

Management/Monitoring Plan

Chetco River, Oregon

Ocean Dredged Material Disposal Site

TABLE OF CONTENTS

Introduction

- Purpose and Authorization
- Introduction to the Management/Monitoring Plan

Section 1: Management Plan

- Site Description..... 1-1
- Federal Navigation Project Description 1-4
- Project Use 1-4
- Normal Project Maintenance 1-4
- Disposal Site Concerns 1-5
- Disposal Site Management Goals 1-5
- Management Practices 1-6

Section 2: Monitoring Plan

- Background and Objectives 2-1
- Tiered Monitoring Approach 2-2
- Monitoring Plan for the Chetco River ODMDS 2-4
- Coordinated Management of Site 2-5
- Monitoring Data..... 2-6

Section 3: Literature Cited

List of Figures/Tables

- Figure 1-1 Chetco River Authorized Project 1-2
- Figure 1-2 Chetco River ODMDS 1-3
- Figure 2-1 Generalized Tiered Approach to Monitoring ODMDS..... 2-4
- Figure 2-2 Chetco Disposal Site Baseline Contour Map 2-7

- Table 2-1 Tiered Monitoring Plan for Chetco ODMDS 2-7

INTRODUCTION

Purpose and Authorization

The purpose of this plan is to establish a coordinated program for the management and monitoring of the Chetco River Ocean Dredged Material Disposal Site (ODMDS) that is publicly acceptable, environmentally sound and feasible from an engineering standpoint. This management/monitoring plan fully meets all criteria and factors set forth in Part 228-Criteria for the Management of Disposal Sites for Ocean Dumping (Title 40 CFR). These regulations were promulgated in accordance with criteria set forth in Sections 102 and 103 of the Marine Protection, Research, and Sanctuaries Act (MPRSA) of 1972 (33 U.S.C. § 1412 and § 1413). Further, Section 506, Site Designation, of the Water Resources Development Act (WRDA) of 1992, further defined the roles, authorities, and responsibilities of the U.S. Army Corps of Engineers (USACE) and the U.S. Environmental Protection Agency (EPA) by amending Section 102(c) of the Marine Protection, Research, and Sanctuaries Act (33 U.S.C. § 1412(c)).

Introduction to the Management/Monitoring Plan

The Chetco River ODMDS fully meets all criteria and factors set forth in Parts 228.5-General Criteria for the Selection of Sites and 228.6-Specific Criteria for Site Selection of Title 40 CFR, as described in the Final Environmental Impact Statement (August 1991). The 5 general and 11 specific criteria are designed to ensure selection of an acceptable disposal site with regard to minimizing interference with the marine environment. Avoidance of adverse impacts to existing fisheries and shellfisheries, or commercial and recreational navigation is to be assured through management of the ODMDS by regulating times, rates, methods of disposal, and quantities and types of materials placed at the site as well as developing and maintaining an effective monitoring program.

The primary purpose of this plan is to manage the disposal of dredged sediments and to evaluate whether the predicted impacts of that disposal on the marine environment are exceeded. This can be accomplished through trend assessment surveys and special studies. The results of the monitoring program can then be used to make decisions concerning the impact of the disposal.

This Management/Monitoring Plan will periodically be jointly reviewed by EPA and the Corps and will be revised as necessary. The timetable for plan review shall not be greater than 10 years after adoption of the plan, and every 10 years thereafter. Meetings and agency coordination will be conducted on an ongoing basis. Data collected under the monitoring program will be compiled and maintained at EPA, Region 10 and at the Corps, Portland District.

SECTION 1
MANAGEMENT PLAN

Site Description

The Chetco River ocean disposal site is located approximately one mile from the Chetco River entrance on the southern Oregon Coast (Figure 1). A detailed description of the site and its historical use is presented in the Chetco Ocean Dredged Material Disposal Site Designation Final Environmental Impact Statement, prepared by the U.S. Environmental Protection Agency (USEPA), Region 10 in August 1991.

This federal project has been dredged since 1962. Initial maintenance was performed with draglines and upland placement of dredged materials. Hopper dredging and ocean disposal at the project began in 1972. The current ocean disposal site was designated as Interim by the U.S. Environmental Protection Agency in 1977 (40 CFR 228.12). In the Federal Register (Vol. 56, No. 182) of October 19, 1991, the Interim site received final designation. An average of 35,000 cubic yards (cy) of dredged material is disposed in the site annually, based on the 5-year period of 1987-1991. Disposal at the site has ranged from a low of 7,800 cy in 1977 to a maximum quantity of 76,300 cy in 1981.

The ODMDS is located in what is considered a dispersive environment subject to ocean currents as well as wave-induced currents. Dispersion of dredged material is dependent on current velocity, water depth, wave height, and the grainsize of the material placed at the disposal site.

The dredged material which is placed at the disposal site is classified as sand and meets exclusionary criteria for grain size and proximity to sources of contamination, and is evaluated periodically to assure that it is suitable for unconfined in-water disposal.

Corner Coordinates (NAD 1983) for the Chetco River ODMDS are:

42 degrees 01' 55	N 124 degrees 16' 37 W
42 degrees 01' 55	N 124 degrees 16' 13 W
42 degrees 01' 37	N 124 degrees 16' 13 W
42 degrees 01' 37	N 124 degrees 16' 37 W

Dimensions: 1,800' x 1,800'
Azimuth: 270 degrees T
Average Depth: 70'

Figure 1-1
Chetco River Authorized Project

Figure 1-2
Chetco River ODMDS

Federal Navigation Project Description

The authorized project includes two stone jetties at the entrance to the channel (Figure 2). An entrance channel 14 feet deep and 120 feet wide runs from the ocean to a turning basin at RM 0+15. The turning basin is 14 feet deep, 250 feet wide, and 650 feet long and is protected by a dike 18 feet high and 1,800 feet long.

Under the Water Resources Development Act (WRDA) 92, the Port of Brookings sought a change in the Congressional authorization which exchanged the Federal project responsibilities in the small boat channel for maintenance of a limited access channel into the commercial (south) boat basin.

Project Use

A large commercial fishing fleet operates out of Brookings. The commercial fishing boats range from 15 to 80 feet in length and from four to 10 feet in draft.

Brookings also serves as home to one of the largest recreational boating fleets on the Oregon coast, with about 650 boats in moorage. The drafts of these craft range from one to eight feet.

Normal Project Maintenance

The sediment at Chetco River is primarily sand at the entrance and sand with accumulations of rock, gravel and cobbles inside of RM 0+05. Sediments inside of the two boat basins consist of sand with higher percentages of fine grained sediments. Sediments within the Federal navigation project are tested periodically, generally every five years, to ensure they are still suitable for ocean disposal.

Shoaling generally occurs between RM -0+10 and RM 0.0 off the end of the north jetty and between RM 0+05 and RM 0+15 at the entrance to the boat basins. An average of approximately 35,000 cubic yards is dredged from the Chetco River project annually.

The project is usually maintained by a hopper dredge and a channel flusher (generally the SANDWICK) from late April to October. The harbor entrance faces south and is one of the first areas on the coast that hopper dredges can work in the spring. Chetco River is often dredged as foul weather backup work in conjunction with the Rogue River Project. The hopper dredge is at Chetco River one to five days, a number of times each season.

The channel flusher is used, during outgoing tides, to sweep sediment from the turning basin, the commercial south boat basin, and the edges of the entrance channel into the main channel for ready removal by a hopper dredge.

Clamshell dredges have been used to remove the rocks which accumulate in the channel

and which can limit the hopper dredge's ability to maintain the channel. Resulting larger grained materials have been placed on upland sites made available by the port. These sediments dredged by clamshell could also be placed at the ocean disposal site, using bottom dump barges.

Disposal Site Concerns

The primary management concern at the Chetco River ODMDS is to avoid mounding at the site. Significant and persistent mounding can result in adverse wave conditions causing a potentially hazardous situation for boaters.

Since the dredged material placed at the site is mostly coarse sand and gravel, similar to the bottom material in the site, it is not expected to significantly alter the benthic habitat.

Debris Management

Debris is defined as material that could cause interference with particular uses. 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-sediment material that would pass through a 24in x 24in mesh is not considered debris if it is dredged as part of the sediment matrix.

Discharge of debris at the ODMDS 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 are required to maintain a record of the handling of debris encountered during dredging and disposal. Compliance inspectors may review these records.

The Corps or EPA may make dredging or disposal site inspections to ensure that the contractor is in compliance with the approved operating plans, and that debris is removed prior to discharge at the ODMDS. Floatable debris must be either removed at the dredging site or picked out of the water at the disposal site. Sediments which contain debris that is not easily removed may require screening through a 24in x 24in mesh. The need for such a requirement will be assessed during the planning or permitting process. If required, the mesh must be periodically cleaned and the debris disposed of appropriately according to the approved dredging and disposal plan.

Disposal Site Management Goals

The Chetco River project is generally maintained by small hopper dredge. Hopper capacity of the vessels working the west coast ranges from 850 to 1,500 cy, but the dredges may not always carry a full load (they may be restricted to partial loads at low tide because the project is shallow).

The site management goal is to disperse material in order to avoid mounding. The dredges typically release dredged material while moving slowly (one to two knots) through the disposal site. Successive loads are placed over different tracks. A precise placement (point dumping) of dredged material is possible, but it requires additional time to accurately maneuver and then hold the vessel over the target point. Point dumping is not performed at this project because the potential for concentrating the material and causing mounding would be counter to management goals. Hydrographic surveys periodically monitor bottom contours.

Nearshore berm creation using dredged material to help reduce erosion along the beach to the south of the river entrance may be conducted. A submerged berm would help to trip waves and dissipate their energy before the waves reach the beach. This berm would be considered a beneficial use of dredged material. Site monitoring requirements would be the same as for the ODMDS.

Management Practices

The following management practices will be followed to ensure that continued use of the Chetco River ODMDS does not result in unacceptable adverse impacts to the environment or human safety:

1. Dredged material will be spread within the disposal site in a manner to avoid mounding and minimize depth of coverage over any given area. This will continue to be accomplished by directing dredge crews to place material in a dispersive manner within the disposal site.

2. Nonfloatable debris must be removed from dredged material at the point of dredging. Floatable debris must be removed either at the point of dredging or from the water.

3. Monitoring will be performed as outlined in Section 2 of this plan, to verify that continued use of the site does not have unacceptable impacts.

4. If monitoring indicates that mounding is occurring at the site, sediment placement practices will be modified to ensure material is dispersed within the site. This may be accomplished by partitioning the site and providing specific placement instructions to enforce distribution throughout the site.

5. If monitoring indicates that disposal is potentially altering the substrate or bottom habitat, management practices will be considered to more effectively sort and selectively place sediment types, such as rock and gravel.

6. Sediments from the Federal navigation channel will continue to be evaluated regularly, generally every 5 years, to ensure that they are still acceptable for ocean disposal following established testing protocols.

7. Any other dredged material (sediments) proposed for placement in the site will be

permitted and/or evaluated for suitability as required under Section 103 of the Marine Protection, Research and Sanctuaries Act, including testing, if necessary.

8. As co-managers, the Corps of Engineers, Portland District, and EPA, Region X, will continue to work together closely to monitor and manage use of the Chetco River ocean disposal site.

SECTION 2

MONITORING PLAN

Background and Objectives

The general objective of this plan is to monitor those aspects of the ODMDS where a potential exists for unacceptable adverse environmental or navigational safety impacts. Monitoring also can bring to light any unexpected impacts, whether beneficial or adverse. Monitoring activities gather information to determine if there is a need to revise dredged material management options and actions. Monitoring of dredged material disposal sites should not be viewed as an isolated activity but as one of several interacting components of an overall dredged material management framework, which includes, but is not limited to:

- site designation,
- project evaluation,
- regulatory permitting,
- compliance, and
- enforcement.

The goal of site designation, project evaluation, regulatory permitting, compliance, and enforcement is to minimize the potential for adverse environmental effects, thus minimizing monitoring requirements.

Previously, monitoring of ocean disposal and other human activities has usually involved time-series measurements of various physical, chemical, and biological parameters. The goal is to discern whether the data gathered showed any change in the site characteristics, and, whether those changes could be attributed to the human disturbance at the site. Critiques of such studies (Boesch 1984, Fredette et al. 1986, Segar and Stamman 1986) list the following deficiencies:

- Weak or ineffective designs for sampling and statistical analysis
- Difficulties in relating observed changes to specific causes, particularly difficulties in separating anthropogenic impacts from natural variability
- Difficulties in determining whether the observed changes constitute unacceptable impacts on resources, resource use, or the ecosystem
- Failure to assess the spatial and temporal scale of any potential effects
- Difficulties encountered by regulators in relating study results to existing regulations and to courses of actions.

In response to such deficiencies, many investigators and agencies have called for a tiered

approach (Fredette et al. 1986, Fredette et al. 1990, Segar and Stamman 1986, Zeller and Wastler 1986).

Tiered Monitoring Approach

In a tiered monitoring approach, simple techniques for monitoring of physical characteristics occupies the lowest tier while more complex chemical monitoring techniques occupy higher tiers (Zeller and Wastler 1986). Biological effects testing of oceanic processes occupies only the highest tier. Work at the higher tiers is undertaken only when the need is demonstrated by the results of monitoring techniques at the lower tier. Thus, only the level of monitoring needed to address specific management decisions is undertaken. Each monitoring plan addresses the specific or unique aspects of a particular site and contains triggers, unacceptable impacts and indications for additional testing depending on the management needs (Zeller and Wastler 1986).

In an ideal tiered approach (Fredette et al. 1986, Fredette et al. 1990, Segar and Stamman 1986), the following elements would govern the decision-making process:

- General objectives
- Specific monitoring objectives
- For each specific objective, a prespecified level of unacceptable impact
- For each specific objective, a null hypothesis to be tested by monitoring activities
- Decision rules or triggers for deciding whether to move to another tier or to employ corrective or remedial action.

Most authors examining the effectiveness of monitoring programs urge that clear, attainable goals be defined at the outset (Fredette et al. 1986, Fredette et al. 1990, Segar and Stamman 1986). According to Segar and Stamman (1986), the broad objectives of most monitoring plans are much the same:

- To ensure that there is no threat to human health
- To ensure that no unacceptable harm to the ecosystem or resources occurs
- To ensure conditions that will lead to an unacceptable impact are not developing
- To make informed management decisions.

The specific management objectives vary from site to site depending upon the materials for disposal, the site characteristics, and the resources of concern in the general area. Instead of directly monitoring the resource of concern, other parameters that indicate the likelihood of an impact on the resource and that can be measured more easily or in advance of a more developed

impact, are often the more appropriate monitoring parameters (Fredette et al. 1990, Segar and Stamman 1986).

In the tiered approach, the decision rules indicating the need for further testing or remedial action are to be defined in advance (Fredette et al. 1986, Fredette et al. 1990, Segar and Stamman 1986). Specifying the decision rule alone is not enough. One should also specify potential actions to be taken for the specific outcomes of applying the decision rule to the monitoring results. In establishing tiers and triggers, concern for a resource is not sufficient, quantitative changes in the resource or other variable that indicate an unacceptable impact are to be predefined and must be testable.

Figure 2-1 shows a generalized, tiered monitoring plan for a disposal site.

- Tier 1

Focus is on determining the physical behavior of the disposed material; generally by bathymetric survey and periodic sediment characterization to determine whether the deposited material is behaving as expected

- Tier 2

Can include more intensive physical or sediment monitoring (limited chemistry and/or minimal biological monitoring) with the extent of each component determined by the outcome of the Tier I activities.

- Tiers 3 and 4

Include intensive studies directed at specific problems.

An evaluation of the monitoring data takes place between each tier to determine whether there is any need for change, or whether more data, the next tier, will be required before determining a need for change.

Potential options concerning the disposal operations include the following:

▪ No change

no change required

monitoring reveals no cause for concern; disposal and monitoring continue as planned

no change possible

e.g. one-time use, thereby eliminating the possibility for subsequent change in disposal operations.

▪ Operational change required

Scheduling

adjust the schedule (time periods or rates) of the disposal to avoid a temporary situation

Placement of material within the site

place the material in a different portion of the site than originally planned

Restrict type or quantity of material placed

Figure 2-1 Generalized, Tiered Approach to Monitoring ODMDS

- Change in site location
Where the impacts are found to be unavoidable and unacceptable over a large area or long time, a change in site location may be considered.
- Discontinue disposal at site
Cessation of disposal if unavoidable and unacceptable conditions occur or persist at a site.

Monitoring Plan for the Chetco River ODMDS

Overview

The objectives of the Chetco River ODMDS monitoring plan are to assure public safety, to verify that no unacceptable harm occurs to resources, resource use, or the ecosystem beyond the site boundaries and, finally, to provide specific information to support informed decisions about managing the site and the disposal operations.

Dredged material from the entrance to the Chetco River and boat basin is periodically evaluated and presently meets ocean disposal requirements; therefore, threats to human health are not expected as a result of disposal of dredged materials from Chetco River. The specific objectives of monitoring are discussed below in the context of the monitoring tiers.

Specific Objectives

Ensure that the dredged material is behaving as predicted and that dredged material disperses quickly and does not form a mound.

Ensure that patterns of adjacent benthic infaunal populations remain as expected.

Assess the significance of potential impacts of disposal operations on the public safety and resources or resource use.

Predictions

Site is anticipated to be dispersive. Dredged material will naturally disperse such that unacceptable mounding will not occur. Material will be placed in a dispersive manner as a part of standard operation procedures.

Unacceptable mounding can be avoided through proper dredge disposal management.

Dredged material is similar to existing substrate. No significant impact to the habitat anticipated.

Area outside the designated disposal area will not be adversely affected by the disposal events.

Evaluation Questions

What is the distribution pattern of the dredged material? Is the material behaving as anticipated?

Can the dredged material be identified as different from the existing substrate?

Is mounding occurring? To what extent?

How have the depth contours been affected?

Do the depth contours change over time?

Is erosion occurring? At what rate?

Has the character of the site been significantly altered so as to cause alteration of adjoining habitat?

Coordinated Management of Site

The Corps and EPA will coordinate decisions and exchange information regarding environmental impacts at the site, or changes in management strategy with the appropriate state and Federal agencies, as well as with other interested parties. Decisions to increase the spacing between the dumping positions, or to shift disposal operations to other portions of the site will be part of the coordinated management strategy.

If Tier 1 monitoring indicates a potential problem which cannot be readily corrected by management practices, Tier 2 monitoring will be employed. If Tier 2 indicates a problem, or a previously unidentified concern is established, a coordinated Tier 3 plan for specific studies will be developed which focuses on the identified concerns.

Monitoring Data

Bathymetric surveys (Tier 1) are scheduled annually. Subsequent bathymetric surveys will show cumulative changes using 1985 surveys as a baseline.

Data from the monitoring program will be compiled yearly and submitted to EPA/Sediment Management Coordinator. These findings will be evaluated and coordinated recommendations will be made concerning the need for management changes.

TABLE 2-1. Tiered Monitoring Plan for the Chetco River ODMDS

Monitoring Level	Monitoring Approach	Action Trigger	Management
Tier 1	Annual bathymetric survey in and adjacent to the disposal site	Depth contours appear to have increased by greater than 5 feet over 50% of the site within 2 years	Corps/EPA joint decision on further course of action
Tier 1A	Sidescan sonar Precision bathymetry	(1) The physical changes are significant and permanent. (2) The deposited material has significantly altered the physical character of the site. (3) Mounding will exceed the -50 ft (MLLW) contour. (4) Mounding has affected the wave climate at the site.	Corps/EPA joint decision on further course of action
Tier 2	Demersal trawls Benthic infaunal sampling Periodic chemical characterization of disposal site	Dredged material disposal has resulted in changes/stress to adjacent benthic community. Benthic infauna and fish/invertebrate populations have decreased beyond levels of natural variations or nuisance species have been introduced Presence of any chemical of concern in concentrations over accepted threshold level	Corps/EPA joint decision on further course of action
Tier 3	Bioassay		Corps/EPA joint decision on further course of action

Figure 2-2

Chetco Disposal Site Baseline Contour Map

SECTION 3

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.

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 Vicksberg, MS.

Office of Technology Assessment. 1987. Wastes in Marine Environments. OTA-0-334. U.S. Government Printing Office, Washington, D.C.

Segar, D. A., and E. Stamman. 1986. "Fundamentals of Marine Pollution Monitoring Programme Design." Mar. Pollut. Bull. 17:194—200.

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