
APPENDIX B

CONFINED DISPOSAL SEDIMENT MANAGEMENT PLAN

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CONFINED DISPOSAL FACILITY SEDIMENT MANAGEMENT PLAN (CONCEPTUAL 30 PERCENT DESIGN DELIVERABLE)

TERMINAL 4 EARLY ACTION PORT OF PORTLAND, PORTLAND OREGON

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Prepared for

Port of Portland

Prepared by

Anchor Environmental, L.L.C.

6650 SW Redwood Lane, Suite 110

Portland, Oregon 97224

August 2006

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1 INTRODUCTION

The Confined Disposal Facility (CDF) Sediment Management Plan will describe the procedures that will be implemented to manage the placement of contaminated sediments, whether dredged by hydraulic or mechanical means, into the Slip 1 CDF, as well as fill and structural fill materials; appropriate management practices to prevent the release of sediments and contaminants during and between placement events; and quality assurance procedures to ensure the CDF is constructed according to specifications.

This plan will describe the management of the Terminal 4 CDF activities from the point in time *after* the Slip 3 sediments are dredged and placed in the CDF through construction of the surface layer.

An at-grade CDF will be constructed in Slip 1 and sediment dredged from Slip 3 will be placed in the Slip 1 CDF. A portion of the CDF contaminated sediment capacity will be used by Terminal 4 sediments. The CDF has excess capacity available for other dredged sediment from the Portland Harbor Superfund Site; however, in order for sediments to be placed in the CDF, the CDF must be selected as an appropriate site for placement of material through a separate removal or remedial action decision and the potential dredged sediment must demonstrate compatibility with Terminal 4-specific sediment acceptance criteria. Sediment acceptance criteria will be developed during design (see annotated outline of the conceptual *Sediment Acceptance Criteria Technical Memorandum*). By constructing the CDF to an at-grade surface, the newly gained land can be used for water dependent commercial purposes. An earthen containment berm will be constructed at the mouth of Slip 1 to serve as an isolation/retention structure for the dredged sediment. The Port of Portland (Port) will acquire State of Oregon property for the purpose of constructing the CDF. Section 4 of the Design Analysis Report (DAR) provides more details on the conceptual design of the CDF.

Completion of the CDF surface layer will be described in the DAR and long-term management activities will be addressed in the Operations, Maintenance, and Monitoring Plan (OMMP).

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The primary purpose of the CDF will be to protect human health and the environment by permanently containing the contaminated sediment dredged from the Removal Action Area and the Portland Harbor Superfund Site.

1.1 CDF Characteristics

A containment berm will be constructed at the mouth of Slip 1 and Slip 1 will be filled with dredged material and upland structural fill to the surrounding grade. Figure 7 of the DAR shows the layout of the CDF. Existing structures within Slip 1 will need to be demolished and properly removed. Outfalls currently discharging into Slip 1 will need to be rerouted to the Willamette River. The remainder of this section describes the design of these different elements, the sequencing of the work, and volumes anticipated.

Figure 8 of the DAR is a generalized cross section through the containment berm. The CDF will consist of four main components:

- **CDF Containment Berm.** The berm configuration assumed for analysis incorporates 2 horizontal to 1 vertical (2H:1V) inward and outward faces. The outward side of the berm will have a bench between elevations -3.2 to 2.8 feet National Geodetic Vertical Datum (NGVD) and will be sloped at 5H:1V. The crest of the structure will be constructed to elevation 33 feet NGVD and is assumed to be 20 feet wide. To improve the berm stability, the foundation of the berm will be overexcavated and backfilled with structural fill. For the majority of the berm structure, the removal of loose sediment will likely be less than 5 feet, but in some locations the removal thickness could be 10 feet. The conceptual design assumes that 10 feet will be removed below the outer toe of the berm. The berm material was assumed to be constructed of sandy gravel or gravelly sand; training dikes, consisting of quarry spalls or riprap, will be placed at both ends of each 3-foot-lift.
- **Dredged Contaminated fill.** Dredged contaminated sediment from Terminal 4 and from other sediment cleanup areas within the Portland Harbor Superfund Site will be placed within the CDF.
- **Imported fill.** Non-contaminated dredged sediment or other materials will be placed within the CDF.

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- **CDF Surface Layer.** A 10-foot-thick surficial layer will be placed above the imported clean fill layer. This layer will be designed to support the end use of the CDF surface. A discussion of the final surface layer parameters will be presented in the Prefinal (60 percent) Design deliverable.

1.2 CDF Fill Sequence (Elevation Control)

The CDF consists of a sand and gravel berm spanning the mouth of Slip 1 with an engineered fill sequence placed behind the berm and terminating at a final upland elevation. The fill sequence consists of the following (this will be confirmed during the Prefinal [60 percent] Design submittal):

Design Elevation (NGVD)

Base of Slip 1	~-35.0 feet
Top of T4 Material	~-XX feet
Top of Contaminated Fill	+XX feet
Top of Imported Fill	+XX feet
Final Elevation	+33.24 feet

Contaminated materials from Terminal 4 and other sites in the Portland Harbor Superfund Site will be placed within the saturated zone of the CDF (i.e., below the water table) to minimize the leachability and mobility of contaminants.

1.3 CDF Capacity and Excess Capacity

The total CDF capacity and the estimated volumes of various fill materials are listed below (this will be confirmed during the Prefinal [60 percent] Design submittal):

Fill Material Volume (cy)

Terminal 4 Sediments	XX cy
Other Non-Terminal 4 Sediments	XX cy
Imported Fill Material	XX cy
Structural Cap	XX cy
Total CDF Capacity	XX cy

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1.4 Cross-reference Sediment Acceptance Criteria Memorandum and CDF OMMP

The focus of *Sediment Acceptance Criteria Technical Memorandum* is to develop acceptance criteria for contaminated sediments from other cleanup sites in the Portland Harbor, subsequent to the placement of Terminal 4 sediments, as well as acceptance criteria for overlying fill and structural fill materials needed to bring the CDF elevation up to final grade.

The OMMP will describe the procedures that will be implemented after the CDF is complete to ensure the long-term structural integrity of the CDF is maintained and to verify contaminants are adequately contained in the CDF.

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2 INSPECTIONS AND QUALITY CONTROL AFTER SLIP 3 MATERIAL PLACEMENT AND BETWEEN FUTURE FILLING EVENTS

Physical inspections of the CDF and water quality monitoring (as required) will be completed between future filling events. The Port would correct issues identified during the inspections or monitoring conducted below.

2.1 Physical Inspections of the CDF

The CDF containment berm will be inspected once at the end of each filling season until the CDF is completed. At that time, the monitoring program described within the OMMP will be employed. Inspections to be completed while the CDF is being constructed include the following:

- The crest and exposed face of the berm will be visually inspected for signs of erosion or slumping
- The submerged face of the outward berm will be surveyed to confirm no signs of erosion or slumping
- The weir structure will be inspected

In the event of a design-level flood or earthquake event, the containment berm will be inspected for signs of erosion or slumping after that event.

2.2 Physical Inspections of the Placed Material

A bathymetric survey will be completed after each of the following events:

- Placement of the Slip 3 sediments
- Placement of contaminated sediments from each unique dredging area
- Completion of a filling season (if different from the events above)
- After the placement of all contaminated sediments
- After placement of the non-contaminated sediment materials and prior to placement of the surface layer (depending on water level, this survey may be completed with upland topographic survey equipment)

The bathymetric surveys will be used to confirm placement in accordance with the CDF design and to document the elevations of the different fill layers.

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A separate monitoring procedure will be developed when fill materials approach the top of the target elevation for placement.

2.3 Water Quality Monitoring During Filling Events

If filling progresses at a relatively fast rate, the water level within the CDF will rise. If water rises high enough, it will be discharged over a weir, through a pipeline and out an outfall into the river. During filling, the water within the CDF will contain some suspended sediments. The total suspended solids (TSS) concentration in the water that goes over the weir needs to be controlled so that water quality standards are met. The TSS concentration at the weir is influenced by several factors, including filling or dredge production rate, solids concentration of influent, size of CDF, ponding depth, dredging volume, and sediment settling characteristics. This overflow of elutriate into the weir and outfall is considered a short-term effect because it would only occur during filling and if the water within the CDF is high enough to overflow the weir structure. Water quality monitoring would be conducted in accordance with the Water Quality Certification requirements.

2.3.1 Monitoring Criterion

This section will reference the criteria by which effluent monitoring results will be compared.

2.3.2 Monitoring Requirements

This section will describe the frequency and protocols related to effluent monitoring. Also included will be protocols for addressing any exceedances observed in the monitoring results.

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3 MANAGEMENT OF FUTURE FILLING EVENTS

3.1 Port of Portland and EPA Administration

This section will describe the framework and responsibilities for administration of CDF activities, as well as the mechanisms by which potential users will apply for placement of their sediments in the CDF.

3.1.1 Application for Filling

3.1.1.1 Port of Portland and USEPA Contact

This section will describe the point of contact at the Port and United States Environmental Protection Agency (USEPA) who will direct the review and approval of requests for placement of material at the CDF and coordinate the details related to the filling activities.

3.1.1.2 Application Requirements

This section will describe the requirements for application to place sediments within the CDF. Among other requirements, applicants must submit a sampling and analysis plan (SAP), sediment quality characterization and geotechnical data in accordance with the *Sediment Acceptance Criteria Technical Memorandum*.

3.1.2 Scheduling of Filling Operations—Operating Days and Hours

This section will describe the days of the week and hours of the day of sediment offloading operations and any special limitations that could impact scheduling. The filling of the CDF is anticipated to be allowed during any time of the day as long as City of Portland ordinances related to lighting and noise are observed.

3.2 Management of Offloading

3.2.1 Docking Facilities

This section will describe the docking facilities available for vessels transporting sediment to the CDF.

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3.2.2 Offloading Methods

This section will describe the possible offloading methods available to users.

3.2.2.1 Mechanical Offloading

This section will describe approved methods for mechanical offloading of contaminated sediments.

3.2.2.2 Hydraulic Offloading

This section will describe approved methods for hydraulic offloading of contaminated sediments.

3.2.3 Spill Prevention

This section will specify measures put in place to prevent releases of contaminated sediments during offloading activities.

3.2.4 Placement of Dredged Sediment

3.2.4.1 Inlet Diffuser

This section will describe how the CDF inlet diffuser will be manipulated to minimize re-suspension and maximize settling when hydraulically offloading contaminated sediments.

3.2.4.2 Targeted Filling Areas

This section will describe how sediments with specific chemical and/or physical properties could be placed in specific areas of the CDF.

3.3 Environmental Controls

A number of environmental controls will be followed during the filling process depending on the elevation of the material being placed.

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3.3.1 Surface Water Management

This section will describe how management of the surface water within the CDF will be accomplished by controlling the elevation of the outlet weir(s) throughout the filling operations to regulate the depth of water ponded within the containment area. The water depth within the CDF will be regulated to avoid compromising the integrity of the containment berm.

3.3.2 Dust Control

This section will describe methods by which dust will be controlled during non-contaminated fill or surface layer placement that is above the water level.

3.3.3 Erosion Control

This section will describe methods by which erosion will be controlled within the CDF during non-contaminated fill or surface layer placement that is above the water level.

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4 REFERENCES

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