



**US Army Corps
of Engineers**
Galveston District

MATAGORDA SHIP CHANNEL IMPROVEMENT PROJECT
CALHOUN COUNTY, TEXAS

NEW WORK MATERIAL ODMDS MANAGEMENT PLAN

AS REQUIRED BY

SECTION 102 OF THE

MARINE PROTECTION, RESEARCH AND SANCTUARIES ACT

ATTACHMENT C
SITE MANAGEMENT PLAN
MATAGORDA SHIP CHANNEL IMPROVEMENT PROJECT
CALHOUN COUNTY, TEXAS
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 U.S. Army Corps of Engineers (USACE) or, in the case of Federal projects, authorized for disposal under MPRSA Section 103(e), applying environmental criteria established by the U.S. Environmental Protection Agency (USEPA) 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 USEPA to designate ocean dredged material disposal sites (ODMDS) in accordance with requirements at 40 CFR 228.5 and 228.6. Section 103(b) of MPRSA requires that the USACE use dredged material sites designated by USEPA to the maximum extent feasible. Where use of an USEPA-designated site is not feasible, the USACE may, with concurrence of USEPA, 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 (Water Resources 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 Matagorda Ship Channel, Texas (MSC) ODMDSs was developed jointly by USEPA, Region 6 and USACE, 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 sites;
2. A program for monitoring the sites;
3. Special management conditions or practices to be implemented at the sites necessary for protection of the environment;

4. Consideration of the quantity of dredged material to be discharged at the sites, and the presence, nature, and bioavailability of the contaminants in the material;
5. Consideration of the anticipated use of the sites over the long term, including the anticipated closure date for the sites, if applicable, and any need for management of the sites after the closure; and
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 MSC ODMDSs for are as follows:

1. Ocean discharge of only that dredged material that satisfies the criteria set forth in 40 CFR 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 sites, 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 Memorandum of Understanding (MOU) between USACE-SWG and USEPA, Region 6 on Management of ODMDSs signed August 13, 1993, USEPA is responsible for designation of ODMDSs. Where use of an USEPA-designated site is not feasible, the USACE-SWG may, with concurrence with USEPA, 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 SWG's area of operation is the joint responsibility of USEPA, 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 of dredged material prior to placement at the ODMDS shall be undertaken and funded by the Permittee if the project is permitted or by 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 ODMDSs, the cost for such work would be shared by the permittee or USACE-SWG and USEPA, Region 6. Physical, chemical, and biological effects-based testing at the ODMDS, or in the site environs after discharge, which is not required as a result of hydrographic monitoring, shall be funded by USEPA, 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 (Existing Maintenance ODMDS). One ODMDS has been designated for maintenance of the MSC (Figure 1). Following is a brief description of the site.

The MSC's maintenance ODMDS is located approximately 2 miles offshore of the Matagorda Peninsula, and about 1,000 feet southeast of the centerline of the MSC Entrance Channel. This site occupies an area of approximately 457 acres, with depths ranging from 25 to 40 feet. The site is rectangular in shape with corner coordinates located at:

28°23'48"N, 96°18'00"W; 28°23'21"N, 96°18'31"W;

28°22'43"N, 96°17'52"W; 28°23'11"N, 96°17'22"W.

One sediment reference area (Figure 2) has been established for this project. The sediment reference area is located northeast of the channel with vertices at the following coordinates:

28°24'27"N, 96°16'04"W; 28°24'33"N, 96°15'52"W;

28°25'10"N, 96°16'30"W; 28°25'04"N, 96°16'42"W.

Baseline conditions at the MSC 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 "Draft Environmental Impact Statement (EIS), Matagorda Ship Channel Ocean Dredge Material Disposal Site Designation," prepared by USEPA, Region 6 in July 1989 and finalized in July 1990.

B. Site Characterization (Proposed New Work ODMDS). The proposed new work ODMDS is anticipated to receive only new work dredged material generated by the construction of the MSC Improvement Project (MSCIP) and is intended to be a one-time use ODMDS. The proposed new work ODMDS is located approximately 3.5 miles offshore from the Matagorda Peninsula (Figure 2), with its area bounded by the following coordinates:

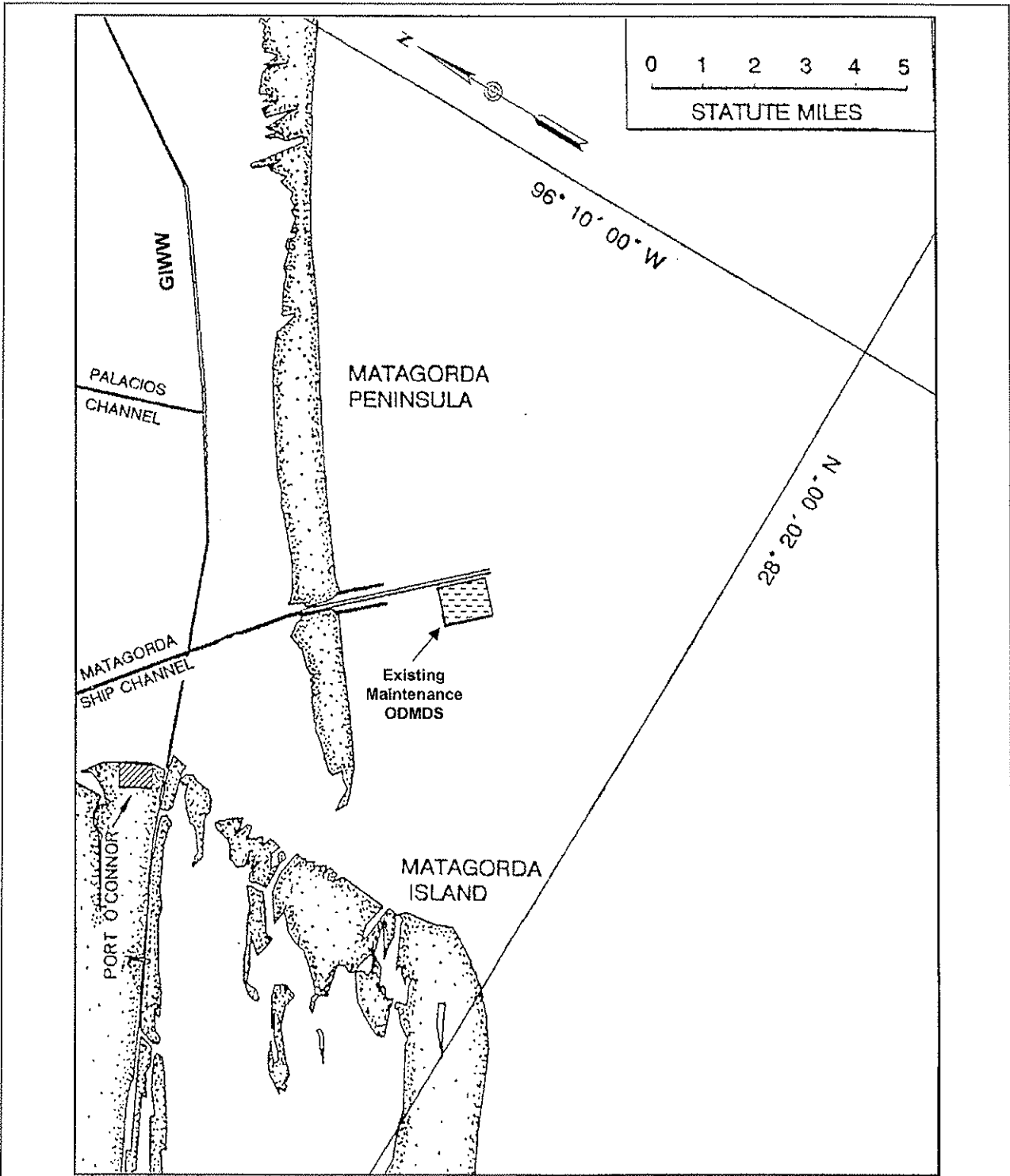
28°21'52"N, 96°16'01"W; 28°23'01"N, 96°17'12"W;

28°22'08"N, 96°18'14"W; 28°21'01"N, 96°17'04"W.

The proposed new work ODMDS occupies an area of approximately 1,649 acres, with its footprint located in depths ranging from 38 to 44 feet.

Baseline conditions at the MSC proposed new work Material ODMDSs were assessed during the site designation process for the MSC maintenance ODMDS. 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 Draft EIS, Matagorda Ship Channel, Ocean Dredged Material Disposal Site Designation prepared by USEPA, Region 6, in July 1989 and finalized in July 1990.

C. Historical Use of Sites. The maintenance ODMDS received final designation in 1990. Historical use of the MSC maintenance material ODMDS between 1996 and 2006 are depicted in Table 1:



- Engineering
- Environmental Consulting
- Surveying

Figure 1

EXISTING MAINTENANCE
ODMDS LOCATION

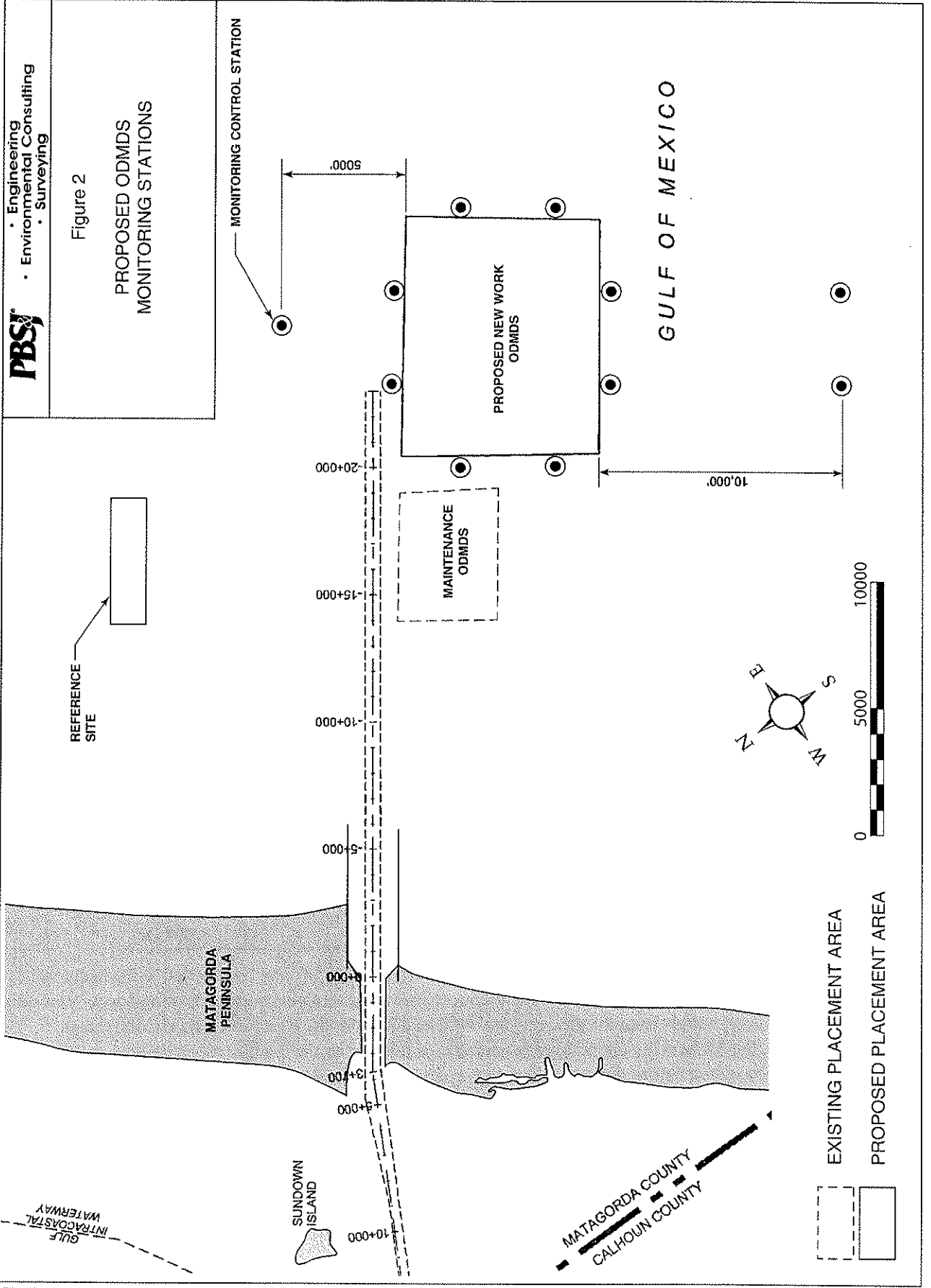


Table 1. Historical Use of the Maintenance Material ODMDS

Start	Completed	Quantity Dredged (cubic yards)
March 15, 1966	April 17, 1966	536,212
July 2, 1966	December 24, 1966	728,300
March 13, 1967	April 9, 1967	381,500
July 17, 1967	October 31, 1967	985,464
January 29, 1968	March 25, 1968	661,100
July 29, 1968	October 6, 1968	683,664
February 10, 1969	April 13, 1969	711,000
October 3, 1969	November 30, 1969	1,003,000
April 20, 1970	May 17, 1970	492,087
October 11, 1970	November 29, 1970	906,785
July 25, 1971	August 8, 1971	229,040
March 20, 1972	April 16, 1972	484,560
March 26, 1973	April 29, 1973	547,000
December 28, 1974	May 6, 1975	1,463,473
January 21, 1976	February 17, 1976	943,112
December 22, 1977	January 29, 1978	290,000
August 2, 1979	August 31, 1979	624,727
August 28, 1980	December 22, 1980	1,716,288
January 26, 1984	March 7, 1984	908,933
January 30, 1989	February 20, 1989	498,040
August 11, 1993	September 7, 1993	964,186
October 3, 1996	October 21, 1996	488,383
July 16, 1999	August 3, 1999	499,341
October 21, 2001	October 29, 2001	285,594
January 18, 2004	February 6, 2004	365,226
July 31, 2006	August 10, 2006	336,720
Total		17,733,735
Average per cycle		682,067

The material is dredged from the MSC's Entrance Channel, and transported to the maintenance 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, 7 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 each ODMDS was observed to prevent short-term transport of the material out of the sites.

D. Proposed New Work ODMDS. The proposed new work ODMDS has not previously received any dredged material from the existing MSC project.

VI. Quantity of Material and Level of Contamination

A. Summary of information used to determine size of the New Work ODMDS. Historically, the average dredging frequency for this navigation project at the Entrance Channel is approximately once every 1.5 years, with an average of 682,067 cy of material excavated per dredging contract. The excavated channel sediments can be characterized as sandy-silty-clay. Average particle-size distributions are described in Table 2.

Table 2. Excavated Channel Sediment Average Particle Size Distribution

Location	% Sand	% Silt	% Clay	%% (mm)
Entrance Channel	51.06	25.34	23.60	0.093
Maintenance ODMDS	89.10	9.95	0.95	0.206
Reference Area	46.87	24.25	28.88	0.061

To construct the MSCIP, a total of 46.5 million cy (mcy) of material will need to be dredged from both the Entrance Channel and the In-Bay Channel. Of the 46.5 mcy of new work material to be dredged from the MSC, approximately 12.0 mcy of that construction dredged material is planned to be placed in the new work ODMDS. The In-Bay Channel dredged material to be placed in the new work ODMDS will consist of 8.8 mcy of predominantly soft clay material with a small fraction of silt. An additional 3.2 mcy of mixed material, containing sand, silts, and clay to be dredged from the Entrance Channel will also be placed within the new work ODMDS.

As described in the ODMDS Analysis Report, the new work ODMDS was evaluated for the one-time placement of 12.0 mcy of construction dredged material, as were other mid-shelf and deep water areas. The primary consideration for selecting the new work ODMDS location was as follows:

1. Benthic sampling data the adjacent maintenance ODMDS indicated no significant changes had occurred in the faunal communities as a result of disposal operations, and that future changes in the benthic community were not anticipated to occur from continued disposal at this site.
2. Both the existing maintenance and preferred ODMDSs are situated in a high-energy erosional zone and can generally accept large volumes of dredged material with little apparent net change to the bottom.
3. The existing maintenance and preferred ODMDSs are within the inlet zone and are adjacent to the channel providing easy access for dredged material placement operations and reduced costs.
4. Studies have shown that there are no unique fisheries in the area.

The size of the new work material ODMDS was determined by simulating the placement dredged sediments and the resulting subaqueous mound configuration by running the MDFATE computer model. As noted earlier, this simulation assumed a total of 12.0 mcy of construction dredged material would be placed in the one-time use new work ODMDS. The new work ODMDS is within a dispersive environment, therefore the dredged material deposited within the footprint of the ODMDS is expected to erode.

B. Summary of testing requirements per Regional Implementation Agreement (RIA) and summary of past dredged material evaluations. On September 24, 1992, an RIA was executed between

USEPA, Region 6, and SWG. The RIA was revised and updated, and a new RIA was issued on November 3, 2003. This RIA described protocols for evaluating the quality of the dredged material and implementation of the *Green book* (USEPA/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 MSC has been evaluated numerous times to determine suitability for offshore placement. This testing was performed to determine levels of organic constituents, as well as toxicity and bioaccumulation assessments. Testing performed for this project is summarized in Table 3.

Table 3. Sediment Quality Assessment History

Date	Type of Testing
June 4, 1979	Pre-dredging Bulk Analyses
May 1980	Toxicity and Bioaccumulation Assessment
October 27, 1983	Pre-dredging Bulk Analyses
November 1985	Toxicity and Bioaccumulation Assessment
December 18, 1988	Pre-dredging Bulk Analyses
December 1996	Toxicity and Bioaccumulation Assessment
July 9, 1998	Pre-dredging Bulk Analyses
September 2001	Toxicity and Bioaccumulation assessment
March 2006	Toxicity and Bioaccumulation Assessment

The results of the above testing indicate maintenance material from the MSC is suitable for offshore placement without special management conditions. Additionally, it is expected the new work dredged material should contain chemical constituents of concern at concentrations that are equal or less than what has been seen in the historic maintenance dredged material, therefore the new work dredged material should be suitable for the one-time placement within the new work ODMDS.

VII. Anticipated Site Use

The maintenance dredging frequency for the MSC's Entrance Channel is estimated to decrease to once every 4 years following completion of the MSCIP. However, the volume of the maintenance dredged material for each dredging cycle is expected to increase to 1.088 mcy. The MDFATE computer model was used to simulate the placement of a larger volume of future maintenance dredged material within the existing maintenance ODMDS. Results of the simulation revealed the size of the existing maintenance ODMDS is sufficient to receive the estimated 1.088 mcy of future maintenance dredged material at a placement cycle of once every 4 years. Therefore, modification to the operations or dimensions of the existing maintenance ODMDS will not be required following implementation of the MSCIP.

The MSCIP will generate roughly 46.5 mcy of new work dredged material. Approximately 12.0 mcy of the 46.5 mcy of new work dredged material is planned to be placed within the preferred one-time use new work ODMDS. The remaining majority of the 34.5 mcy of the new work dredged material will be beneficially used to create subaqueous and emergent habitats, nourish beaches and stabilize shorelines, and provide for in-situ capping of bay bottom contaminants. Also, a small portion of the new work dredged material will be used to create upland disposal facilities to receive new work and future

maintenance dredged material. A multi-agency Resource Management Working Group (RAWG) assisted in formulating a Dredged Material Management Plan (DMMP) to optimize the beneficial use of the MSC's new work and maintenance dredged material. The MSCIP's dredged material placement features are consistent with the DMMP as accepted by the RAWG.

VIII. Special Management Conditions or Practices

Currently, no special management conditions or practices related to placement of dredged material into the designated ODMDS have been 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 existing maintenance and proposed new work ODMDSs immediately following descent to the ocean floor.

A seasonal restriction has been recommended by the National Marine Fisheries Service (NMFS, 2007a, 2007b) during formal consultation undertaken pursuant to the Endangered Species Act. NMFS's biological opinion for the proposed construction of the MSC Improvement Project (MSCIP) is included as Attachment D to the ODMDS Analysis Report (Appendix L of the MSCIP EIS). 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 ODMDSs. 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 MSC 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 *Green Book* 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 material persists in the ODMDS, there may be potential for long-term contaminant effects on the benthos.

The size and location of the MSC designated maintenance and proposed new work ODMDSs 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 maintenance and proposed new work proposed ODMDSs. Since these sites are dispersive in nature, the primary concern of the use of the sites 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 sites occurs, resulting in burial of benthic populations outside the sites. Studies have shown that benthic organisms can burrow through 6–9 inches of dredged material without significant impacts on the community (USEPA/USACE, 1996).

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 USEPA, Region 6, and the USACE-SWG. The tiered testing for these factors is described below.

Construction Material

While the literature on maintenance material disposal on the Gulf Coast indicates only minor short-term and negligible long-term mounding from placement activities, little information is available for new work ODMDSs. Mounding from the construction (new work) material, while acceptable, is higher and of firmer material than is true for the maintenance material. Additionally, construction placement is expected to last for only a period of 2 years or less, and more frequent monitoring would be expected than would be necessary for the periodic, but short-term placement that occurs with maintenance dredging. The following monitoring and surveillance program is proposed for the MSCIP ODMDS during construction. The monitoring is discussed in detail below.

A major consideration in the acceptability of the size of the ODMDS was the location of the dredge when each discharge occurs. To prevent excessive mounding, it is necessary that a method be utilized to record the location of each discharge to ensure that the dredge places material all over the ODMDS while it avoids approaching the edges of the ODMDS too closely. The following is the scheme used in the modeling to avoid excessive mounding and dispersal of material outside the ODMDS: two discharges at all exterior placement points (one should a larger dredge be used), followed by one discharge at each of the interior placement points in a given sequence until each has been utilized. Continue repeating the sequence with one discharge at each interior placement point until construction is complete.

Tier C1

Bathymetric Surveys

Routine bathymetric scans should be conducted for the ODMDS to determine that there is no excessive mounding; e.g., to elevations greater than 10 feet above the existing bottom elevation (unless an alternate height is determined in agreement between the USEPA and USACE on a case-by-case basis), and that there is no short-term transport of material beyond the limits of the ODMDS. Therefore, an accumulation of 1 foot of sedimentation along the ODMDS boundary will be considered the threshold level for movement of material outside of the designated ODMDS. These determinations will be based on a comparison of the results with predredging surveys.

Bathymetric surveys will be obtained before the start of disposal operations. Surveys will be obtained monthly during the disposal operation. Upon completion of disposal operations, surveys will be performed after 6 months and 1 year.

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

Surveys will 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 1 foot. The fathometer, which will display real-time depth on real-time location, must have a

precision of 0.5 foot. All data will be collected using methodology described in Engineer Manual EM 1110-2-1003, dated January 1, 2002.

Data Analysis

If the surveys indicate 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 being met. Further monitoring will be conducted as scheduled.

If the monthly surveys indicate movement of material outside of the designated limits, then the disposal operation will be reviewed to determine if the disposal sequence is being properly followed. The disposal sequence will be adjusted as necessary to compensate for the movement.

If the after-disposal surveys indicate mounding to elevations greater than the threshold elevation, and/or movement of material out of the ODMDS has occurred, then the monitoring program will proceed to Tier C2.

Sediment Chemistry

Monitoring stations (see Figure 2), which consist of a control station (located upcurrent of the ODMDS), two stations located immediately outside the ODMDS (roughly 300 feet from the ODMDS edges), and two stations located some distance down-current from the site (approximately 10,000 feet southwest of the downcurrent edge of the ODMDS) should be sampled for the items noted in the following paragraph to determine if impacts are occurring outside of the ODMDS. Substrate elevation should also be determined at each sampling station during each sampling event.

These stations shall be sampled before and at completion of disposal operations. Post-disposal sampling shall occur 6 months and 1 year after the cessation of discharge of new work material at the site. Samples should be collected for: (1) grain-size analysis, and (2) chemical characterization of sediments.

Data Analysis

If contaminant concentrations are not significantly different from before-disposal data, then the management objectives are being met. Further monitoring shall be conducted as scheduled.

- If significant increases in levels of contaminants are observed but bathymetric monitoring indicates that there is no short-term transport of material beyond the limits of the ODMDS, as determined in Bathymetric Surveys Tier C1, then this is an indication that the increase is not a result of dredged material placement. Further monitoring shall be conducted as scheduled.
- If significant increases in levels of contaminants are observed and bathymetric monitoring indicates that there is short-term transport of material beyond the limits of the ODMDS, as determined in Bathymetric surveys Tier C1, then a determination will be made whether a bioassay/bioaccumulation study is warranted to determine effects to the benthic community. The studies are described below as Biological Testing under tier C2.

Benthos

Monitoring stations (see Figure 2), which consist of a control station (located upcurrent of the ODMDS), two stations located immediately outside the ODMDS (roughly 300 feet from the ODMDS edges), and two stations located some distance down-current from the site (approximately 10,000 feet southwest of the downcurrent edge of the ODMDS) should be sampled for the items noted in the

following paragraph, to determine if impacts are occurring outside of the ODMDS. Substrate elevation should also be determined at each sampling station during each sampling event.

The stations shall be sampled before and at completion of disposal operations. Post-disposal sampling shall occur 6 months and 1 year after the cessation of discharge of new work material at the site. Samples shall be collected for macrobenthic invertebrates (in triplicate). Significant changes are defined as statistically significant differences in community structures or population density.

Data Analysis

If macrobenthic community structure is not significantly different than the control, then the management objectives are being met. Further monitoring shall be conducted as scheduled.

If significant changes are observed, then further analysis shall be conducted under Tier C2.

Tier C2

Bathymetric Surveys

If deposited dredged material mounds to elevations above the threshold value, then monitoring shall continue as scheduled, and could possibly be extended. A Notice to Mariners shall be posted as appropriate.

If transport of material from the site is occurring, hydrographic surveys shall be expanded to include the impacted areas to determine the changes in dispersion of the material. An accumulation of more than 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

During Dredging:

If deposited dredged material is mounding to elevations above the threshold value, but less than 15 feet above the existing bottom elevation, and there is no significant short-term transport of material beyond the limits of the ODMDS, then monitoring shall continue as scheduled. A Notice to Mariners shall be issued as appropriate.

If deposited dredged material is mounding to elevations greater than 15 feet above the existing bottom elevation, and there is no significant short-term transport of material beyond the limits of the ODMDS, then bathymetric monitoring shall continue as scheduled. A Notice to Mariners shall be posted as appropriate. If mounding is considered to be excessive, alterations to the placement operations may be warranted.

If significant movement of material out of the ODMDS is occurring, bathymetric monitoring shall be expanded to include the impacted areas to determine the changes in dispersion of the material. Following completion of disposal operations, surveys shall continue on a quarterly basis for 1 year or until agreement is reached between the USEPA, Region 6 and USACE-SWG to discontinue monitoring. Findings shall be documented for future reference.

After Dredging:

If deposited dredged material has mounded to elevations above the threshold value, but less than 15 feet above the existing bottom elevation; and there is no significant short-term transport of material beyond the limits of the ODMDS, then bathymetric monitoring shall continue at predetermined 6-month

intervals for 1 year or until agreement is reached between the USEPA, Region 6 and USACE-SWG to discontinue monitoring. Findings shall be documented for future reference and a Notice to Mariners will be issued as appropriate.

If deposited dredged material is mounding to elevations greater than 15 feet above the existing bottom elevation, and there is no significant short-term transport of material beyond the limits of the ODMDS, then bathymetric monitoring shall continue at predetermined 6-month intervals for 1 year or until agreement is reached between the USEPA, Region 6 and USACE-SWG to discontinue monitoring. Findings shall be documented for future reference and a Notice to Mariners will be issued as appropriate.

If significant movement of material out of the ODMDS has occurred, bathymetric monitoring shall be expanded to include the impacted areas to determine the changes in dispersion of the material and shall continue on a quarterly basis for a 1-year period or until agreement is reached between the USEPA, Region 6 and USACE-SWG to discontinue monitoring. Findings shall be documented for future reference.

Sediment Chemistry

If the results of the Tier C1 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 USEPA Region 6. Any such testing is contingent on availability of appropriated funds.

Data Analysis

If significant toxicity is not found, testing shall continue as described in Tier C1. However, subsequent sampling shall continue on a quarterly basis for the 1-year period following completion of disposed operations or until agreement is reached between USEPA, region 6 and USACE-SWG to discontinue monitoring findings shall be documented for future reference.

If significant toxicity is found, USACE-SWG together with USEPA, 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. A decision must also be made whether to allow continued use of this site. Findings shall be documented for future reference.

Benthos

A significant change in community structure or population density may be an indication that the substrate has changed. This could be a result of natural redistribution of sediments or the dredged material may be moving beyond the ODMDS at a faster rate than anticipated. A change in community structure could also indicate that toxicity has occurred. Monitoring the macrobenthic community shall continue on a quarterly basis until 1 year following completion of discharge operations has elapsed or until agreement is reached between USEPA, Region 6 and USACE-SWG to discontinue monitoring.

Data Analysis

If significant changes are observed but bathymetric monitoring indicates that there is no short-term transport of material beyond the limits of the ODMDS, as determined in the Bathymetric Surveys Tier C1, then this is an indication that the changes are not a result of dredged material placement. Further monitoring shall be conducted as scheduled.

If significant changes are observed and bathymetric monitoring indicates that there is short-term transport of material beyond the limits of the ODMDS, as determined in Bathymetric Surveys Tier C1, then this is an indication that the changes may be a result of dredged material placement. Further monitoring shall be conducted as scheduled.

- If significant changes are observed, 1 year following completion of disposal operations, then the monitoring shall continue on a quarterly basis for 1 additional year. If significant changes are observed after the second year, further monitoring plans will be developed based on the degree of impact.

If significant changes are observed and there is an indication that the sediments are toxic, as determined in the Sediment Chemistry Tier C2, then this is an indication that the changes may be a result of dredged material placement. Further monitoring shall be conducted as scheduled.

- If significant changes are observed 1 year following completion of disposal operations, then the monitoring shall continue on a quarterly basis for 1 additional year. If significant changes are observed after the second year, further monitoring plans will be developed based on the degree of impact.

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 off site. Chemical analyses of the sediment shall be conducted to identify if contaminants of concern are suspected to be affecting the benthic environment of 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 10 feet, or other mutually agreed-upon elevation, 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 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 will be based on a comparison of the results of these before and after surveys.

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

Surveys will 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 1 foot. The fathometer, which shall display real-time depth on real-time location, must have a precision of 0.5 foot. All data will 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-disposal survey, then the monitoring program will 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 5-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 as 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 to the benthic community. The studies are described below as Biological Testing under Tier M2.

Tier M2

Bathymetric Surveys

If transport of material from the sites is occurring, hydrographic surveys will be expanded to include the impacted areas and will be performed on a semi-annual basis to determine the changes in dispersion of the material until the impacts no longer occur. A depth of more than 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 15 feet above the existing bottom elevation; and there is no significant short-term transport of material beyond the limits of the ODMDS, then semiannual post disposal monitoring will 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 will be continued.

If deposited dredged material is mounding to elevations greater than 15 feet, and/or significant movement of material out of the ODMDS has occurred, SWG, together with USEPA, 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 USEPA, 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 USACE-SWG, together with USEPA, 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 eminent, a decision must also be made whether to allow continued use of this site.

X. 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 Matagorda Ship Channel 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 USACE-SWG or USEPA, Region 6. following a 30-day review period of the change(s), the modifications may be incorporated into the plan by mutual consent of both agencies.

XI. References

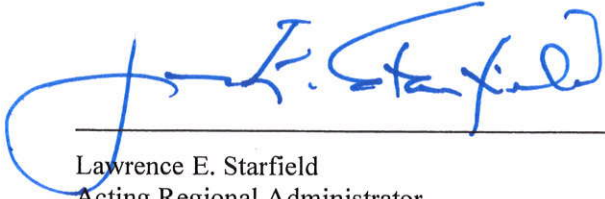
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- . 2003. Regional Implementation Agreement for Testing and Reporting Requirements for Ocean Disposal of Dredged Material Off the Louisiana and Texas Coasts Under Section 103 of the Marine Protection, Research and Sanctuaries Act. U.S. Environmental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

This Site Management and Monitoring Plan complies with Section 102(c)(3) of the Marine Protection, Research, and Sanctuaries Act of 1972 (33 USC 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:



Lawrence E. Starfield
Acting Regional Administrator
Region 6
U.S. Environmental Protection Agency

9/15/09

Date



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

20 October 2009

Date