessel draft. The draft change threshold for notification will be determined at the time of project authorization under Section 103 of the MPRSA.

3.4 Disposal Permitting & Reporting

3.4.1 Permitting Process

All transportation to and disposal of dredged material in the ocean, with the exception of federal civil works projects, requires an ocean dumping permit issued by the USACE pursuant to Section 103 of the MPRSA. A summary of the permitting process can be found on both the EPA (https://www.epa.gov/marine-protection-permitting/mprsa-dredged-material-permits) and USACE websites (https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/).

3.4.2 Information Management of Dredged Material Disposal Activities

As discussed in the following sections, to maintain compliance with this SMMP, a substantial amount of diverse data regarding use of the Jacksonville ODMDS and effects of disposal is required from many sources. If this information is readily available and in a useable format, it can be used to answer many questions typically asked about a disposal site including:

- What is being dredged?
- How much is being dredged?
- Where did the dredged material come from?

- Where was the dredged material placed?
- Was the material dredged correctly? Disposed correctly?
- What will happen to the environment at the disposal site?

To streamline data sharing, EPA Region 4 and the USACE South Atlantic Division have agreed on an eXtensible Markup Language (XML) standard for sharing of disposal monitoring data (see also Section 3.4). Additional standards will continue to be evaluated for sharing of other disposal site related information (e.g., environmental monitoring data, testing data, etc.).

3.4.3 Post Disposal Summary Reports

The USACE shall provide a Post Disposal Summary Report to the EPA within 90 days after project completion.

Necessary report elements include the following: dredging project title; permit number and expiration date (if applicable); contract number; name of contractor(s) conducting the work; name and type of vessel(s) disposing material in the ODMDS; disposal time from each vessel; volume disposed at the ODMDS (as paid *in situ* volume, total paid and unpaid *in situ* volume, and gross volume reported by the dredging contractor); number of loads to ODMDS; type of material disposed at the ODMDS; identification by load number of any misplaced material; dates of pre- and post-disposal bathymetric surveys of the ODMDS; and a narrative discussing any violation(s) of the Section 103 concurrence and/or permit (if applicable).

The narrative should include a description of any violation(s), the time the violation(s) occurred and when it was reported to the EPA and USACE, a discussion of the circumstances surrounding the violation(s), and identification and description of specific measures taken to prevent reoccurrence.

The Post Disposal Summary Report must be accompanied by the bathymetry survey results (that is, plot and X, Y, Z ASCII data file, optionally a GIS shapefile), a summary scatter plot of all disposal start locations, and a summary table of the trip information required by section 3.3.5 with the exception of the disposal completion data. If all data is provided in the required XML format, scatter plots and summary tables will not be necessary.

3.4.4 Project Initiation and Violation Reporting Requirements

The USACE or other site user should notify the EPA 15 days prior to the beginning of a dredging cycle or project disposal.

EPA Region 4 and the USACE Jacksonville District require notification by email within 24 hours if disposal occurs outside of the specified disposal release zone, if excessive leakage occurs, if hull open status occurs outside the ODMDS, or another violation of the conditions in the authorization documents and/or Dredged Material Permit occur. Excessive leakage is defined as more than 1.5 feet of draft loss during transit to the ODMDS averaged between forward and aft sensors. Correspondence will be required to explain how the issue was addressed, pertinent dates, and corrective actions to be implemented to prevent reoccurrence in the future.

4 SITE MONITORING

Site monitoring is conducted to ensure the environmental integrity of a disposal site and the areas surrounding the site as well as to verify compliance with the site designation criteria; any special management conditions; and permit, contract, or Federal project authorization document requirements. Monitoring programs should be flexible, cost effective, and based on scientifically sound procedures and methods to meet site-specific monitoring needs. Tiered approaches to monitoring should be used where specific management actions or additional monitoring activities may be triggered when unacceptable environmental conditions are recorded.

Specific goals of the monitoring program are to provide the following:

1) Information indicating whether the disposal activities are occurring in compliance with the permit (or Federal project authorization documents) and site restrictions;
2) Information on the short-term and long-term fate of materials disposed of in the marine environment; and
3) Information concerning the short-term and long-term environmental impacts of disposal activities.

The site monitoring program describes the monitoring actions that should be taken if issues are found during routine trend assessment monitoring or by any other means. A tiered strategy for a monitoring program is used to ensure that more advanced monitoring activities are used only when necessary. With a tiered approach, an unacceptable environmental condition may trigger further and often more complex monitoring and/or changes to the management of the site. Data collected during site monitoring should be used to adjust site management and/or revise the SMMP.

A monitoring program should be structured to address specific questions (i.e., hypotheses) and measure key indicators and endpoints, particularly those defined during site designation or when specific project-related issues arise. Trend analyses are outlined in the MPRSA Regulations at 40 C.F.R. Section 228.13; these analyses should be used to determine whether there are consistent changes from previous site conditions or baseline conditions. At a minimum, a Trend Assessment Study should be conducted at least once every ten years and should be used to inform any revisions to this SMMP. Results from these surveys should be used to assess the need for additional targeted or more complex studies.

The monitoring program for the Jacksonville ODMDS is designed to address the following questions.

What are the short- and long-term fates of the material disposed at the site?

Fate considerations include, but are not limited to, the following such as:

- Does disposed dredged material remain within the site boundaries or leave the site?
- If any disposed material leaves the site, where does it go? Does it move toward sensitive areas, such as marine sanctuaries or productive fisheries?
- Does disposed material create mounds within the site or result in a dispersed layer on the sea bottom?
- Is there a potential for interference with navigation due to mounding of disposed material?
- Was any material dumped outside of the site boundaries?

What are the short- and long-term environmental impacts of the disposal of material at the site?

Environmental impact considerations include, but are not limited to, the following:

- Has the benthic community structure changed due to disposal activities?
- Is there an absence of pollution-sensitive biota at the site?
- Are there progressive, non-seasonal changes in water quality, sediment composition, or numbers of pelagic, demersal, or benthic biota at or near the disposal site?
- Has there been an increase in contaminant levels in the sediments or biota at or near the site?
- Are there any other impacts detected inside or outside the site boundaries?

Sections 4.1 and 4.2 below describe the monitoring strategy at the site to address these and other questions and also summarize the management actions that will be considered by the EPA, in coordination with USACE, if thresholds are exceeded.

4.1 MONITORING THE TRANSPORTATION, DISPOSAL, AND FATE OF DISPOSED MATERIALS

Monitoring the transportation and disposal process is necessary to confirm that the disposal activities comply with all permit or authorization conditions and site restrictions. Monitoring the location and movement of disposed material at the site should be used to ensure that disposed material remains within the designated site boundaries; to determine whether any accumulation of disposed material poses a navigational hazard in the area; and to confirm that future site use will not exceed the site's capacity. The monitoring activities used to achieve each of these management goals are summarized in Table 12 below.

4.1.1 Baseline Monitoring

Disposal has occurred in the area since 1952. Therefore, no accurate baseline information has been or can be collected. The results of investigations presented in the 1978 designation EIS (EPA, 1983), the 2010 designation studies (ANAMAR, 2011), and subsequent surveys listed in Table 2 serves as the main body of data for the monitoring of the impacts associated with the use of the Jacksonville ODMDS.

4.1.2 Pre- and Post-Disposal Bathymetric Monitoring Requirements

Pre- and post-disposal bathymetric surveys should be conducted by the USACE or may be conducted by the permittee.

Pre-disposal monitoring. A baseline bathymetric survey will be conducted prior to the first use of each release zone.

- Surveys will conform to the minimum performance standards for Corps of Engineers Hydrographic Surveys as described in the USACE Engineer Manual (EM) 1110-2-1003, *Hydrographic Surveying*, dated November 30, 2013 [http://www.publications.usace.army.mil/Portals/76/Publications/EngineerManuals/EM_1110-2-1003.pdf] or updates.
- The number and length of transects required will be sufficient to encompass the release zone and a 500-foot-wide area around it.
- The surveys will be taken along lines spaced at 200-foot intervals or less for single beam surveys and 500 feet or less for multibeam surveys unless a lesser spacing provides 100% coverage.

The recommended performance standards in Table 3-1 in EM 1110-2-1003 shall be applied. Horizontal location of the survey lines and depth sounding points will be determined by an automated positioning system utilizing a differential global positioning system. The vertical datum will be referenced to prescribed NOAA MLLW datum. The horizontal datum should be referenced to the local State Plane Coordinate System (SPCS) for that area or in Geographical Coordinates (latitude-longitude). The horizontal reference datum should be the North American Datum of 1983 (NAD 83).

No additional pre-disposal monitoring at this site is required unless indicated by the agencies.

Post-disposal monitoring. The USACE or other site user will conduct a bathymetric survey within 30 days after disposal project completion. Surveys will not be required for projects less than 50,000 cubic yards. The number and aerial extent of transects required will be the same as in the baseline survey. Bathymetric survey results will be used to ensure that unacceptable mounding is not occurring and to aid in environmental effects monitoring.

- For disposal of rock in Zones D-1 and D-2, a 100% coverage multibeam or sidescan sonar post disposal survey is required.

Data collection methods are described in EM 1110-2-1003. Results from post- and pre-dredge bathymetry should be provided to EPA Region 4 when completed as part of the summary report.

4.1.3 Data Reporting

Project Initiation and Violation Reporting. The USACE or other site user shall notify the EPA 15 days prior to the beginning of a dredging cycle or project disposal. The user is also required to notify the USACE and EPA within 24 hours if a violation of the permit and/or contract conditions related to MPRSA Section 103 or SMMP requirements occur during disposal operations.

Disposal Monitoring Data. Disposal monitoring data shall be provided to EPA Region 4 electronically on a weekly basis. Data shall be provided per the EPA Region 4 XML format and delivered as an attachment to an email to DisposalData.R4@epa.gov. The XML format is available from EPA Region 4.

Post Disposal Summary Reports. See Section 3.4.3 above.

4.2 Monitoring Environmental Effects of Disposed Material

Monitoring of impacts to the physical, chemical, and biological environment is necessary to ensure that the transport and disposal of dredged material does not result in unreasonable degradation to the marine environment or endanger human health, welfare, or economic potentialities.

The environmental effects monitoring plan for Jacksonville ODMDS summarized in Table 12 below is structured as a tiered monitoring approach; unacceptable conditions discovered during a lower tier assessment should trigger additional testing or other management action.

The USACE and EPA periodically assess environmental conditions of the entire site and surrounding area and consider other environmental data that may have been collected by other entities in the area. Periodically collected information is then used to assess overall site conditions and to conduct trend assessments. Enhanced environmental effects monitoring should be triggered if disposed material is found to have unexpectedly left the site or is observed in unexpected locations during the transportation, disposal, and fate monitoring activities described in section 4.1. Any monitoring at the site that identifies an issue of potential concern should trigger additional monitoring or management actions.

Future Monitoring Surveys. Based on the type and volume of material disposed and impacts of concern, various monitoring surveys can be used to determine if and where the disposed material is moving and what environmental effect the material is having on the site and

adjacent areas.

Nearshore shrimping grounds are located between the site and the coastline, and both natural and artificial reefs are common on the mid-shelf east of the site. A sand borrow area is located east of the expanded site. Monitoring results indicate that the disposal mound is relatively stable with possible southerly transport of material, so these areas are not of concern. Sediment composition within the site may be altered as a result of disposal of clay and silty material on otherwise sandy sediments. Progressive transition to sediments containing a higher percentage of silt and clay is inevitable with continued use of the site. Changes in sediment composition will likely alter the benthic community structure. However, based on previous benthic studies, it is unlikely that permanent or long-term adverse impacts will result due to changes in sediment composition.

Due to the concern that disposal of silts and clay could deposit on nearby sand areas available for beach placement, making the area unsuitable as a sand source, the site will be managed using the prescribed release zones with fine grained material being disposed furthest from the identified sand areas. Additionally, management of sand mining activities to extract sand most adjacent to the ODMDS will further alleviate the risk of resource integrity.

The ODMDS and surrounding areas will be monitored for unintentional transport of material offsite, especially towards the designated borrow areas or potential sand source. Should fine grained disposal material be identified outside the ODMDS in the direction of a viable sand source, in greater than a five (5) cm layer and within 1,000 feet from the viable sand source, then additional monitoring may occur, potentially resulting in disposal actions per Table 12 to include mitigative actions such as adjusting buffer zones.

Rock and rubble disposal in Zones D-1 and D-2 will be monitored for habitat creation. The National Dredging Policy promotes the beneficial use of dredged material whenever possible. Consequently, the EPA and USACE have decided to manage rock separately to the extent feasible with the aim of maximizing habitat creation without adversely impacting disposal site capacity. In this way, any habitat created will be spatially separated from areas used for disposal of unconsolidated material. Habitat created will be monitored for function and productivity to assess the success of using this management approach. No management actions are envisioned as a result of this monitoring that would adversely affect overall capacity of the ODMDS as the primary purpose of the ODMDS is dredged material disposal.

A summary of the monitoring strategies for the expanded Jacksonville ODMDS and thresholds for management actions are presented in Table 12. Should future disposal at the Jacksonville ODMDS result in unacceptable adverse impacts as documented in a trend assessment and other surveys, further studies may be required to determine the persistence of these impacts, the extent of the impacts within the marine system, and/or possible means of mitigation. In addition, this SMMP may require revision based on the outcome of any monitoring program.

Table 12. Monitoring Strategies and Thresholds for Action

Goal	Technique	Sponsor	Rationale	Frequency	Threshold for Action	Management Options When Threshold:	
						Not Exceeded	Exceeded
Short & Long-term Fate of Disposed Dredged Material	Sediment Profile Imaging, Modeling	Site User and/or EPA	Confirm aerial extent of disposal mound (apron) and benthic impact. Confirm not impacting benthic communities outside of the ODMDS	Following major New Work Project	Disposal mound footprint occurs outside ODMDS boundaries (5cm)	Continue to use site without further restrictions	-Restrict disposal volumes -Modify disposal zones -Institute Environmental Effects Monitoring
Monitor Bathymetric Trends	Bathymetry and Multibeam bathymetry (Zone D-1 & D-2)	Site User	Determine the extent of the disposal mound and major bathymetric changes	Prior to use of each release zone and Post disposal for significant projects (>50,000cy)	Disposal mound occurs outside ODMDS boundaries	Continue Monitoring	-Modify disposal method/placement -Restrict Disposal Volumes
Ensure Safe Navigation Depth	Bathymetry	Site User	Determine height of mound and any excessive mounding	Post disposal for significant projects (>50,000cy)	A. Mound height > -30 feet MLLW B. Mound height > -25 feet MLLW	Continue Monitoring	A. Modify disposal method/placement A. Direct disposal operators to avoid areas shallower than 30 feet. B. Physically level material shallower than 25 feet. B. Notify mariners of mound location and depth. B. Further restrict disposal volume.

Table 12 (continued). Monitoring Strategies and Thresholds for Action

Goal	Technique	Sponsor	Rationale	Frequency	Threshold for Action	Management Options When Threshold:	
						Not Exceeded	Exceeded
Trend Assessment	Water and Sediment Quality, Benthic Community Analysis (40 C.F.R. 228.13)	EPA	Periodically evaluate the impact of disposal on the marine environment (40 C.F.R. 228.9)	Approximately every 10 years.	-Absence from the site of pollution sensitive biota -Progressive non-seasonal changes in water or sediment quality	Continue Monitoring	-Conduct Environmental Effects Monitoring or Advanced Environmental Effects Monitoring -Review dredged material evaluation procedures
Environmental Effects Monitoring	A. Chemical Monitoring B. Benthic Monitoring	EPA Region 4 and/or USACE	A. Determine if chemical contaminants are significantly elevated[1] within and outside of site Boundaries B. Determine whether there are adverse changes in the benthic populations outside of the site and evaluate recovery rates	Implement if disposal footprint extends beyond the site boundaries or if Trend Assessment results warrant.	A. Contaminants are found to be elevated[1] B. Adverse changes observed outside of the site that may endanger the marine environment	Discontinue monitoring.	- Institute Advanced Environmental Effects Monitoring - Implement case specific management options (i.e.. Remediation, limits on quantities or types of material). -Consider isolating dredged material (capping)

[1] Significantly elevated: Concentrations above the range of contaminant levels in dredged sediments that the Regional Administrator and the District Commander found to be suitable for disposal at the ODMDS.

[2] Examples of sub-lethal effects include without limitation the development of lesions, tumors, development abnormality, and/or decreased fecundity.

Table 12 (continued). Monitoring Strategies and Thresholds for Action

Goal	Technique	Sponsor	Rationale	Frequency	Threshold for Action	Management Options When Threshold:	
						Not Exceeded	Exceeded
Advanced Environmental Effects Monitoring	A. Tissue Chemical Analysis B. Benthic Monitoring	EPA Region 4 and/or USACE	A. Determine if the site is a source of adverse bioaccumulation which may endanger the marine environment B. Determine if the site is a source of adverse sub-lethal[2] changes in benthic organisms which may endanger the marine environment	Implement if Environmental l Effects Monitoring warrants.	A. Benthic body burdens and risk assessment models indicate potential for food chain impacts. B. Sub-lethal effects are unacceptable	Discontinue monitoring	-Discontinue site use - Implement case specific management options (i.e. Remediation, limits on quantities or types of material).
Document Habitat Creation (site user)	Multibeam bathymetry or sidescan sonar	Site User	Determine the relief and aerial extent of habitat created.	Post disposal	1 meter of relief created	No action	Direct future disposal to areas with less relief if available. Institute Rapid Bioassessment.
Document Habitat Creation (EPA)	Rapid Bioassessment	EPA Region 4	Assess quality of habitat created	Post disposal	Habitat quality equals or exceeds natural habitat	Allow continued dumping	Direct rock disposal to other areas of zone D-1 and/or D-2 as capacity allows.

Table 12 (continued). Monitoring Strategies and Thresholds for Action

Goal	Technique	Sponsor	Rationale	Frequency	Threshold for Action	Management Options When Threshold:	
						Not Exceeded	Exceeded
Protect Sand Borrow Areas	Sediment Profile Imaging	EPA Region 4 and/or USACE	Ensure no adverse impacts on mineral extraction (40 C.F.R. 228.6(a)(8))	Within 2 years of major new work project (>2mcy) and every 10 years	Fine-grained disposal material is detected (>5cm) outside the ODMDS in the direction of a viable sand source and within 1000' of the sand source to be mined.	Continue Monitoring	-Monitor sand borrow area for deposition of fines. - If fine grained disposal material is detected (measurable) within sand source area, adjust disposal zones
Compliance	Disposal Site Use Records in EPA Region 4's XML format	Site User	-Ensure management requirements are being met -To assist in site monitoring	Weekly during the project	Disposal records required by SMMP are not submitted or are incomplete	Continue Monitoring	-Restrict site use until requirements are met

5 MODIFICATION OF THIS SMMP

This plan is effective and available for implementation from the date of the last signature. The regulations designating ODMDSs require site users to comply with specific minimum terms and conditions identified in the SMMP and incorporated into the site designations. The MPRSA Section 102(c)(3) directs the EPA, in conjunction with the USACE, to review and revise this SMMP at least every ten years or sooner if site use and conditions at the site indicate a need for revision. The EPA and the USACE share responsibility for implementation of the SMMP. Site users may be required to undertake monitoring activities as a condition of their permit. The USACE and any USACE contractor remain responsible for implementation of the SMMP for Federal new work and maintenance projects.

Conditions for updating this SMMP may include but are not limited to:

- Significant changes in disposal site use (change in frequency, site expansion, de-designation, new dredged material source location, etc.);
- Discovery of significant impacts to the physical, chemical, or biological environment during monitoring activities; and
- Any other conditions or changes at the site or area surrounding the site that may necessitate a review or update to the SMMP.

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7 APPENDIX A – STFATE WATER QUALITY MODEL STANDARD INPUT PARAMETERS

The Jacksonville ODMDS will be modeled in two parts, where applicable. Material placed in the original ODMDS area will use STFATE input for Zone A (with an extended southern boundary), and material placed in the expansion area will use STFATE input for Zones B/C/D.

Water Column Evaluations Numerical Model (STFATE) Input Parameters
Jacksonville ODMDS – **ZONE A**

SITE DESCRIPTION

Parameter	Value	Units
Number of Grid Points (left to right)	45	
Number of Grid Points (top to bottom)	90	
Spacing Between Grid Points (left to right)	350	ft
Spacing Between Grid Points (top to bottom)	350	ft
Constant Water Depth	46	ft
Roughness Height at Bottom of Disposal Site	0.005[1]	ft
Slope of Bottom in X-Direction	0	Deg.
Slope of Bottom in Z-Direction	0	Deg.
Number of Points in Ambient Density Profile Point[2]	4	
Ambient Density at Depth = 0 ft[2]	1.0237[2]	g/cc
Ambient Density at Depth = 16 ft[2]	1.0238[2]	g/cc
Ambient Density at Depth = 33 ft[2]	1.0241[2]	g/cc
Ambient Density at Depth = 52 ft[2]	1.0242[2]	g/cc

AMBIENT VELOCITY DATA[3]

Parameter	Value	Units
Profile	2-Point at constant depth	
X-Direction Velocity = 8.2 feet[3]	0.52[3]	ft/sec
Z-Direction Velocity = 8.2 feet[3]	0.21[3]	ft/sec
X-Direction Velocity = 40.0 feet[3]	0.31[3]	ft/sec
Z-Direction Velocity = 40.0 feet[3]	0.12[3]	ft/sec

DISPOSAL OPERATION DATA

Parameter	Value	Units
Location of Disposal Point from Top of Grid	7395	ft
Location of Disposal Point from Left Edge of Grid	7,700	ft
Dumping Over Depression	0	

INPUT, EXECUTION AND OUTPUT

Parameter	Value	Units
Location of the Upper Left Corner of the Disposal Site - Distance from Top Edge	4,399	ft
Location of the Upper Left Corner of the Disposal Site - Distance from Left Edge	4,704	ft
Location of the Lower Right Corner of the Disposal Site - Distance from Top Edge	26,752	ft
Location of the Lower Right Corner of the Disposal Site - Distance from Left Edge	10,696	ft
Duration of Simulation	14,400	sec
Long Term Time Step	600	sec

COEFFICIENTS

Parameter	Keyword	Value
Settling Coefficient	BETA	0.000[1]
Apparent Mass Coefficient	CM	1.000[1]
Drag Coefficient	CD	0.500[1]
Form Drag for Collapsing Cloud	CDRAG	1.000[1]
Skin Friction for Collapsing Cloud	CFRIC	0.010[1]
Drag for an Ellipsoidal Wedge	CD3	0.100[1]
Drag for a Plate	CD4	1.000[1]
Friction Between Cloud and Bottom	FRICTN	0.010[1]
4/3 Law Horizontal Diffusion Dissipation Factor	ALAMDA	0.001[1]
Unstratified Water Vertical Diffusion Coefficient	AKYO	Pritchard Expression
Cloud/Ambient Density Gradient Ratio	GAMA	0.250[1]
Turbulent Thermal Entrainment	ALPHAO	0.235[1]

Entrainment in Collapse	ALPHAC	0.100[1]
Stripping Factor	CSTRIP	0.003[1]

[1] Model Default Value

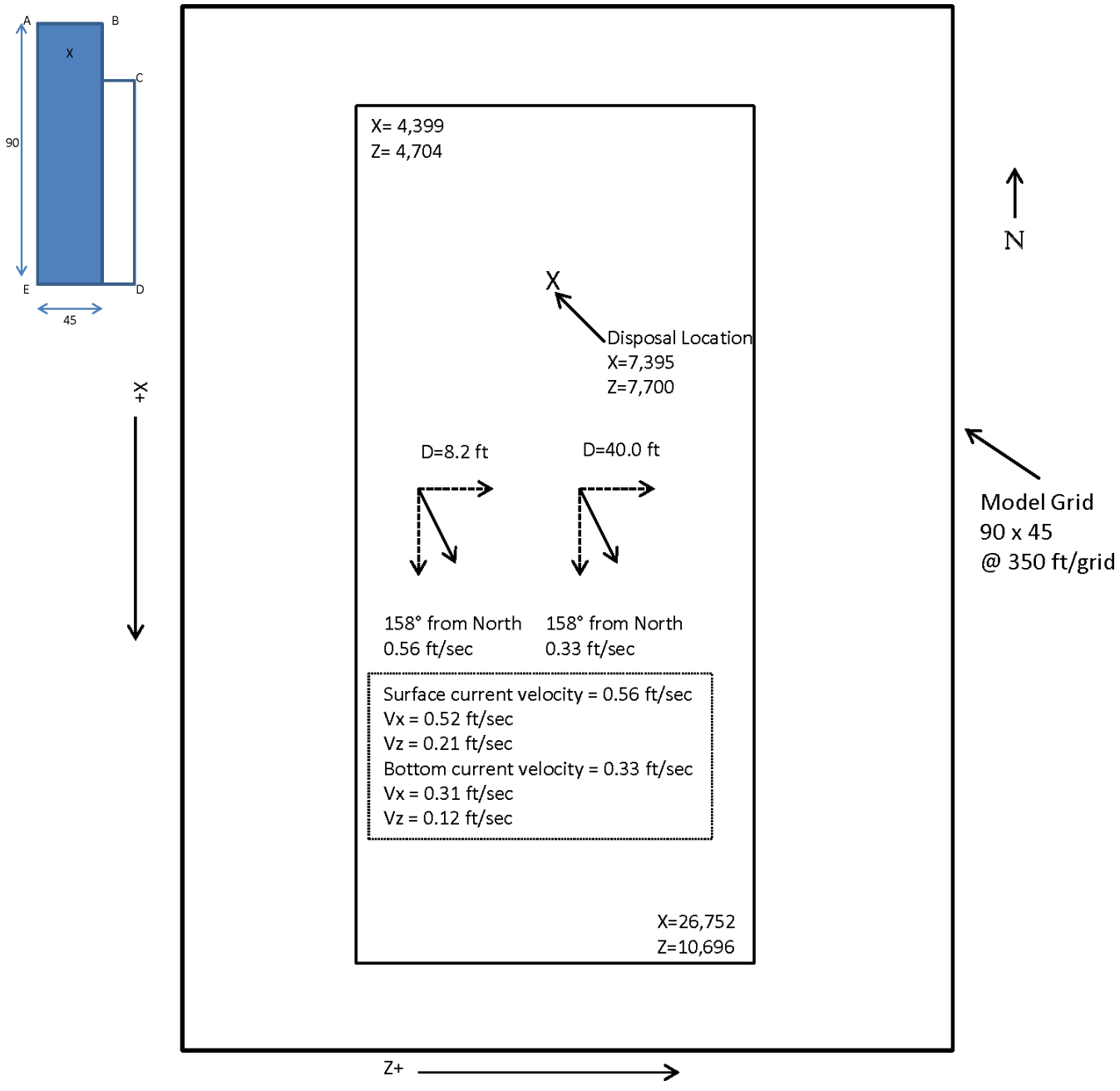
[2] Profile from *Site Designation Studies for a New Ocean Dredged Material Disposal Site Off Jacksonville, Florida*, Anamar 2011

[3] *Ocean Current and Wave Measurements at the Jacksonville and Fernandina Beach Ocean Dredged Material Disposal Sites*, EPA-904-R-09-001, January 2009

Dilution will be dependent on the characteristics of the dredged material and the size of the disposal vessel.

Jacksonville ODMDS ZONE A STFATE

Input Parameters



Water Column Evaluations Numerical Model (STFATE) Input Parameters
Jacksonville ODMDS – **ZONES B/C/D**

SITE DESCRIPTION

Parameter	Value	Units
Number of Grid Points (left to right)	55	
Number of Grid Points (top to bottom)	75	
Spacing Between Grid Points (left to right)	350	ft
Spacing Between Grid Points (top to bottom)	350	ft
Constant Water Depth	57	ft
Roughness Height at Bottom of Disposal Site	0.005[1]	ft
Slope of Bottom in X-Direction	0	Deg.
Slope of Bottom in Z-Direction	0	Deg.
Number of Points in Ambient Density Profile Point[2]	4	
Ambient Density at Depth = 0 ft[2]	1.0237[2]	g/cc
Ambient Density at Depth = 16 ft[2]	1.0238[2]	g/cc
Ambient Density at Depth = 33 ft[2]	1.0241[2]	g/cc
Ambient Density at Depth = 52 ft[2]	1.0242[2]	g/cc

AMBIENT VELOCITY DATA[3]

Parameter	Value	Units
Profile	2-Point at constant depth	
X-Direction Velocity = 8.2 feet[3]	0.52[3]	ft/sec
Z-Direction Velocity = 8.2 feet[3]	0.21[3]	ft/sec
X-Direction Velocity = 40.0 feet[3]	0.31[3]	ft/sec
Z-Direction Velocity = 40.0 feet[3]	0.12[3]	ft/sec

DISPOSAL OPERATION DATA

Parameter	Value	Units
Location of Disposal Point from Top of Grid	12,950	ft
Location of Disposal Point from Left Edge of Grid	9,450	ft
Dumping Over Depression	0	

INPUT, EXECUTION AND OUTPUT

Parameter	Value	Units
Location of the Upper Left Corner of the Disposal Site - Distance from Top Edge	4,828	ft
Location of the Upper Left Corner of the Disposal Site - Distance from Left Edge	5,393	ft
Location of the Lower Right Corner of the Disposal Site - Distance from Top Edge	21,073	ft
Location of the Lower Right Corner of the Disposal Site - Distance from Left Edge	13,507	ft
Duration of Simulation	14,400	sec
Long Term Time Step	600	sec

COEFFICIENTS

Parameter	Keyword	Value
Settling Coefficient	BETA	0.000[1]
Apparent Mass Coefficient	CM	1.000[1]
Drag Coefficient	CD	0.500[1]
Form Drag for Collapsing Cloud	CDRAG	1.000[1]
Skin Friction for Collapsing Cloud	CFRIC	0.010[1]
Drag for an Ellipsoidal Wedge	CD3	0.100[1]
Drag for a Plate	CD4	1.000[1]
Friction Between Cloud and Bottom	FRICTN	0.010[1]
4/3 Law Horizontal Diffusion Dissipation Factor	ALAMDA	0.001[1]
Unstratified Water Vertical Diffusion Coefficient	AKYO	Pritchard Expression
Cloud/Ambient Density Gradient Ratio	GAMA	0.250[1]
Turbulent Thermal Entrainment	ALPHAO	0.235[1]
Entrainment in Collapse	ALPHAC	0.100[1]
Stripping Factor	CSTRIP	0.003[1]

[1] Model Default Value

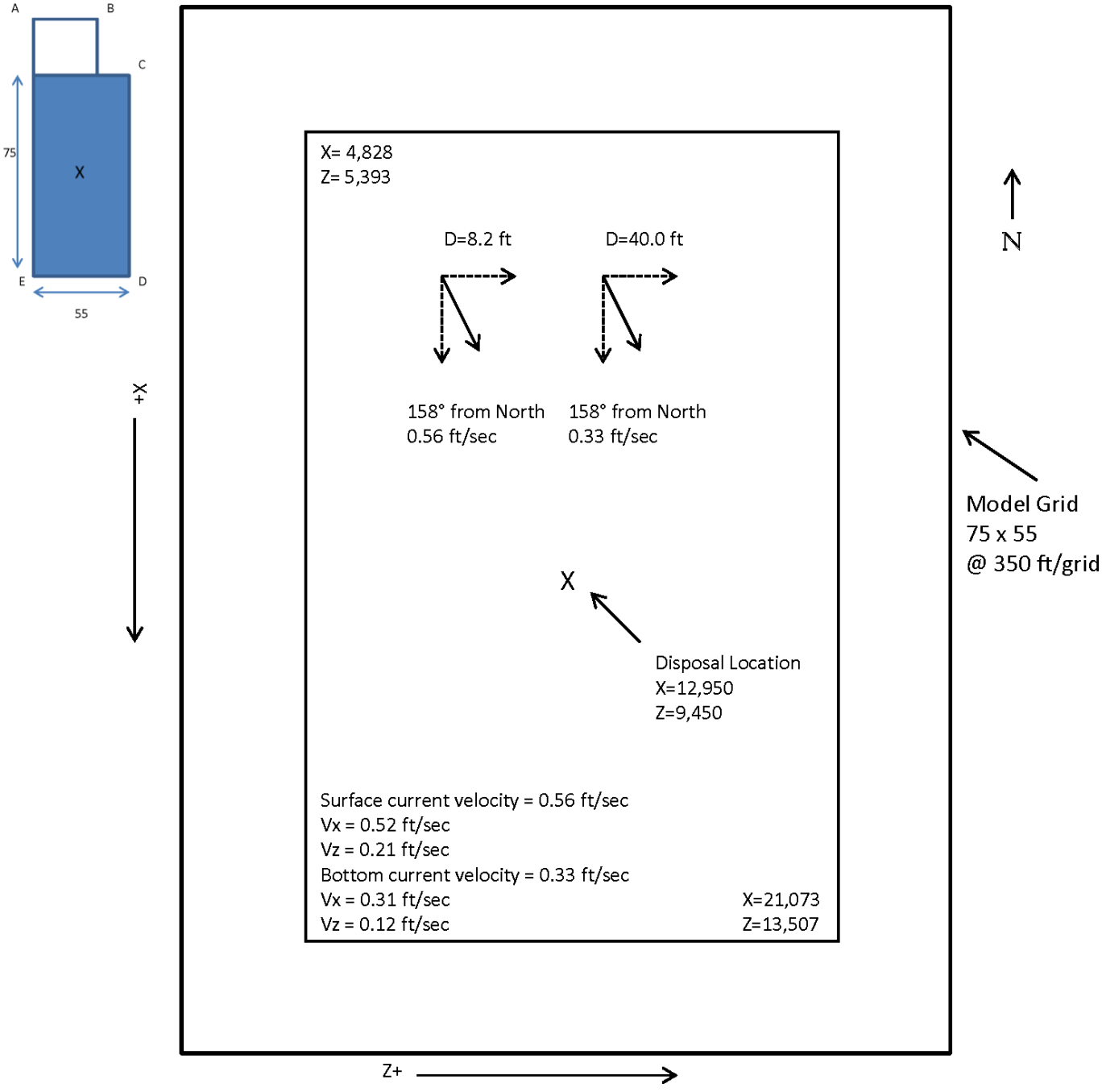
[2] Profile from *Site Designation Studies for a New Ocean Dredged Material Disposal Site Off Jacksonville, Florida*, Anamar 2011

[3] *Ocean Current and Wave Measurements at the Jacksonville and Fernandina Beach Ocean Dredged Material Disposal Sites*, EPA-904-R-09-001, January 2009

Dilution will be dependent on the characteristics of the dredged material and the size of the disposal vessel.

Jacksonville ODMDS ZONES B/C/D

STFATE Input Parameters



Jacksonville ODMDS Background Water Concentration.	
Chemicals of Concern	**Background Concentration Levels (µg/l)**
Arsenic	1.46[1]
Cadmium	0.0029 [1,4]
Chromium (VI)	0.2 [1,4]
Copper	0.166 [1]
Lead	0.048 [1]
Mercury	0.1[1,5]
Nickel	0.21 [1]
Selenium	0.5 [1,5]
Silver	0.01[1,5]
Zinc	0.40[1,4]
Cyanide	1.0[2,5]
Tributyltin (TBT)	0.01[2,5]
Aldrin	0.0048[1,5]
Chlordane	0.015 [2,5]
4, 4'-DDT	0.0048 [1,5]
Dieldrin	0.0048 [1,5]
alpha - Endosulfan	0.0048 [1,5]
beta - Endosulfan	0.0048 [1,5]
Endrin	0.0048 [1,5]
gamma-BHC (Lindane)	0.0048 [1,5]
Heptachlor	0.0048 [1,5]
Heptachlor Epoxide	0.0048 [1,5]
Toxaphene	.015 [3,5]
Pentachlorophenol	No data

[1] *Site Designation Studies for a New Ocean Dredged Material Disposal Site off Jacksonville, Florida*, 2010 sample station S04-WC-BT, Anamar 2011

[2] Reference Station Water from the 2006 Naval Station Mayport 103 Evaluation

[3]Reference Station Water from the 2004 Jacksonville Harbor 103 Evaluation

[4] Result is an estimated concentration that is less than the Method Reporting Limit but greater than or equal to the Method Detection Limit

[5]Analyte not detected. Value based on one half the Method Reporting Limit.

8 APPENDIX B – DISPOSAL HISTORY

Historic Volumes of Dredged Material Placed in the Jacksonville ODMDS and Vicinity

Year		Dredged Material Quantity (cy) (*in situ* volume[6])			
	Jacksonville Harbor Deepening	Jacksonville Federal Navigation Channel	Naval Station Mayport (permit)	Jacksonville Shipyards (permit)	Total
1952–1970[1]		4,461,594	3,992,997	0	8,454,591
1971–1980[1]		2,652,407	3,048,844	0	5,701,251
1985[2]		15,800	0	0	15,800
1986[2]		0	0	109,700	109,700
1987[3]		82,200	0	26,500	108,700
1988[2]		210,500	0	0	210,500
1996[3]		0	659,623	0	659,623
1997[3]		0	439,748	0	439,748
2000[3]		0	887,284	0	887,284
2001[4]		0	174,832	0	174,832
2002[3]		0	225,200	0	225,200
2003[3]		560,446	905,328	0	1,465,774
2005[3]		0	59,667	0	59,667
2006[3]		0	888,134	0	888,134
2007[4]		510,000	0	0	510,000
2008[4]		0	635,000	0	635,000
2009		0	0	0	0

Year		Dredged Material Quantity (cy) (*in situ* volume[6])			
	Jacksonville Harbor Deepening	Jacksonville Federal Navigation Channel	Naval Station Mayport (permit)	Jacksonville Shipyards (permit)	Total
2010[4]		0	174,941	0	174,941
2011[4]		426,000	3,597,663[5]	0	426,000
2012[4]		48,000			3,645,663
2013[4]		57,621			
2014[4]			296,161		
2015[7]			1,537,768		1,537,768
2017	2,902,580		1,621,550		
2018	5,019,603				
2019			1,691,496		
2020	4,069,318				
2021	65,315		1,923,308		
2022		522,902			
2023		210,404	1,323,169		
Total	**12,056,816**	**9,757,874**	**24,082,713**	**136,200**	**26,330,176**

[1] Data from Jacksonville ODMDS EIS (USEPA 1983), in USEPA and USACE 2007.

[2] Data from the USACE Ocean Disposal Database in USEPA and USACE 2007

[3] Data from the Jacksonville District Dredge Information System (paid *in situ* volumes), in USEPA and USACE 2007.

[4] Data from the Jacksonville District Post Disposal Monitoring Reports.

[5] Volume is project total from 2010-2012. Total paid and unpaid in situ volume - 4,082,173 cy.

[6] Volumes prior to 2011 are reported only as paid volumes. Actual volumes could be more.

[7] Data from April 30, 2015, USACE completion memo.

9 APPENDIX C – BATHYMETRIC SURVEYS

Pre/Post Bathymetry Surveys Conducted by the USACE Jacksonville District

Date	Survey Title	Conclusion
Sept. 2001	*Pre-disposal Bathymetry Survey*	Depth maintained at greater than 35 feet throughout the ODMDS.
Nov. 2001	*Post-disposal Bathymetry Survey*	Depth maintained at greater than 34 feet throughout the ODMDS.
Oct. 2002	*Pre-disposal Bathymetry Survey*	Depth maintained at greater than 35 feet throughout the ODMDS.
April 2003	*Pre/Post-disposal Bathymetry Survey*	Depth maintained at greater than 34 feet throughout the ODMDS.
Sept. 2004	*Post-disposal Bathymetry Survey*	Accretions of 2 to 8 feet of material within the disposal zone since 2002. No measurable change in depth outside of the ODMDS boundaries. Depth maintained at greater than 32 feet throughout the ODMDS.
June 2007	*Pre/Post-disposal Bathymetry Survey*	Accretions of material to the south of the disposal zone since 2004. No measurable change in depth outside of the ODMDS boundaries. Depth maintained at greater than 32 feet throughout the ODMDS.
Feb. 2008	*Pre-disposal Bathymetry Survey*	Minimum Depth of 30 feet.
July 2008	*Post-disposal Bathymetry Survey*	Minimum Depth of 26 feet.
Jan. 2010	*Pre-disposal Bathymetry Survey*	Minimum Depth of 30 feet.
April 2010	*Post-disposal Bathymetry Survey*	Minimum Depth of 30 feet.
Oct. 2010	*Pre -disposal Bathymetry Survey*	Depth maintained at >30 feet throughout the ODMDS
Feb. 2011	*Mid-Project Bathymetry Survey*	Minimum Depth of 29 feet.
Oct. 2011	*Mid-disposal Bathymetry Survey*	Depth maintained at >29 feet throughout the ODMDS
Dec. 2011	*Mid-disposal Bathymetry Survey*	Depth maintained at >29 feet throughout the ODMDS
Jan. 2012	*Mid-disposal Bathymetry Survey*	Depth maintained at >27 feet throughout the ODMDS

Date	Survey Title	Conclusion
Apr. 2012	*Mid-disposal Bathymetry Survey*	Depth maintained at >29 feet throughout the ODMDS
June 2012	*Mid-disposal Bathymetry Survey*	Depth maintained at >28 feet throughout the ODMDS
Aug. 2012	*Post-disposal Bathymetry Survey*	Depth maintained at >29 feet throughout the ODMDS
Aug. 2013	*Post-disposal Bathymetry Survey*	Depth maintained at >29 feet throughout the ODMDS
Jan. 2014	*Pre -disposal Bathymetry Survey*	Depth maintained at >28 feet throughout the ODMDS
March 2014	*Post-disposal Bathymetry Survey*	Depth maintained at >28 feet throughout the ODMDS
May/June 2015	*Post-disposal Bathymetry Survey*	Zone A
Nov/Dec 2015	*Expanded Site Pre-Disposal Survey*	Zones A, B1, B2, C1, C2, D1, D2, D3
June 2020	*Post-disposal Bathymetry Survey*	Zones B1, C1
Oct. 2020	*Monitoring Survey*	Zone D1
Nov. 2020	*Post-disposal Bathymetry Survey*	Zones A, B1, C1, D1
Apr. 2021	*Post-disposal Bathymetry Survey*	Zone D1
Nov. 2021	*Post-disposal Bathymetry Survey*	Zone A, B1, C1, D1
Jun/July 2022	*Post-disposal Bathymetry Survey*	Zones B1, B2, C1, C2, D1, D2
Apr./May 2023	*Post-disposal Bathymetry Survey*	Zones B2, C2, D1, D2, D3
July 2023	*Post-disposal Bathymetry Survey*	Zone A, B1, C1