US Army Corps
of Engineers®
Galveston District

CHANNEL TO PORT MANSFIELD, TEXAS

SITE MANAGEMENT PLAN
FOR THE MAINTENANCE DREDGING
OCEAN DREDGED MATERIAL DISPOSAL SITE

AS REQUIRED BY
SECTION 102 OF THE
MARINE PROTECTION, RESEARCH AND SANCTUARIES ACT

SITE MANAGEMENT PLAN

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OCEAN DREDGED MATERIAL DISPOSAL SITE

I. General

The Marine Protection, Research and Sanctuaries Act (MPRSA) of 1972 (33 U.S.C. Section 1401, et seq.) is the legislative authority regulating the disposal of dredged material into ocean waters, including the territorial sea. The transportation of dredged material for the purpose of placement into ocean waters is permitted by the Corps of Engineers or, in the case of Federal projects, authorized for disposal under MPRSA Section 103(e), applying environmental criteria established by the Environmental Protection Agency in the Ocean Dumping Regulations (40 CFR Parts 220-229).

Section 102(c) of the MPRSA and 40 CFR 228.4(e)(1) authorize the Environmental Protection Agency (EPA) to designate ocean dredged material disposal sites (ODMDSs) in accordance with requirements at 40 CFR 228.5 and 228.6. Section 103(b) of MPRSA requires that the Corps of Engineers (USACE) use dredged material sites designated by EPA to the maximum extent feasible. Where use of an EPA-designated site is not feasible, the USACE may, with concurrence of EPA, select an alternative site in accordance with MPRSA 103(b).

Section 228.3 of the Ocean Dumping Regulations established disposal site management responsibilities; however, the Water Resources Development Act of 1992 (WRDA 92; Public Law 102-580) included a number of amendments to the MPRSA specific to ODMDS management. Section 102(c) of MPRSA as amended by Section 506 of WRDA 92 provides that:

1. Site management plans shall be developed for each ODMDS designated pursuant to Section 102(c) of MPRSA.

2. After January 1, 1995, no ODMDS shall receive a final designation unless a site management plan has been developed.

3. For ODMDSs that received a final designation prior to January 1, 1995, site management plans shall be developed as expeditiously as practicable, but no later than January 1, 1997, giving priority to sites with the greatest potential impact on the environment.

4. Beginning on January 1, 1997, no permit or authorization for dumping shall be issued for a site unless it has received a final designation pursuant to Section 102(c) MPRSA or it is an alternate site selected by the USACE under Section 103(b) of MPRSA.

This Site Management Plan, for the Channel to Port Mansfield, TX Ocean Dredged Material Disposal Site, was developed jointly by the U.S. Environmental Protection Agency, Region 6 (EPA, Region 6) and the U.S. Army Corps of Engineers, Galveston District (USACE-SWG). In accordance with Section 102(c)(3) of the MPRSA, as amended by WRDA 92, the plan includes the following:

1. A baseline assessment of conditions at the site;

2. A program for monitoring the site;

3. Special management conditions or practices to be implemented at the site that are necessary for protection of the environment;

4. Consideration of the quantity of dredged material to be discharged at the site, and the presence, nature, and bioavailability of the contaminants in the material;

5. Consideration of the anticipated use of the site over the long term, including the anticipated closure date for the site, if applicable, and any need for management of the site after the closure;

6. A schedule for review and revision of the plan.

II. Site Management Objectives

The purpose of ODMDS management is to ensure that placement activities do not unreasonably degrade the marine environment or interfere with other beneficial uses (e.g., navigation) of the ocean. The specific objectives of management of the Channel to Port Mansfield, TX Ocean Dredged Material Disposal Site for maintenance material are as follows:

1. Ocean discharge of only that dredged material that satisfies the criteria set forth in 40 CPR Part 227 Subparts B, C, D, E, and G and Part 228.4(e) and is suitable for unrestricted placement at the ODMDS;

2. Avoidance of excessive mounding either within the site boundaries or in areas adjacent to the site, as a direct result of placement operations.

These objectives will be achieved through the following measures:

1. Regulation and administration of ocean dumping permits;

2. Development and maintenance of a site monitoring program;

3. Evaluation of permit compliance and monitoring results.

III. Roles and Responsibilities

In accordance with Section 102 (c) of the MPRSA and with the Regional MOU between USACE-SWG and EPA, Region 6 on Management of ODMDSs signed August 13, 1993, EPA is responsible for designation of ODMDSs. Where use of an EPA-designated site is not feasible, the USACE-SWG may, with concurrence with EPA, Region 6 select an alternative site in accordance with Section 103(b) of the MPRSA as amended by Section 506 of WRDA 1992.

Development of site management plans for ODMDSs within the Galveston District is the joint responsibility of EPA, Region 6 and the USACE-SWG. Both agencies are responsible for assuring that all components of the site management plans are implementable, practical, and applicable to site management decision-making.

IV. Funding

Physical, chemical, and biological effects-based testing shall be undertaken on sediments to be deposited at the ODMDS. This testing will be conducted at least every five years, or as necessary to address contaminant concerns due to unanticipated events, and will be funded by the permittee if the project is permitted or USACE-SWG for Federal projects. The permittee or USACE-SWG, as appropriate, shall also be responsible for costs associated with placement site hydrographic monitoring. Should monitoring indicate that additional studies and/or tests are needed at the ODMDS, the cost for such work would be shared by the permittee or USACE-SWG and EPA, Region 6. Physical, chemical, and biological effects-based testing at the ODMDS, or in the site environs after discharge, that is not required as a result of hydrographic monitoring, shall be funded by EPA, Region 6. Federal funding of all aspects of this Site Management Plan is contingent on availability of appropriated funds.

V. Baseline Assessment

*A. **Site Characterization.*** The Channel to Port Mansfield Maintenance ODMDS is located approximately 1.1 miles offshore, and about 800 feet north of the centerline of the Entrance Channel. The site is rectangular in shape with corner coordinates located at:

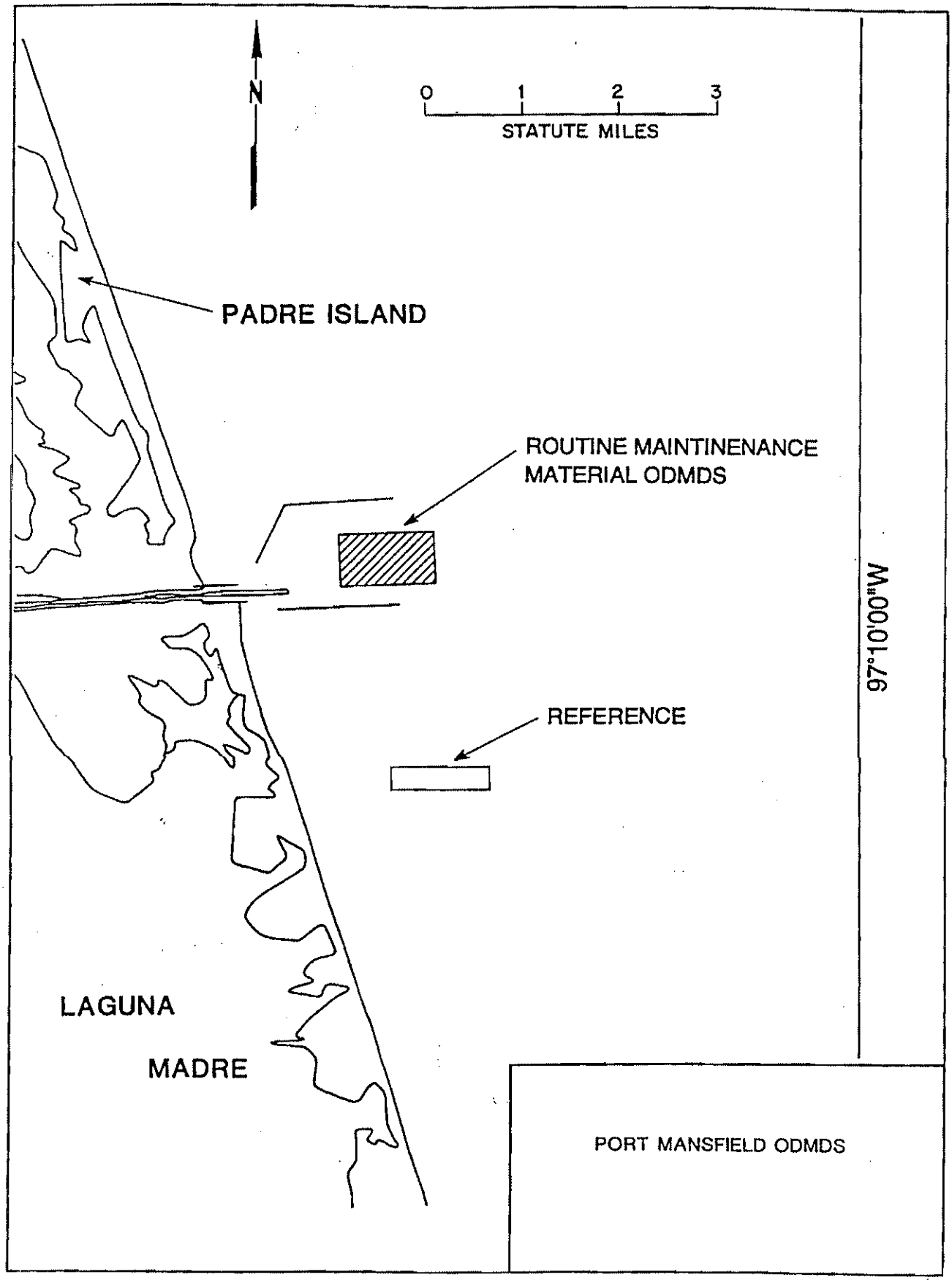
26°34'24"N, 97°15'15"W;
26°34'26"N, 97°14'17"W;
26°33'57"N, 97°14'17"W;
26°33'55"N, 97°15'15"W.

This site occupies an area of approximately 0.42 square nautical miles, with depths ranging from 35 to 50 feet. The sediment reference area is located south of the channel with vertices at the following coordinates:

26°32'11"N, 97°13'44"W;
26°31'58"N, 97°13'44"W;
26°31'58"N, 97°14'42"W;
26°32'11"N, 97°14'42"W.

Baseline conditions at the Channel to Port Mansfield Maintenance ODMDS were assessed during the site designation process. Details of baseline conditions, including descriptions of the marine environment in the site vicinity and the physical, chemical and biological characteristics of the sediments and the water column at the site, are contained in the "Final Environmental Impact Statement (EIS), Channel to Port Mansfield, Ocean Dredged Material Disposal Site Designation" prepared by EPA, Region 6, in July 1990.

*B. **Historical Use of the Site.*** The Channel to Port Mansfield maintenance ODMDS received final designation on September 10, 1990 (55 FR 175). Historically, the dredging frequency for this navigation project is approximately 1.7 years, with an average of about 198,749 cubic yards (CY) of material excavated per dredging contract. Descriptions of dredged volumes from 1963 through 2002 are depicted in the following table:


N
0 1 2 3
STATUTE MILES
PADRE ISLAND
ROUTINE MAINTINENANCE
MATERIAL ODMDS
REFERENCE
97°10'00"W
LAGUNA
MADRE
PORT MANSFIELD ODMDS

Maintenance Dredging History

STARTED	COMPLETED	QUANTITY DREDGED (CUBIC YARDS)
February 4, 1963	February 17, 1963	43,899
August 11, 1964	August 20, 1964	80,613
November 19, 1965	November 28, 1965	90,749
October 3, 1966	December 17, 1966	96,287
June 1, 1967	September 4, 1967	97,333
June 5, 1969	June 15, 1969	161,110
June 16, 1970	July 26, 1970	99,097
May 15, 1972	July 23, 1972	416,569
May 28, 1973	July 23, 1973	314,900
August 5, 1974	September 12, 1974	81,216
May 1, 1976	August 1, 1976	292,433
September 6, 1977	September 30, 1977	534,000
August 4, 1978	September 27, 1978	226,296
July 16, 1979	August 4, 1979	364,534
November 6, 1980	December 3, 1980	302,181
May 10, 1983	July 5, 1983	372,765
April 4, 1986	May 14, 1986	104,196
March 23, 1988	June 14, 1988	132,937
November 14, 1988	December 7, 1988	169,585
March 9, 1990	September 30, 1990	131,692
June 28, 1991	November 25, 1991	98,748
February 3, 1994	April 6, 1994	242,813
March 4, 2002	March 20, 2002	117,271
Total		4,571,224
Average		198,749

The material is dredged from the Channel to Port Mansfield, and transported to the ODMDS by hopper dredge or scow. The dredge, either a conventional bottom opening hopper or a split-hulled hopper, travels from the dredging site with its doors closed. Upon reaching the designated

ODMDS, the hoppers are opened and the material is released as the dredge travels through the site. The hoppers are closed before the dredge leaves the site. The disposal operations occur 24 hours a day, seven days a week until the dredging is completed. Historically, dredged material release points were not specified; however, a 500-foot wide no-discharge zone immediately inside the boundaries of the ODMDS was instituted to prevent short-term transport of the material out of the site.

Prior to the 1990 final designation of the maintenance site, another placement site located closer to shore was used for dredged material discharge. As explained in the Final EIS, this historically-used site was not selected as the final site because it was located within a buffer zone adjacent to a biologically sensitive area.

VI. Quantity of Material and Level of Contamination

A. ***Summary of information used to determine size of the site.*** Historically, since 1963, the dredging interval for this navigation project is approximately 1.7 years, with an average of about 198,749 CY of material excavated per dredging contract. However, during the period since the final designation of the maintenance ODMDS in 1990 until 2002, which was the most recent dredging, the average quantity of material dredged decreased to approximately 152,944 CY, while the dredging interval increased to about 3.8 years. The excavated channel sediments can be characterized as predominantly sand with relatively low percentages of silt and clay. But, the ODMDS and reference area are almost entirely sand. Overall grain size characteristic of the sediment are indicated by the D_{50}, which represents the median particle size. The channel sediment can be characterized as very fine sand, whereas the ODMDS and reference area are fine sand. Average particle size distribution is described in the table below.

Particle Size Distribution

	AVERAGE COMPOSITION (%)			
LOCATION	SAND	SILT	CLAY	D_{50} (mm)
Channel	77.29	10.04	12.67	0.116
ODMDS	96.6	3.4	0.0	0.187
Reference Area	96.3	3.7	0.0	0.135

As described in the site designation EIS, the size of the ODMDS was determined by simulations run on a computer model. These simulations assumed an average shoaling rate of about 170,000 CY of material to be dredged during each maintenance contract. This quantity is about 10

percent greater than the current average of approximately 152,900 CY dredged per cycle, while the dredging interval increased more than twofold. Therefore, a smaller average quantity of material is deposited less often than the previous rate. The site can be described as dispersive; therefore the dredged material deposited there is expected to erode and dissipate.

Primary considerations for selecting this site were as follows:

1. The vicinity of the Site has received material dredged from the Channel to Port Mansfield Project since the 1960s. Past studies have not determined any significant adverse impacts from disposal in the vicinity.

2. Past studies have determined that this is a high-energy erosional zone and can generally accept large volumes of dredged material with little apparent net change to the bottom.

3. The site is within the inlet zone and is adjacent to the channel, providing easy access for dredged material placement operations, and reduce costs.

4. Studies have shown that there are no unique fisheries in the area.

B. Summary of testing requirements per Regional Implementation Agreement (RIA) and summary of past dredged material evaluations. On September 24, 1992, a RIA was executed between EPA Region 6, and the Galveston District. This RIA was updated on November 3, 2003 (U.S. EPA and USACE, 2003), and describes protocols for evaluating the quality of the dredged material and implementation of the "GREEN BOOK" (U.S. EPA and USACE, 1991). These protocols describe chemical parameters to be analyzed, as well as required detection limits. It also specifies how toxicity testing and bioaccumulation assessments are to be conducted, as well as organisms to be utilized. Since that time, all sediment evaluations have been conducted in accordance with the RIA. Since 1979, before development of the RIA, dredged material from the Channel to Port Mansfield Project had been evaluated numerous times to determine suitability for offshore placement. This testing was performed to determine levels of metals and organic constituents, as well as toxicity and bioaccumulation assessments. Testing performed for this project is summarized in the following table:

Sediment Quality Assessment History

DATE	TYPE OF TESTING
January 6, 1979	Pre-dredging Bulk Analyses
September 1980	Toxicity and Bioaccumulation Assessment
December 21, 1982	Pre-dredging Bulk Analyses
December 6, 1989	Pre-dredging Bulk Analyses

The above testing indicated that the material was suitable for offshore placement without special management conditions.

VII. Anticipated Site Use

As previously discussed, the dredging frequency for this project is approximately 3.8 years, with an average of approximately 152,944 CY of material excavated per dredging contract. It is anticipated that the channel will continue to shoal at a similar rate. Presently, the ODMDS only receives dredged material from the Federally-maintained Channel to Port Mansfield Project. Material from other sources is not presently placed at this site, and none is expected in the foreseeable future.

It is the policy of the Galveston District to implement beneficial uses of dredged material, wherever practicable. Since 1986, much of the maintenance dredged material was used for beach nourishment along Padre Island National Seashore. This placement option will continue to be considered for future maintenance of the Channel to Port Mansfield Project.

VIII. Special Management Conditions or Practices

Currently, no special management conditions or practices related to placement of dredged material into the designated ODMDS are required. As previously discussed, evaluations of sediment quality have indicated that the material from the channel is suitable for offshore placement without such requirements. However, all operations shall be conducted such that the dredged material remains within the bounds of the ODMDS immediately following descent to the ocean floor.

A seasonal restriction has been recommended by the National Marine Fisheries Service, during formal consultation undertaken pursuant to the Endangered Species Act (NMFS, 2007). This restriction was based on potential impacts of hopper dredging operations on several species of threatened and endangered sea turtles. The recommendation is to restrict hopper dredging to the period from December 1 through March 31, during which turtle abundance is at a minimum. This

recommendation pertains, however, only to actual dredging operations, and not placement of the material into the ODMDS. While it may not be practical to observe this restriction for all dredging cycles, it will be practiced when feasible.

IX. Monitoring Program

The primary purpose of the Site Monitoring Program is to evaluate the impact of the placement of dredged material on the marine environment. The evaluations will be used for making decisions, preventing unacceptable adverse effects beyond the site boundary, and ensuring regulatory compliance over the life of the ODMDS. Emphasis will be placed on determining physical impacts, since, to date, dredged material from the Channel to Port Mansfield Project has been determined to be acceptable for ocean placement, without special conditions; however, consideration of contaminants will also be included. Testing of dredged material is conducted based on "Greenbook" and RIA procedures, however it is necessary to verify the decisions made regarding the suitability of the dredged material are correct and that the material is not having an adverse impact to the environment. In the event that the dredged material persists in the ODMDS, there may be potential for long-term contaminant effects on the benthos.

The size and location of the Channel to Port Mansfield Project ODMDS were determined pursuant to the General Criteria as listed in 40 CFR 228.5, and the Specific Criteria at 40 CFR 228.6(a). There are no significant environmental resources delineated within or immediately outside of the designated ODMDS. Since this site is dispersive in nature, the primary concern of the use of the site is the potential short-term build up of dredged material, such that a hazard to navigation is presented. Another concern is whether there is significant short-term movement of the dredged material beyond the ODMDS boundaries; specifically, the benthic community can be impacted if significant rapid movement of material off the site occurs, resulting in burial of benthic populations outside the site. Studies have shown that benthic organisms can burrow through 6-9 inches of dredged material without significant impacts on the community (Maurer, et al., 1978).

The Site Monitoring Program is designed as a tiered program. If initial tier results fail predetermined limits, then a more complex set of tests is invoked at the next tier to determine the extent of impact. The tiers are used to facilitate rapid, accurate and economical collection of information for use by the EPA, Region 6, and the USACE-SWG. The tiered testing for these factors is described below.

MAINTENANCE MATERIAL

TIER M1

Physical and chemical evaluations of the ODMDS material shall be conducted to characterize possible effects from the placement of dredged material occurring at the site. Physical analyses of the sediment can assist in assessing the impact of disposal practices on the benthic environment at the disposal site and determine if dredged material is migrating offsite. Chemical analyses of the sediment shall be conducted to establish whether contaminants of concern are suspected to be affecting the benthic environment at the disposal site.

Bathymetric Surveys

The ODMDS is located outside of the safety fairway for large vessel traffic, therefore, the mounding will be considered in regard to shallow-draft vessels, only. Considering the grain-size characteristics of typical maintenance dredged material from this channel, significant mounding is not expected subsequent to discharge operations. The threshold elevation for mounding of dredged material within the ODMDS will be ten (10) feet above the existing bottom elevation.

Since the site is dispersive, movement of material from the site is expected to occur after disposal operations cease. In order to detect if short-term movement of the material out of the designated ODMDS is occurring at a significant rate, hydrographic surveys of the ODMDS shall be obtained before the start of disposal operations, and soon after completion of disposal operations. An accumulation of one (1) foot of sedimentation along the ODMDS boundary will be considered the threshold level for movement of material outside of the designated ODMDS. This determination shall be based on a comparison of the results of these before and after surveys.

Hydrographic surveys shall be conducted along transects within the ODMDS. These transects shall be oriented perpendicular to the channel in the direction of sediment transport (i.e., southwest). Transect intervals shall be every 1,000 feet extending 1,000 feet outside each boundary. In addition, a depth profile shall be obtained along each boundary.

Surveys shall be obtained using a USACE, or contract survey vessel equipped with electronic surveying capabilities. The vessel must be equipped with positioning equipment with a horizontal precision of one (1) foot. The fathometer, which shall display real-time depth on real-time location, must have a precision of 0.5 feet. All data shall be collected using methodology described in Engineer Manual EM 1110-2-1003, dated January 1, 2002.

Data Analysis

- If deposited dredged material is not mounding to elevations greater than the threshold elevation above the existing bottom elevation, and there is no short-term movement of material beyond the limits of the ODMDS, then the management objectives are met. No further post-disposal monitoring will be required.

- If mounding to elevations greater than the threshold elevation, and/or movement of material out of the ODMDS has occurred, as determined by the post-dredging survey, then the monitoring program shall proceed to Tier M2.

Sediment Chemistry

Sediment chemistry analyses shall be conducted in conjunction with the dredged material evaluations from samples collected in the navigation channel. Collecting samples from both the navigation channel and ODMDS during the same sampling event has been determined to be the most efficient use of resources. Because most ODMDSs lie directly adjacent to the navigation channels, there are relatively short distances between the two areas. As described in the RIA, sediment testing in the navigation channels generally occurs on a five-year cycle. Sediment chemistry results from the ODMDS should be compared to the results collected from the navigation channel. Significantly elevated sediment concentrations are defined as concentrations above the range of contaminant levels in dredged sediments that the Regional Administrator and the District Engineer found to be suitable for disposal at the ODMDS.

Data Analysis

- If contaminant concentrations are not significantly different than navigation channel concentrations then no further testing is needed.

- If significant increases in levels of contaminants are observed at the ODMDS, then a determination will be made whether a bioassay/bioaccumulation study is warranted to determine effects on the benthic community. The studies are described below as Biological Testing under Tier M2.

TIER M2

Bathymetric Surveys

If transport of material from the site is occurring, hydrographic surveys shall be expanded to include the impacted area and shall be performed on a semi-annual basis to determine the changes in dispersion of the material until the impacts are no longer observed. An accumulation of more than one (1) foot of sedimentation along the ODMDS boundary will be considered the threshold level for significant movement of material outside of the designated ODMDS.

Data Analysis

- If deposited dredged material is mounding to elevations above the threshold value, but less than fifteen (15) feet above the existing bottom elevation and there is no significant short-term transport of material beyond the limits of the ODMDS, then semi-annual post-disposal monitoring shall occur as described.

- If at six months after disposal, deposited dredged material remains mounded to elevations greater than half the post-disposal elevations, then bathymetric surveys shall be continued.

- If deposited dredged material is mounding to elevations greater than fifteen (15) feet, and/or significant movement of material out of the ODMDS has occurred, the Galveston District together with EPA Region 6 will consider various management options to rectify the situation. Such options could include, but are not limited to expansion of the ODMDS; or relocation of the ODMDS within the zone of siting feasibility described in the designation EIS.

Biological Testing

If the results of the Tier M1 sediment chemistry evaluation suggest the need for additional testing, then solid-phase bioassay and bioaccumulation testing shall be conducted in accordance with the procedures described in the RIA. If the sediment can be attributable to recent dredging, funding for testing under this Tier will be provided by USACE-SWG or the permittee, as appropriate; otherwise funding will be provided by EPA, Region 6. Any such testing is contingent on availability of appropriated funds.

Data Analysis

- If toxicity is not indicated, then no further testing is needed and disposal activities can continue at the ODMDS.

- If toxicity is indicated at the ODMDS, the Galveston District together with EPA Region 6 will consider various management options to rectify the situation. Because the ODMDS is a dispersive site, potential sources of toxicity other than dredged material must also be considered. If planned use of the ODMDS is imminent, a decision must also be made whether to allow continued use of this site.

X. References

Maurer, D.L., R.T. Keck, J.C. Tinsman, W.A. Leathem, C.A. Wethe, M. Huntzinger, C. Lord, and T.M. Church. 1978. Vertical Migration of Benthos in Simulated Dredged Material Overburdens, Vol. 1: Marine Benthos. Technical Report D-78-35. U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

NMFS (National Marine Fisheries Service), 2007. Revision 2 to the November 19, 2003 Biological Opinion concerning Dredging of Gulf of Mexico Navigation Channels and Sand Mining ("Borrow") Areas Using Hopper Dredges by COE Galveston, New Orleans, Mobile, and Jacksonville Districts (Consultation Number F/SER/2000/01287).

U.S. EPA and USACE. 1991. *Evaluation of Dredged Material Proposed for Ocean Disposal - Testing Manual.* EPA-503/8-91/001. U.S. Environmental Protection Agency and U.S. Army Corps of Engineers, Washington, D.C.

U.S. EPA and USACE. 2003. *Regional Implementation Agreement for Testing and Reporting Requirements for Ocean Disposal of Dredged Material off the Louisiana and Texas Coasts Under Section 103 of The Marine Protection, Research and Sanctuaries Act.* U.S. Environmental Protection Agency, Region 6 and U.S. Army Corps of Engineers, Galveston and New Orleans Districts.

XI. Site Management Plan Review and Revision

Pursuant to Section 102(c) of the MPRSA, as amended by WRDA 1992, the Site Management Plan for the Channel to Port Mansfield ODMDS will be reviewed and revised, if necessary, not less frequently than 10 years after adoption and every 10 years, thereafter.

Modifications or updates to the Site Management Plan may be necessary, based on specific needs identified for specific authorized projects. Modifications or updates to the Site Management Plan may be proposed by either the USACE-SWG or EPA Region 6. Following a thirty (30) day review period of the changes(s), the modifications may be incorporated into the plan by mutual consent of both agencies.

This Site Management Plan complies with Section 102(c)(3) of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. Sections 1401, et seq.) as amended by Section 506 of the Water Resources Development Act of 1992 (WRDA 92; Public Law 102-580), and has been approved by the following officials of Region 6 of the U.S. Environmental Protection Agency, and Galveston District of the U.S. Army Corps of Engineers. This plan goes into effect upon the date of the last signature:

NOV 25 2008

Richard E. Greene
Regional Administrator
Region 6
U.S. Environmental Protection Agency

Date

15 DEC 2008

David C. Weston
Colonel, Corps of Engineers
District Engineer
Galveston District
U.S. Army Corps of Engineers

Date