



**US Army Corps
of Engineers** ®
Portland District

FINAL

Site Management/Monitoring Plan

Coos Bay, Oregon

Site E, Site F, and Site H

EPA Section 102

Ocean Dredge Material Disposal Sites (ODMDS)

2006

ABSTRACT

This Site Management/Monitoring Plan (SMMP) has been prepared jointly by EPA, Region 10, and USACE, Portland District, and describes management and monitoring requirements for EPA-designated ODMDSs located offshore from Coos Bay, Oregon. This SMMP supersedes all previous SMMPs for the Coos Bay ODMDSs. Periodic review and updating of the SMMP will occur on at least a 10-year schedule. All permits or other authorizations to use Coos Bay ODMDSs shall be conditioned as necessary to assure consistency with this SMMP.

Coos Bay ODMDS Site Management/Monitoring Plan

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Introduction

This Site Management/Monitoring Plan (SMMP) was prepared jointly by the U.S. Environmental Protection Agency, Region 10 (EPA), and U.S. Army Corps of Engineers, Portland District (USACE), and describes management and monitoring requirements for EPA-designated sites located offshore from Coos Bay, Oregon (figure 1). The SMMP becomes effective with the completion of site designation and supersedes and replaces all previous Coos Bay ODMDS SMMPs.

It is the responsibility of the EPA and USACE to manage and monitor each of the ODMDSs designated by EPA pursuant to Section 1002 of MPRSA. SMMP provisions shall establish requirements for all dredged material disposal activities at the site. All Section 103 ocean disposal permits or evaluation shall be conditioned as necessary to assure consistency with the SMMP.

Guidance for the preparation of ODMDS SMMPs in accordance with WRDA 1992 and the MPRSA, as amended, is provided in the joint EPA/USACE Guidance Document for *Development of Site Management Plans for Ocean Dredged Material Disposal Sites* (USACE/EPA 1996). This guidance document lays out a recommended framework for site management plan development and content.

Specific management of designated ODMDSs involves regulating the times of use, the quantity and the physical/chemical characteristics of dredged material that is dumped at the site; and establishing disposal controls, conditions, and requirements to avoid and minimize potential impacts to the marine environment. Appropriate management of ODMDSs is aimed at assuring that disposal activities comply with permit requirements, site management objectives and conditions, and do not unreasonably degrade or endanger human health, welfare, the marine environment or economic potentialities. Monitoring the site and adjacent environs is a critical component of management to verify compliance with requirements, objectives, and conditions and that unanticipated or significantly adverse effects are not occurring from past or continued use of the disposal site and that permit terms are met.

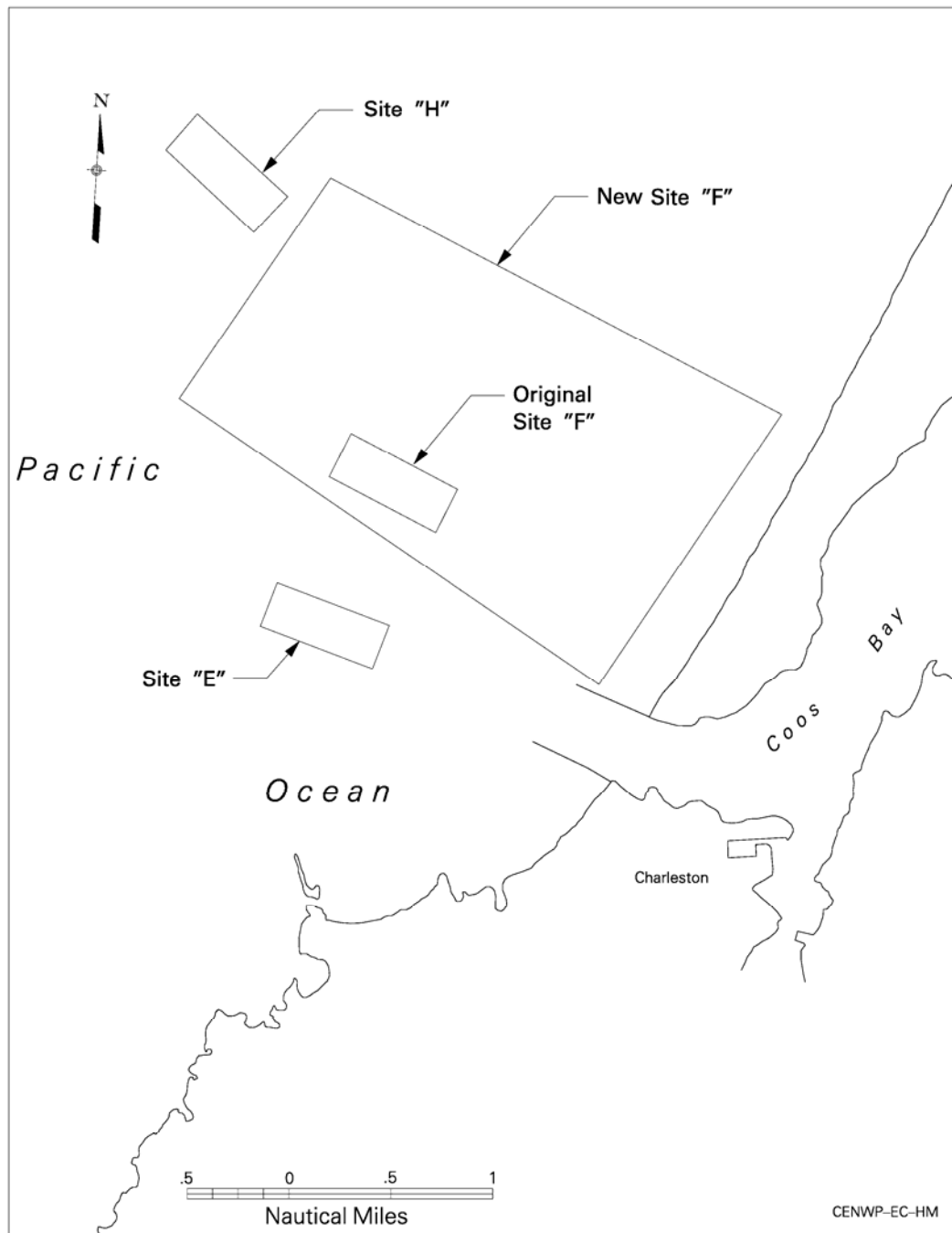


Figure 1: General Site Map Coos Bay ODMDS.

Site Management Roles and Responsibilities

Ocean disposal is a federal, non-delegatable program. Site designations and management are a federal responsibility. Owing to the interactive nature of regulating ocean disposal of dredged material, the functional management of ocean dredged material disposal sites along the coast of Oregon is shared between EPA, Region 10 and the USACE, Portland District. The EPA and USACE will routinely consult on all decisions regarding site use and management. The primary mechanism for pre-disposal consultation will be the annual ODMDS monitoring update prepared by the Portland District.

The EPA may condition, terminate or restrict site use with cause. Region 10 is responsible for ocean disposal in ocean waters off the States of Alaska, Washington, and Oregon, which includes the Coos Bay ODMDSs addressed in this SMMP.

The USACE is expected to be the primary user of ODMDS for dredged material from federal navigation projects. The USACE also issues the permits for transportation of dredged material for the purpose of ocean disposal, after consultation with and concurrence from the EPA in compliance with these criteria.

Baseline Definition

MPRSA 102(c)(3)(A) requires that the SMMP include a baseline assessment of conditions at the site. The record for the Pacific Ocean off Coos Bay includes over thirty years of studies and surveys which are pertinent to dredged material management. Assessments of physical, chemical and biological characteristics of the section of the north Pacific Ocean encompassing these Coos Bay ODMDSs is described in two environmental impact statements (1985 and 1994) for ODMDS site designation and other technical studies and annual monitoring surveys. There are no rare, unique, or critical habitats at or in the vicinity of the ODMDSs. . All the sites are situated within sight of land in open, dynamic ocean environment. The seafloor is characterized as relatively uniform and featureless with highly active shifting sands grading to shifting silts as it slopes (10/100 feet) westward into deeper water. All sites had been used for disposal of dredged material at the time of designation.

Pacific Northwest ocean dumping sites are usually dispersive. However, mounds (and potential navigation hazards) developed at other ODMDSs when more material was placed in discrete locations than the ocean had capability to disperse by the next disposal event. Current understanding and experience indicate *very slow dispersion* from mounds at ocean depths greater than 18 meters. Much higher dispersion rates have been observed within nearshore areas with depths shallower than 18 meters.

Bathymetric baseline for existing ODMDS E and H was established at the time of formal designation, i.e., 1986. Bathymetric baseline for the newly designated ODMDS F is established with designation of the expanded site, i.e., post disposal bathymetric surveys for years 2004 and

2005.

Site Definitions and Description

Disposal Site Definitions

For the purposes of management and monitoring of designated ODMDS the following definitions are applicable:

Disposal Site: The sea bottom and overlying water column that is described in the applicable *Federal Register* Final Rule designating the individual site. A disposal site can consist of a placement area, appropriate drop zones(s), and a buffer (if applicable).

Placement Area (also can be called disposal area): The area of the sea bottom that will be immediately occupied by disposed dredged material released at the water surface (1) on an annual use basis, and/or (2) over the anticipated life of the disposal site. Generally, the placement area for dispersive sites is designated and managed on a seasonal or annual cycle. Material discharged and accumulating in the placement area during the active disposal season is expected to be transported out of the site and redistributed by natural forces (e.g., tides, currents, waves) leaving the placement area with near its original capacity. The placement area for non-dispersive sites are designed and managed for an ultimate accumulated volume capacity or for a specific number of years. Material discharged and accumulating in non-dispersive placement areas is not expected to be transported outside the boundaries of the disposal site, although natural forces may redistribute placed material on-site immediately or over several years.

Drop Zone (also can be called target zone, release zone): A drop zone is a defined area at the water surface within the placement area and within which dredged material discharge may occur. Drop zones are a management tool with the purpose of controlling where material discharged at the surface will impact and accumulate on the bottom. Drop zones are typically smaller than the placement area or are offset within the placement area to account for the spread of material as it descends through the water column and impacts on the bottom. The Drop Zone may be further subdivided into “cells” for more specific placement control.

Disposal Site Descriptions

EPA designated three ODMDSs (E, F and H) in 1986 primarily to accommodate disposal of dredged material from federal navigation channel and projects in Coos Bay. The sites had been used for disposal of dredged material since at least 1977. In 2006, EPA designated a new, substantially larger ODMDS F (figure 1). As part of the 2006 designation, the SMMP was revised and updated. All three Coos Bay ODMDSs are subject to this SMMP. The sites are primarily intended to receive suitable dredged material from the USACE Coos Bay navigation project, other local USACE projects, and appropriately permitted dredged material from non-USACE projects. Dredged material to be disposed of in the ocean under Corps permit is subject to USEPA site management requirements in this SMMP.

Table 1. Coordinates (NAD 1983) and Dimensions of the Sites

Site (Year)	Depth (m)	Size (m)	Coordinates (Degree, minute, decimal second)
H ¹ (1986)	55	1097 x 442	43° 23' 52.4012"N, 124° 22' 52.4313"W 43° 23' 41.4011"N, 124° 23' 05.4316"W 43° 24' 15.4014"N, 124° 23' 30.4333"W 43° 24' 04.4012"N, 124° 23' 42.4335"W
E ² (1986)	17	1097 x 427	43° 21' 58.3999" N, 124° 22' 49.4291" W 43° 21' 47.3999" N, 124° 22' 03.4270" W 43° 21' 34.3998" N, 124° 22' 09.4270" W 43° 21' 45.3997" N, 124° 22' 55.4291" W
F (2006)	6-51	4450 x 2450	43° 22' 54.8887"N, 124° 19' 28.9905"W 43° 21' 32.8735"N, 124° 20' 37.7373"W 43° 22' 51.4004"N, 124° 23' 32.4318"W 43° 23' 58.4014"N, 124° 22' 35.4308"W

Site H: This site is located the farthest offshore of Coos Bay (3.4 nautical miles) and located in the deepest water. Site coordinates and dimensions are provided in table 1. The existing site has proven adequate for disposal needs under current management practices. The site is dispersive for fine-grained material. See figure 1.

¹ This site was originally designated using NAD 27 datum using standard degree, minutes and seconds. Those original coordinates: 43° 23' 53"N, 124° 22' 48"W; 43° 23' 42"N, 124° 23' 01"W; 43° 24' 16"N, 124° 23' 26"W; 43° 24' 05"N, 124° 23' 38"W (NAD 27) have been converted to NAD 83 datum. The location of the site itself has not changed.

² This site was originally designated using NAD 27 datum using standard degree, minutes and seconds. Those original coordinates: 43° 21' 59" N, 124° 22' 45" W; 43° 21' 48" N, 124° 21' 59" W; 43° 21' 35" N, 124° 22' 05" W; 43° 21' 46" N, 124° 22' 51" W (NAD 27) have been converted to NAD 83 datum. The location of the site itself has not changed.

Components of the Disposal Site: The Disposal Site, Placement Area, and Drop Zone are identical.

Disposal Capacity: Since 1986, more than 6.7 million cubic yards have been dumped at site H, for an average annual loading volume of 375,000 cubic yards. Persistent mounding has not occurred. Over the long-term, site capacity seems to be unlimited. More than 1.3 million cubic yards were dumped at site H in 1997 without problem indicating that site capacity is substantial in the short-term as well. Material placed redistributes north and northeast out of the site.

Site E: This site is located approximately 1.5 nautical miles off the entrance to Coos Bay and slightly south of the channel line. Site coordinates and dimensions are provided in table 1. In 1987, disposal of dredged material at Site E was limited to no more than 150,000 cubic yards annually. No material was placed at site E between 1990 -2005. In 2006, a limited dump of 100,000 cubic yards was allowed. See figure 1.

Components of the Disposal Site: The Disposal site, Placement Area, and Drop Zone are identical.

Disposal Capacity: Although the site is dispersive, material transport is slow and complicated by legacy mounding developed in the 1980s. Since 1987,

Site F: The site is the largest of the Coos Bay ODMDS and is located offshore and north of the entrance to Coos Bay. It extends from approximately .5 nautical mile from the shoreline to approximately 3 nautical miles into the open Pacific Ocean. Site coordinates and dimensions are provided in table 1. Most of the site has been used by the Corps under section 103 authority during the past 10 years. The 103 authorization expired in 2005. See figure 1. The larger site F is a departure from past practices along the Oregon coast in that it allows disposal opportunities over a wider area rather than concentrating disposals into the smallest possible area. The advantages of this management option are that impacts at any one location are reduced and recovery time between disposal events is increased, and bottom topography effects are reduced.

Components of the Disposal Site: The Disposal Site and Placement Area are identical. Because the site is large, Drop Zones will be established (either as part of annual maintenance dredging planning or permit review) for individual disposal events depending on where and how material is to be placed in the site. The site is further divided (for management purposes) into a nearshore zone and an offshore zone.

Disposal Capacity: Due to the size of the site and the fact that it is dispersive throughout, capacity is virtually unlimited. However the strength and rate of dispersion that can be expected varies. Monitoring data and historic experience at this location indicate that very slow dispersion from deposits at depths greater than 18 meters should be assumed. Much higher dispersion rates have been observed for material placed within the nearshore area at depths shallower than 18 meters.

Anticipated Site Use

MPRSA 102(c)(3)(E) requires that the management plan include consideration of the anticipated use of the site. Primary and regular use of the Coos Bay ODMDS sites is expected by the Portland District, Corps of Engineers, for maintenance material removed from the federal navigation project; a summary of the project is included in this SMMP. Recent maintenance volumes dredged by the Corps from the Coos Bay navigation channel and entrance channel have averaged 1.3 million cubic yards annually. It is expected that the ODMDSs will also be used in the future for disposal of material dredged by other public or private entities (e.g., the International Port of Coos Bay or berth owners) in accordance with Section 103 of the MPRSA. These disposals would require Section 103 permits (which could be multiple-year authorizations) from the Regulatory Branch of the Corps of Engineers and EPA concurrence. Individual permits are typically public noticed and require other federal consultations (e.g., ESA, EFH) and authorizations (e.g., water quality certification). Permitted disposals in the ocean from Coos Bay have typically averaged less than 100,000 cubic yards annually and most frequently have been directed to site H because the material is fine-grained.

Coos Bay Navigation Project Description

The authorized project includes two high-tide, rubble mound jetties at the entrance to Coos Bay.

The channel across the outer bar (from RM -08+100 to RM 0) is 47 feet deep and 700 feet wide. The size of the channel then gradually decreases to 37 feet deep and 300 feet wide at RM 1.0. These dimensions continue to RM 9.0. At RM 9.0 the channel widens to 400 feet and continues to RM 15.0; it then decreases to 22 feet deep and 150 feet wide until RM 17.0.

Turning basins at Coal Bank Slough and the City of North Bend are 37 feet deep, 900 feet wide, and 1,000 feet long. An anchorage 37 feet deep, 800 feet wide, and 1,000 feet long is authorized at Empire. This anchorage was abandoned as mitigation for expansion of the RM 12 turning basin.

An access channel 17 feet deep and 150 feet wide runs from deep water in Coos Bay—at approximately RM 2 on the main Coos Bay channel—to the mooring basin at Charleston. The Charleston mooring basin is 17 feet deep, 500 feet wide, and 900 feet long. The South Slough Channel Extension is 16 feet deep and 150 feet wide; it runs from the mooring basin to the highway bridge across the Slough at RM 1.3.

Site Management Objectives

The primary objective of this SMMP is to provide for the safe and efficient disposal of dredged material at each of the Coos Bay ODMDS while minimizing effects to coastal resources. General objectives for accomplishing this are to:

1. Avoid creation of persistent mounds,
2. Beneficially use dredged material when practical,
3. Minimize long-term adverse effects to marine resources,
4. Minimize interference with other uses of the ocean, and
5. Maintain safe navigation and commerce,
6. Promote safe and efficient dredge operations; and
7. Document disposal and monitoring activities at the ODMDS.

These general site management objectives apply to both all the ODMDSs; however, owing to the different characteristics of each site, the specific management requirement to meet those objectives will be different. Additionally, management restriction specific to each site may have been or be imposed. Specific individual site objectives and restrictions will be periodically reassessed and/or revised in the future.

Individual Site Objectives

Site H

- Manage for dredged material primarily removed from above RM 12.
- Manage placement of material to maximize erosion and dispersal into the active littoral zone (generally northward).

Site E

- Manage primarily for fallback use in adverse sea conditions that prevent disposal at other ODMDS.
- Manage primarily for dredged material removed below RM 12.
- Place material to maximize erosion and dispersal into the active littoral zone *southward*.
- Encourage continued erosion of historic mound by placement of *not more than* 150,000 cubic yards (preferably less) annually to retain mound formation below -60 feet MLLW.

Site F

- Manage primarily for dredged material removed below RM 12.
- Place material to maximize erosion and dispersal into the active littoral zone *northward*.
- Encourage continued erosion of historic mounds at and north of former site F.

Site Monitoring and Special Studies

Site monitoring is a key component of site management. The main purpose of a disposal site monitoring program is to determine compliance with site use requirements or conditions and whether dredged material site management practices, including disposal operations, at the site need to be changed to avoid unreasonable degradation or endangerment of human health or welfare or the marine environment. These activities are collectively referred to as “Routine Monitoring” throughout the SMMP. Routine monitoring events may be triggered annually or some other time period (e.g., five years), when a set volume of material has been placed, or a combination of volume and chronology. Special Studies will be undertaken as necessary to address specific questions or issues that are not covered by routine monitoring events. Such situations could include follow-up after an accident (e.g., spill of a material) or in advance of use of a new type of equipment, or a different type of material (e.g., rocks). The results of these Special Studies are intended to refine future management objectives and practices, modify routine monitoring requirements or reset Baseline conditions.

Potential decision outcomes resulting from routine monitoring of disposal at one or both of the ODMDS include the following:

No Change:

No Change *Required* (e.g., routine monitoring reveals no cause for concern; disposal and monitoring continue as planned)

No Change *Possible* (e.g., one-time event or accident; while there may be no change in disposal operations, other actions may be appropriate)

Additional Information Required:

Adjust routine monitoring (e.g., go to a higher intensity tier)

Special Study

Operational Change Required:

Scheduling (e.g., adjust time periods or rates of disposal)

Adjust Placement of Material Within Site (e.g., place material in a different Drop Zone or in a different manner)

Restrict Type or Quantity of Material Placed

Change Sites:

Relocate disposal activities from one site to another (i.e., days to weeks);
follow-up with monitoring to determine if additional attention warranted).

Discontinue Disposal Site Use:

Cease Disposal--Short-Term (e.g., 1 season) (A known temporary condition;
follow-up with monitoring to determine if additional attention warranted).

Cease Disposal--Long-Term. Typically this would occur when routine monitoring or a Special Study confirms an unacceptable condition persists.

This would require site modification or identification and designation of a new site(s).

Routine Monitoring

The 1996 Guidance Documentation (USACE/EPA, 1996) for developing management plans states that continuous monitoring of all physical, chemical, and biological parameters and resources in and around a typical disposal site is not necessary.

Routine monitoring typically follows a tiered framework: simple techniques for monitoring of activities or their consequences occupies the lowest tier while more complex monitoring techniques occupy higher tiers. Only the level of monitoring needed to address specific management questions would be undertaken

The following Specific Monitoring Objectives are identified for the Coos Bay ODMDS:

- Ensure that dredged material is being placed as required by this SMMP.
- Ensure that the dredged material is behaving as predicted during placement (e.g., monitoring v. modeling).
- Placement of dredged material does not create persistent and adverse wave-generating mounds (principally shallow water concern).
- Assess the significance of potential impacts of disposal operations on the public safety and resources or resource use.
- Verify that material is moving out of the dispersive sites over time, as predicted, providing long-term capacity without adverse effects.

Coos Bay ODMDS Site Routine Monitoring.

For management purposes, routine monitoring will concentrate on determining how to distribute material (1) in the nearer shore portions of the site to augment littoral processes, and (2) throughout the deeper portions of the site to avoid or minimize mounding. Bathymetric surveys shall be conducted annually for all sites. The number and length of transects required for annual assessment will be sufficient to encompass the ODMDS and at least a 500 feet wide perimeter around the site, EXCEPT for the shoreward boundary of site F where shallow water and waves would make this requirement dangerous or impossible. Bathymetric surveys will be used to monitor the disposal mound(s) to assist in verification of material placement, to monitor bathymetric changes and trends and to insure that the site capacity is not exceeded, (i.e., that the mound does not exceed the site boundaries). The entire site is surveyed in mid- to late-spring to assess the potential capacity of the site (i.e., how much of the previous year's disposed material has dispersed from the site?). If weather permits, a post-disposal survey is conducted at the end of the dredging season to verify placement accuracy and configuration of the placed material. As needed, smaller surveys (i.e., not whole site) will be conducted at intervals during disposal to check for placement accuracy, appropriate configuration of material on the bottom (i.e., mound heights), and to verify computer model predictions on uniform placement. Annual bathymetric profiles are evaluated for cumulative changes based upon comparison of the oldest and most complete surveys available with the then-current survey results. This information will be provided as part of the annual assessment report.

Because of the government's interest in maintaining shoreline amenities and structures, off-site beach monitoring is required during the first 10 years of site use. Measurable changes to the beach slope, composition or topography are not expected, except perhaps in the vicinity of the North Jetty, due to the disposal of dredged material. The Corps may propose to satisfy this requirement through a special study.

Periodic reassessment of the use of the site and surrounding area by important biological resources will occur on a 7-9 year schedule. The level of effort for this reassessment is expected to be similar to past studies in the area. It is anticipated that such reassessments will be documented as a stand-alone report. If possible

The National Marine Fisheries Service (NMFS) specifically requested to receive copies of annual bathymetric surveys. EPA will provide a copy of the annual assessment report to NMFS.

Special Studies

Special Studies are non-routine studies of specified duration that are intended to address specific questions or issues that are not covered by routine monitoring events or that arise from routine monitoring. The obvious need for a Special Study would be following an accident or spill, such as occurred near Coos Bay with the *New Carissa*. Under such circumstances, the EPA and USACE would mutually scope and conduct appropriate study(ies) to determine the effect of the incident on the site(s) and whether specific contingency or even enforcement action would be necessary. The results of any Special Studies would be used to refine future management objectives and practices, modify routine monitoring requirements, or reset baseline conditions. Depending on the objective of the study, technical assistance or advice would be sought from other federal agencies, academia, and/or the state. It is anticipated that special studies would be coordinated with the Northwestern Regional Dredging Team.

The following special studies will be conducted during the first five years of the effective date of this SMMP. The USACE and EPA mutually will develop a work plan and schedule.

Site E & F

1. Sediment Transport and Fate.

A sediment transport and fate special study would involve the assessment of transport rates and fate of material placed. Various methods are available to further assess sediment transport and fate including detailed bathymetry, seabed drifters, sand tracers, various acoustic methodologies, and modeling. The goals of this special study would be to quantify movement out of the site, define (perhaps quantify) factors affecting movement, assess potential benefits of continued site use, and refine management strategies in the site.

2. Mound Test/Placement Verification.

Material is to be placed such that it does not deposit outside of the Placement Area. Current placement models do not incorporate the effects of sediment placement (primarily spread) on a (developing) mound. Routine monitoring by bathymetric surveys are not sufficiently sensitive to define the outer limits of the mound created by a disposal event. A mound test and placement verification special study would involve the investigation of mound development and configuration along with sediment and benthic infauna succession. Sediment profiling cameras (SPI) can be used to verify the spread of the outer flank (thin layer) of the mound. This information can be used for model verification. In addition information can be gathered regarding sediment characterization and when preformed over several years biological succession. The goal of this special study includes verification of placement of the dredged material as planned inside the Placement Area and specific Drop Zones, documentation of the extent and changes in sediment characteristics, document changes over time in sediment characteristics and benthic community, and to reassess the existing point-dump versus thin-layer placement strategy. It is expected that two field surveys would be required, one after the disposal event and one the following year.

3. Macroinvertebrate/Groundfish.

Studies on aquatic resources will verify the predicted level of effects from disposal. This study would primarily use the SPI technique used to assess the mound characteristics for benthic invertebrate assessment. This effort will be coordinated with the previously described special study. Trawling surveys may be needed to assess macroinvertebrate and groundfish species population characteristics. Any abnormalities found to occur in these groups will also be noted.

Restrictions and Requirements

Individual Site Requirements

Site H

(1) Only clean dredged material can be placed into the ocean under current statutes and regulations. Sediment suitability must be documented prior to disposal at the site following procedures³ approved by the Regional Sediment Evaluation Team.

(2) Only fine-grained material (typically originating above RM 12 in Coos Bay) may be discharged.

³ Current approved procedures are the *Dredged Material Evaluation Framework for the lower Columbia River Management Area (DMEF)*, 1998. See "Quantity of Material and Presence of Contamination" section.

Site E

- (1) Only clean dredged material can be placed into the ocean under current statutes and regulations. Sediment suitability must be documented prior to disposal at the site following procedures⁴ approved by the Regional Sediment Evaluation Team.
- (2) Because of legacy mounding at site E, use will generally be limited to situations when the approach to the other ODMDS is unsafe (i.e., adverse weather conditions) and when littoral drift reversals occur (i.e., moving south rather than north) that would move disposed material away from the channel.
- (3) Disposal of dredged material at site E is limited to no more than 150,000 cubic yards annually because of its proximity to the entrance channel and shallow depth.

Site F

- (1) Only clean dredged material can be placed into the ocean under current statutes and regulations. Sediment suitability must be documented prior to disposal at the site following procedures⁵ approved by the Regional Sediment Evaluation Team.
- (2) For management purposes, the site is divided into 2 basic sediment transport zones, with active, year-round transport within the 8 to 15 meter depth zone (nearshore zone), and a less active zone from 15 to 46 meters with transport gradually diminishing with season and depth (offshore zone).
- (3) Nearshore Zone:
 - a. The nearshore zone will be managed preferentially for sands (e.g., material dredged below RM 12) and placements designed to augment the foundation of the North Jetty and remain in the active littoral system and available to replenish the Coos Bay-Umpqua beach/dune system.
 - b. Pursuant to Conservation Recommendation by NOAA, disposals into the nearshore zone before June 1 of any year are limited to essential work when other disposal options are not available.
 - c. Disposals will be “staggered” (i.e., non-continuous and non-repetitive) to achieve initial deposit mounds with gradual side slopes. This will also be responsive to another Conservation Recommendation by NOAA.
- (4) Offshore Zone:
 - a. The offshore zone is progressively less dispersive with greater depth. Some mounding is expected at any location within this zone from initial disposal and subsequent redistribution by currents. Disposals in this zone should be designed to be spread the material over a large bottom area and to achieve minimum initial accumulation. In no case should material be placed such that the mound protrudes above -50 feet MLLW in order to minimize potential wave generation.

⁴ Current approved procedures are the *Dredged Material Evaluation Framework for the lower Columbia River Management Area (DMEF)*, 1998. See “Quantity of Material and Presence of Contamination” section.

⁵ Current approved procedures are the *Dredged Material Evaluation Framework for the lower Columbia River Management Area (DMEF)*, 1998. See “Quantity of Material and Presence of Contamination” section.

b. The offshore area will primarily be managed for disposal of sands; however, silts can be discharged in this zone if site H is unavailable.

(5) For the first 10 years of site use, the area of the old site F (see figure 1) adjacent 450 meters immediately north will not be directly disposed on to allow the legacy mounds to erode and recover.

Annual Summary Assessment Requirement

The operational mechanism for use and monitoring of sites on an annual basis as well as management decision-making will be the annual summary report updates. The annual summary report for a given dredging year is based on the results of the previous year's monitoring, the pre-dredging/disposal hydrographic surveys (typically conducted in the spring), and dredge operating parameters. The summary will focus on any operational adjustments which should be implemented. It is expected that the primary user of the ODMDS will be the USACE for material dredged from federal projects. The summary will identify the capacities of the ODMDS, expected volumes to be discharged, dredging and disposal techniques, timings and locations, routine monitoring or special studies, and other considerations drawing on the then-current site use conditions and SMMP. The USACE, either as user of the site or as permitting authority, will take the lead to draft the summary and provide it to EPA. Once reviewed by EPA, the summary will constitute the template for that year's disposal. EPA recognizes that the summary cannot anticipate every operational situation and that day-to-day flexibility in dredging and disposal decisions will be necessary. However, the user will make every effort to consult with EPA and seek their concurrence before changes are initiated, for example, decisions to increase the spacing between the dumping positions, to shift disposal operations to other portions of the site, to redistribute material at a site or to an alternate site, or to make other significant changes in site use or management.

Record-Keeping and Reporting Requirements

Daily records are required of dredgers indicating where material was dredged and where and how material was placed. Also required to be recorded are start and endpoint coordinates for each load placed. An annual summary report of quantities dredged and placed at each site will be prepared and provided to EPA.

Data from any routine monitoring or special studies will be compiled and submitted to the EPA (ATTN: Region 10, Ocean Dumping Coordinator). These results will be evaluated by EPA and the USACE and these agencies will attempt to make consensus decisions concerning the need for management changes regarding the site. In addition, EPA should be notified by the USACE 15 days prior to the beginning of a dredging cycle or project disposal. Holders of Section 103 permits shall notify EPA not less than 10 days prior to use of any Coos Bay ODMDS.

Inspection and Surveillance Provisions

Contract dredges have 24-hour inspection by USACE personnel to ensure dredging and disposal

in the correct locations. USACE dredges are responsible for ensuring their proper positioning. USCG has surveillance role under MPRSA. EPA will typically utilize the inspection and surveillance capabilities of these other agencies; however, EPA may choose to implement its own inspection and surveillance requirements using EPA personnel or contractors. It is expected that EPA will cooperate with the USACE on any special studies.

Special Management Conditions or Practices

The following Special Management Conditions will be implemented at Coos Bay.

Placement Strategy

The placement strategy has a large influence on the consequences of disposal in any site. Placement strategies vary, ranging from individual dumps to the long-term distribution of material. Both EPA and USACE policy establishes a preference for beneficial use of dredged material. Of the three sites, use of the Site F, the intermediate and particularly the shallow nearshore portion, is judged to have greater potential to provide a positive benefit as dispersion of sediments is inshore toward the beaches as well as along existing bathymetric contours. Accordingly, any sandy material going to the ocean must preferentially use the nearshore of Site F. Exceptions to this requirement include: (1) material or equipment incompatibility; (2) weather or navigation safety (e.g., use of multiple dredges) conflicts; (3) expected volumes exceed annual capacity in any year; (4) conflict with non-federal conditions; and/or (5) specific restriction or direction by EPA.

A Uniform Placement Strategy is applied to all sites; however, the specific manner in which this strategy is applied at each site differs due to the size of sites E and H and the greater dispersive or less-dispersive characteristics of zones in site F. Application of “uniform placement” is most critical to each annual disposal particularly for the nearshore zone. Application of “uniform placement” is more of an expected outcome over the long-term and multiple-year disposals, particularly in the offshore zone of site F and at site H.

Presently, sites E and H are relatively small. Placement at these sites are still expected to result in a uniform accumulation on the bottom of dredged sediments, but the surface resulting from each disposal event will be rougher.

Equipment Considerations

The type of dredge used influences the dimensions of the individual and cumulative dump mound. No specific disposal technique is required at any Coos Bay ODMDS. For the hopper dredges that commonly work in Coos Bay, the USACE’s multiple bottom-door hopper dredge ESSAYONS for each load would produce a thinner deposit than the split-hull contract hopper dredges at any given water depth. Material discharged from a barge is typically more consolidated than material discharged from a hopper dredge. Hopper dredges are the dredge

type normally deployed at Coos Bay for sandy material. Clam shell and hopper barges are typically used for the fine-grained material above RM 12 and permit work.

Quantity, Seasonal and Weather Restrictions

Quantities placed at the sites will vary year-to-year based on dispersal and will be monitored. Disposal volumes and placement will be closely monitored and documented, especially in shallow water, to verify uniform placement, and to assess dispersive capability. Adverse sea and weather conditions limit dredging and disposal to a period typically from June through October. No other seasonal restrictions are considered necessary at this time. Even during the dredging season, storm events can restrict disposal events. Based on conservation recommendations by NMFS under EFH, EPA will closely scrutinize disposals into the nearshore zone of site F proposed to occur earlier than June 1st of any year. Generally, only material that needs to be removed for navigation safety considerations, and for which no feasible alternative disposal options exist, may be dumped into these portions of site F. As monitoring results are compiled, should any such restrictions appear necessary, disposal activities will be scheduled so as to avoid adverse impacts.

Equipment Requirements and Discharge Point

Hopper dredges or clamshell and barge operations could include USACE and private contract dredges. All such operations are required to meet all US Coast Guard requirements for safety. They are also required to use modern global positioning equipment capable of fixing their location within plus or minus 3 feet to ensure that material is placed within the designated disposal sites/Drop zones.

Debris Removal Provisions

Debris is material that could cause interference with particular uses of the ocean. Floatable debris comprises material such as logs that could cause navigation hazards or solids, such as plastic or wood chunks that could foul beaches. Non-floatable debris comprises material that could reasonably be expected to cause conflicts with bottom-net or trawl fishing. As a general rule, non-floatable, non-sediment materials that would pass through a 24-inch x 24-inch mesh is not considered debris if it is dredged as part of the sediment matrix.

The USACE or EPA may make dredging or disposal area inspections to ensure that the contractor is in compliance with the approved operating plans, and that debris is removed prior to discharge at ODMDSs. The need for such a requirement will be assessed during the planning or permitting process. Floatable debris must be either removed at the dredging area or picked out of the water at the disposal area. Sediments, which contain debris that is not easily removed, may require screening through a 24-inch x 24-inch mesh. The mesh must be periodically cleaned and the debris disposed of according to the approved dredging and disposal plan. Hopper and pipeline dredges are incapable of picking up large debris.

Discharge of debris at ODMDSs is prohibited unless specifically allowed. Typically the

planning or permitting process assesses the potential risks of any debris that could be encountered during dredging. Dredging contractors and USACE dredge captains are required to maintain a record of the handling of debris encountered during dredging and disposal. Compliance inspectors may review these records. Copies of these records may be required as part of annual reporting.

Quantity of Material and Presence of Contamination

MPRSA 102(c)(3)(D) requires that management plans include consideration of the quantity of the material to be disposed of at the site, and the presence, nature, and bioavailability of the contaminants in the material.

The dredged material placed is not expected to remain within the boundaries of the ODMDS after disposal. The rate and direction of movement across the ODMDS boundaries is determined by physical transport mechanisms. Depending on these transport mechanisms and the nature of the material, transport may be rapid and continuous, or may occur only during episodic events, such as storms or seasonal changes in transport mechanisms.

Only clean dredged material can be placed into the ocean under current statutes and regulations; there is no need for further restriction on material suitability. Material suitability must be documented prior to disposal at the site. This is typically completed as part of regulatory permitting (non-Corps) or the Corps' substantive review process. All sediments to be placed at the ODMDS will be evaluated according to then-current requirements of the MPRSA, national guidance, and local manual and determined to be suitable for that purpose. At this time, the *Dredged Material Evaluation Framework* (DMEF) (USACE et al., 1998) is the local manual. Representatives of the USACE Portland District, EPA Region 10, other federal agencies and the States of Oregon and Washington comprise the Regional Sediment Evaluation Team (RSET), which has been tasked to develop a comprehensive Sediment Evaluation Framework for the Pacific Northwest by the Northwestern Regional Dredging Team (RDT). When the regional manual is completed, it is expected to replace the existing DMEF. It is expected that the interagency RSET will be used to evaluate the suitability of all sediments in the future. The current and future RSET evaluation procedures are designed to be consistent with the MPRSA and the CWA.

Characterization records of dredged material approved to be disposed at any of the Coos Bay ODMDSs shall typically be retained by the USACE—either as the entity responsible for the dredging and disposal (Planning and/or O&M program) or the permitting agency (regulatory permits). Ultimately, all sediment data will be routinely entered into the Northwestern RDT sediment database where it would be publicly available. Secondary copies of characterizations will be retained by EPA.

Site Management Plan Review and Revision

MPRSA 102(c)(3)(F) requires that the management plan include a schedule for review and

revision of the plan. This SMMP is now in effect. SMMP revisions will be made as determined necessary by EPA. Should the results of monitoring or special studies indicate that the continued use of any ODMDS would lead to unacceptable effects, then this SMMP will be modified as necessary to mitigate the adverse effects. While minor refinements to SMMP elements are expected during the first 10 years, no substantive revision of the SMMP is anticipated before 2016. At least every 10 years thereafter throughout the life of the sites, EPA will conduct a substantive review of the SMMP. These reviews will likely involve coordination with other agencies, technical experts, and stakeholders.

Literature Cited

- Boesch, D. F. 1984. "Introduction: Field Assessment of Marine Pollution Effects: The Agony and the Ecstasy." In: H. H. White (ed.) *Concepts in Marine Pollution*. Univ. of Maryland, College Park, Maryland. pp. 643-646.
- DMEF. 1998. Dredge material evaluation framework for the lower Columbia River management area. U.S. Army Corps of Engineers, Portland District and Seattle District; U.S. Environmental Protection Agency, Region 10; Oregon Department of Environmental Quality; Washington State Department of Natural Resources and Department of Ecology.
- Geo Recon International Lmt., 1989. "Results of a Sidescan Sonar and Sub-Bottom Profiling Study, Coos Bay, Oregon," Prepared for USACE, Portland District, under Contract. p. 7.
- Fredette, T. J., G. Anderson, B. S. Payne, and J. D. Lunz. 1986. "Biological Monitoring of Open-Water Dredged Material Disposal Sites." *Oceans 86 Conf. Rec.* 764—769.
- Fredette, T. J., D. A. Nelson, J. E. Clauser, F. J. Anders. 1990. "Guidelines for Physical and Biological Monitoring of Aquatic Dredged Material Disposal Sites." Technical Report D-90-12, US Army Engineer Waterways Experiment Station Vicksburg, MS.
- Interstate Electronics Corporation, 1973. "An Atlas of Ocean Waste Disposal Sites," Prepared for US Environmental Protection Agency, Ocean Disposal Program, Under Contract 68-01-0796. Six Volumes.
- Johnson, B.H. 1990. User's guide for models of dredged material disposal in open water. Technical Report DRP-90-5. U.S. Army Engineer Waterways Experiment Station, Vicksburg MS.
- Johnson, B.H. and M.T. Fong. 1995. Development and verification of numerical models for predicting the initial fate of dredged material disposed in open water: Report 2, theoretical developments and verification results. Technical Report DRP-93-1. U.S. Army Engineer Waterways Experiment Station, Vicksburg MS.
- Marine Taxonomic Services. 1990. Coos Bay channel invertebrate assessment study. Draft Report. Prepared by Marine Taxonomic Services, Corvallis, Oregon for the U.S. Army Corps of Engineers, Portland OR.

- Ogden Beeman & Associates, INC., 1990. "Coos Bay Disposal Site "F" Study," Prepared for USACE, Portland District, under Contract DACW07-89-D-0029, p. 48.
- Segar, D. A., and E. Stamman. 1986. "Fundamentals of Marine Pollution Monitoring Programme Design." Mar. Pollut. Bull. 17:194—200.
- USEPA/USACE. February 1991. Evaluation of dredged material proposed for ocean disposal – testing manual. Report number EPA-503/8-91/001.
- USEPA/USACE. February 1998. Evaluation of dredged material proposed for discharge in inland and near coastal waters – testing manual (referred to as the 'Inland Testing Manual'). Report number EPA-823-B-98-004.
- USACE/EPA 1996. "Guidance Document for Development of Site Management Plans for Ocean Dredged Material Disposal Sites." U.S. Army Corps of Engineers, Portland District and Seattle District; U.S. Environmental Protection Agency
- USACE. 2005. "Ocean Dredged Material Disposal Sites Management/Monitoring Program, Summary Report: Coos Bay" Portland District
- U.S. Army Corps of Engineers (Corps). March 2005. Coos Bay sediment quality evaluation. Portland OR.
- USACE. 2005. "Sediment Quality Summary Report: Coos Bay" Portland District.
- USACE, 1984. Summary-"Coos Bay Offshore Disposal Site Investigation," of Phase I-V;
- Hancock, D. R., Nelson, P. O., Sollitt, C. K. and Williamson, K. J. 1981. Coos Bay Offshore Disposal Site Investigation, Interim Report Phase I. Prepared by Oregon State University for the U. S. Army Corps of Engineers, Portland District.
- Nelson, P. O, Sollitt, C. K., Williamson, K. J, and Hancock, D. R. 1983. Coos Bay Offshore Disposal Site Investigation, Final Report Phase II, III. Prepared by Oregon State University for the U. S. Army Corps of Engineers, Portland District.
- Sollitt, C. K., Hancock, D. R. and Nelson, P. O. 1984. Coos Bay Offshore Disposal Site Investigation, Final Report Phase IV, V. Prepared by Oregon State University for the U. S. Army Corps of Engineers, Portland District.
- USEPA. September 8, 2004. The technical basis for revisions to the dredged material management program's bioaccumulative contaminants of concern list (Draft). Prepared for the Agencies of the Dredged Material Management Program. U.S. Environmental Protection Agency Region 10, Seattle WA.

USEPA. 1991. Handbook: remediation of contaminated sediments. U.S. Environmental Protection Agency, Center for Environmental Research Information. Cincinnati OH.

Zeller, R. W., and T. A. Wastler. 1986. "Tiered Ocean Disposal Monitoring Will Minimize Data Requirements." Oceans 86 Conf. Rec. IEEE Service Center, Piscataway, New Jersey. pp. 1004-1009.