

DRAFT

REMOVAL ACTION WORK PLAN

**TERMINAL 4 PHASE I REMOVAL ACTION
PORT OF PORTLAND, PORTLAND OREGON**

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Prepared for

Port of Portland
Portland, Oregon

Prepared by

Anchor Environmental, L.L.C.
Ash Creek Associates, Inc.
Envirocon, Inc.
Hickey Marine Enterprises, Inc.

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List of Acronyms and Abbreviations

ACA	Ash Creek Associates, Inc.
Anchor	Anchor Environmental, L.L.C.
AOC	Administrative Order on Consent for the Removal Action
BMP	best management practice
CDF	Confined Disposal Facility
CHASP	Contractor Health and Safety Plan
City	City of Portland
CQAO	Construction Quality Assurance Officer
CQAP	Construction Quality Assurance Plan
CQC	Construction Quality Control
CQCP	Construction Quality Control Plan
cy	cubic yard
DAR	Design Analysis Report
DDT	dichloro-diphenyl-trichloroethane
DEQ	Oregon Department of Environmental Quality
DGPS	differential global positioning system
DSL	Department of State Lands
EE/CA	Engineering Evaluation/Cost Analysis
Envirocon	Envirocon, Inc.
EPP	Environmental Protection Plan
GPS	global positioning system
H:V	horizontal to vertical
HASP	Health and Safety Plan
HME	Hickey Marine Enterprises, Inc.
HP	horsepower
HSO	health and safety officer
ISE	imminent and substantial endangerment
MHz	megahertz
mm	millimeter
NGVD	National Geodetic Vertical Datum
NOAA	National Oceanic and Atmospheric Administration

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List of Acronyms and Abbreviations

NTCRA	Non Time Critical Removal Action
O&M	operations and maintenance
ODOT	Oregon Department of Transportation
OSHA	Occupational Safety and Health Administration
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PEC	Probable Effects Concentration
PLS	Professional Land Surveyor
Port	Port of Portland
Port PM	Port of Portland Project Manager
PPE	personal protective equipment
QAPP	quality assurance project plan
QA/QC	quality assurance/quality control
RAA	Removal Action Area
RACR	Removal Action Completion Report
RAO	Removal Action Objective
RAWP	Removal Action Work Plan
RCRA	Resource Conservation and Recovery Act
RFIs	Requests for Information
RI/FS	Remedial Investigation/Feasibility Study
Rinker	Rinker Materials
RM	river mile
Ross Island	Ross Island Sand and Gravel
SAP	Sampling and Analysis Plan
SOW	Statement of Work
SVOC	semivolatile organic compound
sy	square yard
T4	Terminal 4
TDP	Transportation and Disposal Plan
TEC	Threshold Effects Concentration
USACE	U.S. Army Corps of Engineers

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List of Acronyms and Abbreviations

USEPA	U.S. Environmental Protection Agency
VCP	Voluntary Cleanup Program
WQCCMP	Water Quality Compliance Conditions and Monitoring Plan
WQMP	Water Quality Monitoring Plan

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1 INTRODUCTION

This Removal Action Work Plan (RAWP) presents the details for the implementation, quality assurance, and quality control of the Terminal 4 (T4) Phase I Removal Action.

1.1 Background

In 2000, the U.S. Environmental Protection Agency (USEPA) added the Portland Harbor Superfund Site to the National Priorities List. The Port of Portland (Port) is one of 10 potentially responsible parties that entered into an Administrative Order on Consent with USEPA for a Remedial Investigation/Feasibility Study (RI/FS) of the Superfund Site in fall 2001. The Administrative Order on Consent allows Removal Actions to be conducted to address known contamination at specific locations within the Superfund Site.

Contaminants found in T4 sediment samples during a remedial investigation directed by the Oregon Department of Environmental Quality (DEQ) led to a determination that a Removal Action at T4 is warranted. Accordingly, the Port is conducting a Non-Time-Critical Removal Action (NTCRA) under an Administrative Order on Consent for Removal Action (the AOC) executed by the Port and USEPA in October 2003. Figure 1 shows the Removal Action boundary at T4.

The AOC sets forth the general legal requirements that govern the execution of the Removal Action. Appendix A to the AOC is the statement of work (SOW) for the implementation of the Removal Action. The SOW provides a list of deliverables, their submittal schedule, and the technical requirements each deliverable has to meet in order to implement the Removal Action.

As part of the execution of the Removal Action, the Port completed an engineering evaluation and cost analysis (EE/CA; BBL 2005) in which various Removal Action alternatives were identified, compared, and ranked for their relative performance at meeting specific objectives associated with the evaluation criteria of effectiveness, implementability, and cost. Based on the alternatives evaluated in the EE/CA, USEPA issued an Action Memorandum (Action Memo) on May 11, 2006 (USEPA 2006) that documented the selection of the Removal Action. The Removal Action documented in the Action Memo included a

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combination of monitored natural recovery, capping, and dredging with placement of contaminated sediments in a confined disposal facility (CDF) to be built on site.

The Port proceeded down a path to implement the Removal Action, which included several steps (30, 60, and 100 percent design deliverables) in the Removal Action Design process. The Port submitted the T4 Removal Action 60 Percent Design Submittal in December 2006, and from early 2007 through November 2007, the Port and USEPA teams (note: USEPA's team partners include the Tribes, DEQ, and National Oceanic and Atmospheric Administration [NOAA]) worked collaboratively on resolving technical questions and issues associated with the design.

As part of the collaborative resolution process, it was determined that many of the design issues are linked to the overall harbor-wide RI/FS process. For this reason, the Parties agreed to revise the schedule for implementation of the T4 Removal Action to realign the project with the harbor-wide RI/FS schedule. As a condition of the approval of the schedule realignment, USEPA is requiring the Port to implement an abatement action during the 2008 in-water work window to reduce risks present at the T4 site (USEPA 2007). Essentially, this action results in the division of the Removal Action project into two phases. Phase I (the abatement action) is planned for the 2008 in-water work window and encompasses abatement measures that could be initiated in the near term to reduce risk and address any imminent and substantial endangerment at T4 that may exist. Phase II (including construction of the CDF) will commence once the project is realigned with the harbor-wide RI/FS process. The Port submitted an Abatement Measures Proposal (Phase I remedy) in October 2007 (Anchor 2007). USEPA provided comments on the proposal in November 2007, and based on those comments and their resolution, a final Phase I Removal Action abatement remedy was identified.

Phase I of the Removal Action includes the following components:

- Dredging and off-site disposal of sediment exhibiting the highest chemical concentration, providing a permanent solution of contaminant mass removal

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- Construction of a nearshore cap to isolate petroleum-contaminated sediments from aquatic receptors and control a potential ongoing source to nearby areas
- Stabilization of the Wheeler Bay bank to minimize contaminant migration to the river
- Dredging and off-site disposal of contaminated sediments in Slip 3 at Berth 410 to support water-dependent maritime use in a manner consistent with the Action Memo (USEPA 2006) and in support of overall risk reduction in the Removal Action Area (RAA)

The Final Design Analysis Report (DAR; Anchor 2008) presents the design details for the agreed-to Phase I remedy.

1.2 Phase I Removal Action Area

The Port is a port district of the State of Oregon, which owns the T4 uplands between River Miles (RMs) 4.1 and 4.5 on the Lower Willamette River. The Port acquired T4 from the City of Portland (City) as part of a merger with the City Commission of Public Docks in 1971. The Port also currently owns a portion of the submersible and submerged lands in Slip 1 and Slip 3 located within the RAA (defined below). The remainder of the submersible or submerged land is owned by the State of Oregon and managed by the State of Oregon Department of State Lands (DSL).

The T4 facility itself is within or adjacent to the Portland Harbor Superfund Site. The RAA is defined in the AOC as “that portion of the site adjacent to and within the Port of Portland’s Terminal 4 at 11040 North Lombard, Portland, Multnomah County, Oregon, extending west from the ordinary high water line on the northeast bank of the Lower Willamette River to the edge of the navigation channel, and extending south from the downstream end of Berth 414 to the downstream end of Berth 401, including Slip 1, Slip 3, and Wheeler Bay.”

A vicinity map and site plan locating T4 is provided on Figure 1.

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1.3 Phase I Removal Action Objectives and Activities

After there was agreement on realigning the overall Removal Action and completing a Phase I Removal Action in 2008, the Port and USEPA management teams discussed what specific abatement measures should be scoped in Phase I, and agreed that the measures should address the following objectives:

- Proposed measures should be partially effective in abating imminent and substantial endangerment (ISE) posed to aquatic life that may have direct contact with sediments within the RAA
- Proposed measures should be consistent with USEPA's selected Removal Action (i.e., CDF in Slip 1)
- Proposed measures should not unduly impede or disrupt the designated use of T4 for water-dependent maritime use
- Proposed measures should be consistent with sediment management activities that will be required at T4 to continue ongoing water-dependent maritime use (e.g., maintenance dredging)

The abatement measures that meet these objectives and are part of the Phase I project include:

- Removal of material with the highest surface sediment Probable Effects Concentration (PEC) exceedance ratios (greater than 20 times the PEC) in Slip 3 and north of Berth 414. The PEC values are provided in Table 1. This removal work is referred to as the Berth 411 "Plus" dredging.
- Removal of sediment along Berth 410/411 to eliminate navigational impediments consistent with USEPA's Action Memo (USEPA 2006). This removal work is referred to as the Berth 410 dredging.
- Placement of a cap at the head of Slip 3 to address petroleum-contaminated sediment.
- Stabilization of the shoreline at Wheeler Bay.

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These Phase I abatement measures will meet the objectives by:

- Dredging and off-site disposal of sediments exhibiting the highest surficial chemical concentrations
- Dredging and off-site disposal of contaminated sediments in Slip 3 at Berth 410 to support water-dependent maritime use in a manner consistent with the Action Memo (USEPA 2006) and in support of overall risk reduction in the RAA
- Constructing a nearshore cap to isolate petroleum-contaminated sediments from aquatic receptors and control a potential ongoing source to nearby areas
- Stabilizing the bank to minimize contaminant migration to the river

These Phase I abatement measures are shown on Figure 2 and described in detail below. The head of Slip 3 cap and the Wheeler Bay shoreline stabilization are intended to be the final Removal Action for these areas, consistent with the 2005 USEPA-selected Removal Action. The dredge areas will be reassessed and addressed as part of Phase II of the Removal Action implementation (i.e., final Removal Action activities).

1.4 Area-specific Activities

1.4.1 Slip 3 – Combination of Dredging and Capping at Head of Slip

The Phase I Removal Action in Slip 3 consists of a combination of dredging, placing a sand layer, and capping. A portion of the area in Slip 3 will be dredged as shown on Figure 2. The area at the head of Slip 3 and in front of the existing pinch pile bulkhead will be capped. The activities of the Phase I work will be coordinated with the operations of Kinder Morgan, the Port's Slip 3 tenant. Dredged sediments from Slip 3 will be taken to an upland landfill.

1.4.2 North of Berth 414 – Dredging

In this subarea, high polycyclic aromatic hydrocarbon (PAH) concentrations were reported in two historical samples; the Port collected additional data in July 2006 to determine if elevated PAH concentrations are present and to what extent. The results in this area confirm the presence of elevated PAH concentrations; therefore, dredging will be used to address sediments in this subarea.

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1.4.3 Wheeler Bay – Shoreline Stabilization

As part of the RI/FS and Source Control Measure Voluntary Cleanup Program (VCP) Agreement between DEQ and the Port, five composite soil samples were collected from potentially erodible river bank soil along Wheeler Bay. Soil samples from all five composite areas contained concentrations of PAHs, cadmium, copper, selenium, zinc, and dichloro-diphenyl-trichloroethane (DDT) above screening levels for human or ecological receptors (Ash Creek/Newfields 2007). Therefore, the river bank area was identified as requiring a source control measure. The Wheeler Bay shoreline will be graded to a more stable configuration and further stabilized with surface erosion control measures to isolate remaining contaminants.

1.5 Performance Standards

To achieve the Phase I Removal Objectives, performance standards were established in the Design Analysis Report (Anchor 2008) and are included in the area-specific sections pertaining to dredging, capping, and shoreline stabilization (see Sections 2.1, 4.1, and 5.1, respectively).

1.6 Phase I Contractors

The Port has hired Hickey Marine Enterprises, Inc. (HME) to complete the dredging and capping work in Slip 3. Ash Creek Associates, Inc. (ACA) has been hired by the Port to complete the Wheeler Bay shoreline stabilization work. Envirocon, Inc. (Envirocon) is working as a subcontractor to ACA. The Port has also hired Anchor Environmental, L.L.C. (Anchor) to perform environmental monitoring and to support the Port's construction management and oversight activities throughout Phase I of the project.

1.7 Work Plan Organization and Approach

The remainder of this document provides detailed information as follows:

- **Section 2 – Phase I Removal Action Dredging.** This section details how the dredging will be completed for the Phase I Removal Action, including discussion of the performance standards, summary of the work, equipment and materials to be

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- used, construction methods, quality assurance/quality control (QA/QC) measures, health and safety, environmental protection, and scheduling/reporting.
- **Section 3 – Dredge Material Handling, Transport, and Disposal.** This section details how the dredged material will be handled, transported, and disposed of for the Phase I Removal Action, including discussion of the equipment and materials to be used; handling, transportation, and disposal methods; QA/QC measures; health and safety; environmental protection; and scheduling/reporting.
 - **Section 4 – Head of Slip 3 Capping.** This section details how the capping at the head of Slip 3 will be completed for the Phase I Removal Action, including discussion of the performance standards, summary of the work, equipment and materials to be used, construction methods, QA/QC measures, health and safety, environmental protection, and scheduling/reporting.
 - **Section 5 – Wheeler Bay Shoreline Stabilization.** This section details how the earthwork required to stabilize the Wheeler Bay shoreline will be completed for the Phase I Removal Action, including discussion of the performance standards, summary of the work, equipment and materials to be used, construction methods, QA/QC measures, health and safety, environmental protection, and scheduling/reporting.
 - **Section 6 – Reporting/Project Coordination.** This section discusses project team roles and responsibilities, project coordination, project reporting/recordkeeping, design changes, files and records management, and how closeout will be completed for the project.
 - **Section 7 – References.**

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2 PHASE I REMOVAL ACTION DREDGING

2.1 Dredging Performance Standards

Performance standards were developed for both the Berth 411 “Plus” dredging and the Berth 410 dredging to govern design and construction. Each of the standards are discussed below.

Berth 411 “Plus” Dredging – Remove sediments that pose the highest ecological and human health risk. Removal of these highest risk sediments will provide a permanent solution of contaminant mass removal from the river. Specifically, the dredging will meet the following performance standards:

- Remove contaminated sediments defined as those with surface sediments having a greater than 20 PEC exceedance ratio down to a specified elevation coinciding with PEC exceedance ratios of 10 or less as predetermined by sediment core data. If full removal is not technically feasible, complete partial removal and place a minimum 6-inch-thick sand layer to be determined by quantity measures (i.e., volume of cap material placed per surface area).
- Reduce contaminant levels in the Berth 411 “Plus” dredging area.
- Conduct the work consistent with the best management practices (BMPs) listed in the Dredging, Transportation, and Disposal specification (DAR Appendix E; Section 352023) in order to minimize the movement of material with elevated chemical concentrations into unintended areas.
- Conduct the work consistent with the BMPs listed in the Dredging, Transportation, and Disposal specification (DAR Appendix E; Section 352023), in order to minimize dredging residuals and minimize recontamination of adjacent sediments.
- Conduct the work consistent with the Water Quality Monitoring Plan (WQMP; DAR Appendix H) and the Water Quality Compliance Conditions and Monitoring Plan (WQCCMP) in order to minimize water quality impacts outside the compliance boundary.

Berth 410 Dredging – Remove sediment to a depth necessary to maintain navigable water depths for deep-draft vessels that call at the Slip 3 berths consistent with the Port’s statutory

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authorization and USEPA's Action Memo (USEPA 2006). Specifically, the dredging will meet the following performance standards:

- Remove sediment to depths that allow vessels to safely access berthing areas in Slip 3.
- Conduct the work consistent with the BMPs listed in the Dredging, Transportation, and Disposal specification (DAR Appendix E; Section 352023), in order to minimize the impacts to surrounding sediments and the "leave" surface of the dredge area.
- Conduct the work consistent with the WQMP (DAR Appendix H) and the WQCCMP in order to minimize water quality impacts outside the compliance boundary.

2.2 Dredging/Excavation Summary

2.2.1 Berth 411 "Plus" Areas

Figure 3 shows the Berth 411 "Plus" dredge prism. Berth 411 "Plus" dredging will generate 4,750 to 6,800 cubic yards (cy) of dredged material. The lower volume is the anticipated minimum quantity associated with the neat line. The higher volume includes the 1-foot payable overdredge allowance.

The Berth 411 "Plus" dredge material will be dredged mechanically, loaded on sealed haul barges, and hauled to the Port of The Dalles for offloading. The material will be disposed of at the Wasco County landfill.

Figure 3 shows the portion of Slip 3 that will receive a sand layer. The sand layer will be a minimum of 6 inches thick as determined by quantity measures (i.e., volume of cap material placed per surface area). This sand layer will be placed mechanically.

2.2.2 Berth 410

Figure 3 shows the Berth 410 dredge prism. Berth 410 dredging will generate 3,650 to 9,200 cy of dredged material. The lower volume is the anticipated minimum quantity associated with the neat line. The higher volume includes the 1-foot payable overdredge allowance plus the 1-foot allowable overdredge allowance (2 feet total below neatline).

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The Berth 410 dredge material will also be dredged mechanically, loaded on sealed haul barges, and hauled to the Port of The Dalles for offloading. The material will be disposed of at the Wasco County landfill.

2.3 Equipment

The Contractor will use the following equipment for the removal of sediments:

- Primary clamshell dredge at T4 – the *Sea Horse* is a 142- by 58-foot derrick barge. The barge has three hydraulically controlled spuds for stability. The *Sea Horse* utilizes biodegradable mineral oil. The derrick will use a 20-cy Cable Arm bucket as the primary dredge, with an Atlas 10-cy digging bucket as the backup dredge.
- Transport barges – the barges will likely consist of 2,500-ton capacity *Umpqua 2*, 2,500-ton capacity *Umpqua 3*, and the 3,000-ton capacity *Chetco*. Each haul barge will have up to 6-foot fully enclosed watertight welded steel bin walls; all scupper holes will be closed off and secured. The transport barges will have temporary barrier walls secured at 45-degree angles in all four corners of the transport barges to facilitate sediment dewatering. The barriers will have seepage holes cut along the base with screens secured at the openings to retain the solids and allow water to flow behind the barrier for pumping to the water management lash barge. Slotted 55-gallon drums will be set behind the temporary barrier for water gathering and pump placement.
- Water management barge – the water management barge is a four module lash unit. The barge is 123 feet by 64 feet by 12 feet high with four watertight compartments that are covered to eliminate additional water generation. The barge is set up with four hatches to facilitate pumping of water to the upland sanitary sewer manhole at T4 (The Port has obtained a permit from Environmental Services of the City of Portland [Batch Discharge Number 2008-027]). The barge can contain up to 450,000 gallons of liquid.
- Sand layer placement equipment – the sand layer will also be placed with the *Sea Horse*.
- Support equipment – support equipment includes a twin-outboard-powered 24-foot aluminum crew/survey boat, *Piggy*, equipped with a single-beam recording

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fathometer for surveying. In addition, two outboard-powered work skiffs and the tug/tender *Husky* with 800 horsepower (HP) will be utilized at T4.

2.3.1 Fueling Requirements

Ultra low sulfur diesel fuel will be utilized on highway trucks for transport from the offload facility to the landfill, the 70,000 lb transload excavator, and all other land based off highway heavy equipment where horsepower exceeds 50.

Marine diesel equipment will utilize low sulfur diesel that is dyed red to designate the universal off highway categorization in accordance with federal law and standards. Gasoline used for pumps, outboards, and other equipment is standard unleaded regular gasoline.

2.4 Materials

Before barges leave the Terminal 4 facility, the sediment and debris will be covered if the weather warrants. Weather with high winds and hot, dry weather will trigger the need for covering. The purpose of the covering is to reduce the potential for material loss and to reduce addition of water to the sediment from waves. The tarps will consist of plastic sheeting of 10 mil or thicker.

2.4.1 Spill Prevention Materials

Square-point shovels and brooms will be used to cleanup any spillage on the *Sea Horse*. Oil booms will be at the site in case of fuel spills. The dredging and capping Environmental Protection Plan (EPP; Appendix C1) presents more details on spill prevention materials.

2.4.2 Fish Deterrent System

The Port will install a fish deterrent system prior to HME beginning the dredging work within Slip 3. The intent of the system is to lead fish migrating downstream along the shoreline back out into the river and away from the Slip 3 dredging area. The system will be located as shown on the drawings and consist of a mesh leader. The leader will

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be a 20-foot-deep panel intended to guide fish in the top 20 feet of the water column and will be made of 3/16-inch knotless nylon net mesh material so as not to impinge or gill juvenile salmonids down to a size of 40 millimeters (mm). The mesh netting will be colored such that juvenile fish can see it in the water column. Floats and lead lines will be used to keep the net upright. The net will be properly secured throughout the Slip 3 dredging activity (see Figure 3).

2.4.3 Sand Layer

The sand layer material will be processed by Ross Island Sand and Gravel (Ross Island) located on the Willamette River in Portland. The aggregate materials will be mined from their Avery, Washington, source located next to the Columbia River with a conveyed barge loading terminal. The unprocessed mine material is barged to Ross Island's southeast Portland facility for offloading and processing to produce material as specified. The Avery source located just a few miles upstream of The Dalles, Oregon, is adjacent to the Columbia River. Material from this source was used at the McCormick and Baxter Creosote Facility cleanup.

Imported material will need to meet the chemical criteria presented in Table 2. Section 2.6 describes the QA testing to be conducted on import materials.

2.5 Dredging Methods and Procedures

Figure 4 illustrates the orientation of the clamshell dredge, transport barge, and water management barge at the dredge site in T4.

2.5.1 Anticipated Construction Schedule

The following construction sequence is anticipated for the dredging (see Figure 5A for the current construction schedule):

- Upon mobilization and setup of the upland components of the transloading facility at The Dalles, sediment removal will initiate. The first dredge location will be at the small area just north of Berth 414. This work will be completed in 1 day.

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- The offloading derrick (*Sea Vulture*), the transport barge containing sediments dredged from the first dredge area, and the barges to be used for the spill containment at the offloading facility (see Section 3.2) will be towed together up river to The Dalles offloading facility.
- The Berth 411 area will then be dredged from the head of the slip to the mouth. The duration of the work is anticipated to take 10 days to complete. Transport (haul) barges will be loaded one day and offloaded the next, requiring 2 days to complete the dredge, haul, offload, and return cycle.
- Offloading at The Dalles facility will occur concurrently with the dredging operation.
- A short shutdown will occur at the completion of the Berth 411 dredging before the Berth 410 dredging occurs (shut down dredging event 1). During the shutdown, the dredge plant, material barges, upland transload equipment, and on-highway haul trucks will demobilize. The on-water transload equipment will not demobilize.
- The sand layer will be placed following the completion of the Berth 411 dredging during the shut down dredging event 1 time period.
- After remobilization of the equipment, the Berth 410 dredging will be completed in a similar sequencing as described above for Berth 411. The work will occur for 3 days and shut down dredging event 2 will occur.
- During this second shutdown, the capping work at the head of Slip 3 will occur.
- Remobilization for dredging will then occur and the final dredging will require 4 days.

2.5.2 Dredging Means and Methods

Appendices D1 and E present HME's dredging, transportation, and disposal plan. Dredging will be performed by the dredge *Sea Horse* utilizing a 20-cy Cable Arm clamshell bucket. If sediments cannot be dredged due to a firmer river bottom, a 10-cy heavy-duty Atlas round-nose clamshell bucket will be used to reach final grade.

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Once dredging commences, the operator will slowly begin lowering the open bucket until it reaches bottom without going below the required depth. The operator will then close the bucket in a slow manner while holding it at depth. Once closed, it is to be hoisted slowly until it reaches the water surface. At the water surface, the bucket will be allowed to drain free water prior to swinging and placing dredge material on the haul barge. The bucket will then be lowered into the barge and cracked open to allow material to be released and prevent any mud from splashing outside of the bin walls.

To prevent splashing when loading the barge, each bucket will be cracked open in small increments to allow the material to slowly fall out until completely open. The bucket will then be closed before swinging into position for another cycle. It will not be opened until it reaches the water surface.

Prior to departure of any loaded sediment barge from the Portland harbor, an extended weather forecast will be researched for the transit to The Dalles offload facility. As stated in the Biological Assessment, the barges will be covered if weather warrants. Weather with high winds and hot, dry weather will trigger the need for covering.. Crews of a minimum of six will tarp the load with a plastic sheeting of 10 mil or thicker. Tarps will be secured as needed, taking into consideration weather conditions. Securing of tarps will not hinder in any way access along deck walkways of material barges.

Collateral debris may be encountered during sediment removal. If logs, cables, or other debris are encountered, this material will be segregated on the transport barges for special handling at the offload facility. This material will be incorporated in the loads of sediment to the designated landfill as practicable.

2.5.3 Barge Water Containment

Each flat-deck material barge will have up to 6-foot fully enclosed watertight welded steel bin walls; all scupper holes will be closed off and secured. The barge will be loaded in a manner to prevent listing and material will be loaded with special care to fill no more than 1 foot from the top of the bin walls.

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Temporary barrier walls will be secured at a 45-degree angle in all four corners of the transport barges to facilitate sediment dewatering. The barriers will have seepage holes cut along the base with screens secured at the openings to retain the solids and allow water to flow behind the barrier for pumping to the lash combo barge. Slotted 55-gallon drums will be set behind the temporary barrier for water gathering and pump placement.

There will be pumps stationed on each corner of the material barge during dredging operations with 2 to 3 men dedicated for transfer of water to the lash barge. The lash barge is made up of four compartments and has approximately 450,000 gallons of total liquid capacity.

The lash barge will be hauled to Berth 408 and offloaded to the designated upland sanitary sewer manhole at T4 (see Figure 1 for location). The Port has obtained a permit from Environmental Services of the City of Portland (Batch Discharge Number 2008-027). The estimated water discharge volume is up to 1.5 to 2 million gallons. The discharge rate will be kept below 50 gallons per minute as monitored with a flow meter. If water removal is required from the lash barge prior to the first scheduled shutdown, the barge would be transported to Cascade General, located on Swan Island, to be pumped into large holding tanks without any discharge flow restriction. This work would be done at night with no impact on the dredging operation.

2.5.4 Sand Layer Placement

For the placement of the sand layer, a grid pattern of cells will be drafted and downloaded to the computer in the dredge cab. The cell size will be determined by the size of the bucket and the weight per unit area of the sand layer. HME is planning to use a 10-cy Atlas re-handle bucket with a width of 8 feet. Placement of 1 ton (approximately 0.8 cy) of the sand layer per 22 square feet of area will be accomplished by determining the weight of sand layer material required for each grid (8 feet by 25 feet—200 square feet). Each cell will require approximately 7.3 cy (5.8 tons) of sand layer material. HME will utilize a 10 cy Atlas re-handle clamshell bucket for placement

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throughout each cell. Filling the bucket 75 percent full before placement will assure at least the minimum coverage of 1 ton per 22 square feet. The cells will be displayed on the computer monitor in the cab of the crane. The operator will push the capping target button once each cell has been filled to the required weight. This will target a position of each filled cell and shade it with a selected color for display.

Positioning the dredge to start the sand layer will be done in a manner to prevent the spuds of the dredge from settling into the recently placed layer. All work will begin near shore and work offshore, covering 60 to 75 feet of width before repositioning the dredge.

To spread the sand layer evenly, the bucket will be lowered to the water surface and then cracked open. The operator will then swing throughout the cell until all of the material is removed from the bucket. The operator will then position the bucket at the center of the covered cell and push the capping target button located near the swing control lever. The capping target button will fill the cell selected with color and store the position to a saved file. Usage of this feature allows the operator to keep track of the area that has been covered.

Figure 6 illustrates the Type 3 capping placement grid.

2.5.5 Archeological Monitoring

Appendix G provides the detailed protocols for archeological monitoring. The Port will retain the services of a professional archaeologist as defined in ORS 97.740 and ORS 390.235(6) (b) to provide on-site monitoring when ground-disturbing activity is conducted within the boundaries of the archaeological sensitivity areas at Terminal 4 (Figure 1 of Appendix G) and is expected to encounter or extend into native soils or sediments

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2.6 Quality Assurance/Quality Control

HME's Construction Quality Control (CQC) Manager will be responsible for the implementation of the Contractor Quality Control Plan (CQCP). HME's Project Superintendent is responsible for the execution of the CQCP and will act as the Quality Control Representative. The derrick operators at the T4 dredge site will continually monitor location and depths at the work site and report any abnormalities to the Project Superintendent. The Quality Control Representative shall conduct inspections of all aspects of the work specified and shall report to HME's General Superintendent. Appendix B1 provides more details on the CQCP.

2.6.1 Dredging Location Control

The mainline on the crane will be marked with the bucket in the open position. There will be painted marks at 1-foot intervals. The Cable Arm bucket does not change vertical position when closing. The Atlas bucket, if needed, has a difference of 3 feet between the open and closed position. Therefore, final grade with the Atlas bucket is achieved by allowing the bucket to dig until the marks painted on the mainline read 3 feet deeper than in the open position. Both buckets require the operator to set the mainline brake when grade is reached to avoid any overdredging. Detailed drawings of the clamshell configurations will be posted in the cab to assist the operator in the elevation changes between buckets and tide levels.

Horizontal positioning and control is performed with HYPACK 6.2b DREDGEPACK software, which is supported with a C.S.I. VS100 vector antenna and a C.S.I. VS 110 differential global positioning system (DGPS) beacon receiver. The vector antenna is mounted on the stern of the dredge. This unit provides the dredge position to the operator. The unit sends a signal via 900-megahertz (MHz) Maxstream radio to the computer mounted in the crane cab. A Trimble DSM212L DGPS beacon receiver provides the position of the boom tip. There is a 20-inch flat-screen monitor mounted in front of the operator and a bucket target switch at the controls to enable the operator to target each bucket at dredged grade. All targeted buckets will have their positions stored in a saved file and submitted in the Daily Quality Control Report.

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A TideTrac electronic tide gauge will provide a water level reading every 3 minutes and will be displayed on the monitor in the cab of the crane. This unit also gives a countdown timer of the next tide update and displays the battery voltage of the gauge. Solar panels will be used to keep a constant voltage to the gauge. Staff gauges will also be set in plain sight of the operator for control verifications. Staff gauges will be checked periodically to ensure the accuracy of the electronic monitoring equipment.

2.6.2 Pre-dredge Survey and Progress Surveys

A pre-dredge survey of the area to be dredged will be taken by the Port within 1 month of beginning work. Multibeam data will be conducted by running lines on 50-foot spacing parallel with the berthing lines of the project.

HME will provide daily sounding cross sections of the previous day's work, at no greater than 25-foot trackline intervals, using a survey-grade depth sounder. The volume of material dredged and the area affected will be determined daily. Accuracy for measured depth will be +/- 0.25 foot; accuracy of horizontal positions will be +/- 3 feet at the 95 percent confidence interval.

HME will have a set of the previous day's surveys available to the Port for review at the contractor's on-site project office the following day. Drawings shall be prepared at a scale of 1 inch = 50 feet on plan sheets and shall depict the survey control lines. Cross section plots shall be prepared every 100 feet perpendicular to the capping area. The cross sections shall be depicted on plan sheets.

2.6.3 Sand Layer Tracking

Section 4.6 provides details on sand layer tracking.

Prior to any on-site placement, HME will complete a characterization of import materials. The characterization will include analysis of a source sample, site inspection, and site characterization. HME will also provide the Port with a 5-gallon sample of material from each borrow source—the Port may complete additional analysis on this 5-

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gallon material sample. Analysis will be for analytes required in the specifications. In addition, each load of imported material will be visually inspected by HME upon delivery for the presence of foreign, recycled, or reprocessed material. HME will collect certified tickets from the borrow source for each load of material brought to the site. Finally, one sample for every 20 percent of the total volume of each material imported will be taken and submitted for grain size analysis, chemistry, and total organic carbon.

2.6.4 Daily QA/QC Checks/Verification

Dredging and sand layer location control equipment will be checked daily. Progress surveys from the previous day's work will also be reviewed daily to confirm conformance with the design documents. HME will maintain and submit Daily Quality Control Reports. HME will maintain current quality control records of all inspections and tests performed. These records will include factual evidence that the required inspections or tests have been performed, including the type and number of inspections or tests involved; results of inspections or tests; nature of defects, deviations, or causes for rejection; proposed remedial action; and corrective actions taken.

2.7 Health and Safety

HME will be responsible for managing site health and safety for the sediment dredging. The HME Contractor Health and Safety Plan (CHASP) was prepared by a certified industrial hygienist, and a copy of the plan can be found in Appendix A1.

The plan assesses the risks associated with the dredging and sand layer work and details the safety plans to address them. The risks assessed are summarized under the following types and the primary project-specific risk issues are listed below:

- Toxicity of chemicals of concern – Site-related chemicals are semi-volatile organic compounds (SVOCs) in the form of PAHs, and heavy metals including lead and zinc. The primary concern is related to inhalation of dust or incidental exposure related to direct contact with sediment. These risks are addressed through dust control, good hygiene, and decontamination.

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- Physical hazards – There are no unusual physical hazards associated with the project. Construction physical hazards are discussed and addressed in the CHASP.
- Biological hazards – There are no unusual biological hazards associated with the project. Construction biological hazards are discussed and addressed in the CHASP.
- Environmental hazards – There are no unusual environmental hazards associated with the project. Given the construction schedule, heat/sun-related hazards are of greatest concern. Construction environmental hazards are discussed and addressed in the CHASP.

The Site Safety Program will be set up by a Site Health and Safety Officer who will perform onsite monitoring periodically during the project. Other qualified management personnel may assume the duties of the Site Health and Safety Officer during periods of minimal activities onsite.

Copies of the CHASP will be made available to all HME personnel involved in field work on this project and all subcontractors and other non-employees who may need to work on the site.

2.8 Environmental Protection

The dredging and capping EPP and Transportation and Disposal Plan (TDP; Appendices C1 and D1, respectively) elaborate on the control measures to prevent environmental pollution and minimize environmental degradation during and as a result of construction operations. These plans include HME's BMPs for construction work in the proximity of surface water and during transportation of materials on roadways. The plans detail the following control measures:

- Contamination prevention
- Contamination and cleanup
- Response procedures
- Erosion and turbidity control
- Supervision
- Noise control

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- Protection of air
- Spill control plan for trucking

2.8.1 Fueling of Equipment

Fuel transfers will be performed in accordance with U.S. Coast Guard oil transfer procedures aboard each derrick barge. Diesel fuel is stored in fuel tanks aboard the derrick barges. Unleaded gasoline is stored in double-wall fuel tanks aboard the derrick barges. All fuel transfer hoses have been and will be inspected, tested, marked, and maintained in accordance with U.S. Coast Guard requirements. Oil-absorbent pads and/or sweep will be used to cleanup deck spills. All equipment maintenance will be performed aboard the derrick or material barges.

2.8.2 Spill Control and Response

Appendix C1 presents HME's EPP. The following measures will be employed to control spills:

- Sediment barges are sealed on all four sides to prevent any leakage of sediments or liquid.
- Drip pans, steel plates, open-top containers, and sediment screens will be used at all points of transfer of dredged material to prevent leakage from contacting the surrounding soils or water. All containment structures will be bermed to contain sediments and prevent runoff.
- Drip pans will be used under stationary equipment and at points of liquid transfer.
- The sediment barges will be monitored continuously by the Site Superintendent at T4 and the Site Supervisor at The Dalles for any sign of leakage or spillage during loading, offloading, and transporting from the offload site to the landfill. If any leakage or spillage is detected, the operations will be terminated until repairs and/or a remedy is in place. All leakage or spillage of dredged materials will be cleaned up promptly and transported to the landfill for disposal.

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The Safety/Regulatory Manager will have overall responsibility for implementing and managing the containment and cleanup effort. The Project Superintendent at T4 and the Site Supervisor at The Dalles offload site will have direct responsibility at each respective site for containment and cleanup of spilled materials. The Project Superintendent and Site Supervisor will report all spills of dredged materials or petroleum products to the General Superintendent and Safety/Regulatory Manager, who will in turn make all required notifications to the Port and federal, state, and local authorities. NRC Environmental Services will be HME's primary spill response contractor.

On-site spill response and cleanup materials include 450 feet of 8-inch by 12-inch collapsible sea curtain stored onboard the derrick *Sea Horse*. The derrick *Sea Hawk* has 300 feet of 8-inch by 12-inch collapsible sea curtain onboard. An oil spill response and cleanup kit consisting of a pump and skimmer, Skim-Pak model 1800, 3M sorbent pads, sorbent sweep, and personal protective equipment (PPE) is available aboard each derrick.

HME maintains a complete supply of containment equipment, sorbent materials, pumps, skimmers, and PPE at the Vancouver, Washington, main office location. In addition, HME maintains a mobile Environmental Response Unit to be use in the event of a larger spill or if addition response resources are required.

All HME personnel employed have received OSHA 40-hour HAZWOPER training and are well-versed in the use and deployment of spill response equipment, as well as PPE. All subcontractor personnel will receive orientation prior to beginning work detailing the specific hazards of the project and PPE requirements. Spill equipment will be inspected periodically and documented in the Daily Quality Control Report.

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2.8.3 BMP Measures to be Employed by HME to Reduce Water Quality Impacts, Residuals, and Contaminant Migration

To reduce the likelihood of water quality impacts and dredge residuals and minimize migration of contaminated sediments beyond project limits, HME will utilize the following Best Management Practices (BMPs) during construction:

- The Berth 411 Plus dredging will be completed before the Berth 410 dredging can begin.
- Dredge passes will proceed from the head of the slip towards the mouth.
- HME will complete a horizontal dredge pass across the dredge surface before moving to the next deeper pass. A dredge pass is defined as a horizontal dredge cut consisting of up to two “bites” of the dredge bucket—one “bite” will occur as the derrick works from one side of each reach to the other, and the second “bite” may occur as the derrick works back the other direction.
- HME will begin dredging at the highest elevation of material to be removed and work toward the lowest elevation. “Glory holing” will not be allowed.
- HME will sequence their work such that there is one last pass across the entire Berth 411 Plus dredge area.
- Overfilling of the bucket will not occur.
- HME will pause the dredge bucket as it breaks the surface of the water and allow the bucket to drain free water prior to swinging and placing dredge material on the haul barge. Note that USEPA may direct HME to avoid overwater bucket dewatering as a contingency BMP if water quality exceedances are documented.
- No bottom stockpiling or multiple bites of the clamshell bucket will occur.
- HME will seal off barge scuppers on haul barges and repair any holes in fences to prevent water or sediment from draining off a haul barge.
- Barges will not be overfilled.
- No grounding of construction barges will occur.
- Overdredging at the base of a slope will not occur.
- Dragging of the dredged surface to level the mudline will not occur.

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2.8.4 Dredge Equipment Decontamination

Equipment decontamination at the end of construction will include the following procedures:

- The dredge plant derrick (*Sea Horse*) will be continually cleaned in the event that any sediment drippage occurs when removing soft sediment. Deck hands will perform this task as an ongoing process utilizing square-point shovels and/or brooms with watertight containment and incorporation in the sediment barges.
- The sectional lash barge will require extensive cleanup, as this unit will have latent sediment in the bottoms of the tank(s) generated by particulate settlement. This material will be supplemented with drying agent, mixed with the sediment, then removed for haul and disposal at the designated disposal facility.
- The sediment transport barges have steel flat-deck arrangements. A rubber-tired loader will scrape up any latent sediment for removal to on-highway dump trucks and disposal at the designated disposal facility.
- Sweeping and hand shoveling, which is anticipated to be minimal, will supplement equipment work. Following the sweeping of the lash and flat-deck transport barges, steam cleaning will be done. Rinsate will be vacuumed up by West Coast Marine Services, who will deliver the liquids and latent sediment to a wastewater disposal facility.

2.9 Scheduling/Reporting

Figure 5A presents the anticipated construction schedule for this work. T4 dredge activities are proposed to run 8- to 10-hour shifts, with the option for 12-hour shifts, 6 or 7 days per week. There is a chance that the Berth 411 dredging may occur as a double shift.

Reporting. The HME Project Superintendent is responsible for the reporting and has the sole authority for their review and approval. Standard reports include:

- Construction Reports (daily)
- Test Reports (daily)
- Calibration Records (weekly)
- Construction Photographs (weekly)

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- Survey Records (bi-weekly)
- Corrective Action Reports (as generated)

All project documents, including QA/QC reports, will be controlled by the Project Superintendent and secured in the job-site office under his direct control. Current records of operations, activities, and tests performed will be maintained.

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3 DREDGE MATERIAL HANDLING, TRANSPORT, AND DISPOSAL

3.1 Equipment

The Contractor will use the following equipment to transport and offload sediments:

- Transport barges – the barges will likely consist of 2,500-ton capacity *Umpqua 2*, 2,500-ton capacity *Umpqua 3*, and the 3,000-ton capacity *Chetco*.
- Barge transportation to the disposal transload facility will be performed by Tidewater Barge Lines with multiple crew river tug boats with HP ranges of 2,000 to 4,000 HP. Actual tugs utilized for the transport will be dependent on availability.
- The offload unit to be fixed at the dock in The Dalles will be the *Sea Vulture*. She is a Manitowoc Series 1 4,600 pedestal mounted crane on a 112-foot by 60-foot barge. The derrick is set up with two winch-controlled spuds. This unit is also equipped with state-of-the-art global positioning system (GPS) instantaneous on-screen controls.
- Support barges to be fixed at the offload site in The Dalles will be the 103-foot by 29-foot barge *BK5* and the 170-foot by 36-foot *Barge 34*. Affixed to these units will be the swing drip pans in the swing radius of the offload Cable Arm clamshell bucket.
- The primary transload excavator will be a +/-70,000-pound-class excavator equipped with a 60-inch-wide spoon bucket and thumb. This excavator will facilitate sediment offload and offload of the collateral debris removed from T4.
- Haul units will be 8-axle end-dump on-highway truck and trailers equipped with onboard axle scales to verify that loads are within legal weight limits prior to transport to the landfill. The operation will start out with five haul units and may increase to eight depending on efficiency and material flow without compromising cleanliness and safety.

3.1.1 Fueling Requirements

The fueling requirements presented in Section 2.3.1 apply to the transport and offloading activities as well.

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3.2 Transportation Means and Methods

Appendices D1 and E present HME's dredging, transportation, and disposal plan. Please see Section 2.5 for the anticipated sequencing of the dredging activities at T4. Once the barges are loaded, the following sequencing will occur.

3.2.1 Hauling Material by Barge

Sediment barges will be transported to the Bernert Barge Lines Terminal located in The Dalles (see Figure 7 for barge haul route map). The transport starts at Willamette River Mile 4, with movement initially downstream to Willamette River Mile 0/Columbia River Mile 101.5. The upstream transport will initiate at Columbia River Mile 101.5 to the Bernert Barge facility in The Dalles at Columbia River Mile 189.

The 2,500- to 3,000-ton sediment barges will be attached to the *Sea Vulture* with fleetling facilitated by a winch affixed to the *Sea Vulture* for offload. The material will be offloaded with a 14-cy Cable Arm environmental clamshell bucket. Two drip containment barges will be strategically located with fabricated drip plate(s) that overlap between the sediment barge. The two drip containment barges, 20-foot by 8-foot watertight open-top container, and the watertight sediment transfer box will be placed at dock's edge. The placement of the drip containment will be in the path of the *Sea Vulture's* offload swing radius to eliminate the potential of spilling sediments into the river, onto the dock, and on the ground upland (see Figure 8).

Tarp removal (if used) will take place just prior to offloading. Tarps will be unlash and rolled in small sections for safe handling and then stowed at end bin walls of the material barge. Tarps may be reused if deemed fit to do so. All proper PPE, as identified in the HME CHASP (Appendix A1), will be worn during all tarping operations.

3.2.2 Transloading and Disposal of Sediments and Debris at Subtitle D Landfill

The initial activity for this portion of the T4 project will be the development of the upland offload facility, which includes but is not limited to pavement improvements,

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stormwater management berms, watertight transload box installation, drying agent storage, truck lining station, truck covering station, and dry decontamination station (see Figure 8).

Pavement improvements will include subgrade preparation and paving of the existing gravel area along the east side of the property. In addition to the new pavement in this area, existing joints and transitions will be sand seal coated. Extruded asphalt curbing will be installed to corral precipitation and add a redundant mechanism to isolate potential spillage (if any) in the re-handle/transloading process.

Ecology blocks will be used to develop the drying agent containment area within reach of the load-out excavator. The drying agent will be stockpiled at the landfill and will be backhauled to the Bernert yard as needed to maintain a sufficient quantity to supplement the sediment moisture reduction program. The drying agent will be stockpiled on both the barge and the ground adjacent to the excavator.

A custom fully-welded, watertight steel fabricated box will facilitate a large target for the clam to transfer the sediments for rehandle to on-highway 8-axle truck and trailers. The walls of the box will be of sufficient height to eliminate the potential of splattering sediment outside of the containment as the clamshell opens.

Prior to load-out in the trucks, each bed will be fully lined with plastic before the sediments are loaded. Concurrently, bed liners will be shipped/stored, the lining and truck bed covering stations will be constructed and the truck haul routes (temporary pavement markers) will be established. Upon completion of loading the trucks, each truck bed will be covered prior to departure to the landfill. If sediment spillage occurs at the transfer point, the material will be immediately hand-shoveled, swept up, and incorporated into the load.

“Trucks entering and leaving” signs will be installed on both sides of the road accessing the Bernert yard to establish notice to the public.

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Dust suppression will be handled with water misting of the sediment via the water pumps on the *Sea Vulture*. A widespread water misting system will be strategically placed to moisten the exposed sediments and completely eliminate airborne particulates. In addition, dust will be fully suppressed at the surge/transload box. This will be accomplished in the same manner as described above, with water sourced from either one of the pumps on the *Sea Vulture* or the upland fire hydrant located at the entrance to the Bernert facility. All water used for dust suppression will be contained within the barge.

The truck loading procedure will be as follows:

- Truck beds will be lined at the bed lining station.
- Trucks will pull into the loading zone.
- Sediments offloaded by the *Sea Vulture* will be placed in the surge/transload box.
- The 70,000-pound excavator will supplement and mix the drying agent with the sediment as needed to absorb any moisture prior to loading in the truck.
- Trucks will be loaded with special care to direct the material for transport to the Wasco County Landfill. On-board axle scales will facilitate loads to legal limits.
- The loaded truck will be inspected for any latent spillage of sediment and immediately cleaned off.
- The loaded truck will then move to the tarping station for load coverage prior to disembarking to the landfill.
- Concurrently with the offload of sediment, submersible pumps will be available to pump off any free liquids generated in the process either in the transport barges or surge box. Water generated will be allowed to settle and the water will be pumped off to a water hauler for disposal at an approved municipal treatment site or the Wasco County Landfill. During pumping operations all connections will be visually monitored for signs of leakage.
- Housekeeping is imperative and personnel will be dedicated to maintain drip pans, haul routes, and truck decontamination through the entire cycle of operations.

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As a precaution, two Baker/Frak tanks will be permanently stationed on one of the drip containment barges and the upstream end of the *Sea Vulture* to facilitate free liquids (if any) pumped off of the sediment transport barges. During pumping operations all connections will be visually monitored for signs of leakage.

3.2.3 Hauling Material by Truck

The trucks will haul on the designated haul route shown on Figure 9. Trucks will weigh in, generating certified scale weights of each load for detailed recording. The load will be dumped and trucks will exit and return to the Bernert yard to start another round of the cycle.

The approved landfill is the Subtitle D Wasco County Landfill facility in The Dalles, Oregon. The drying agent is a landfill approved material produced at the Camas, Washington, Georgia-Pacific paper plant. This material is an ash-based byproduct generated in the process of paper production. The material has proven historical effectiveness as experienced on previous sediment removal projects performed throughout the Portland Harbor and specifically on the previous contract at T4.

3.3 Quality Assurance/Quality Control

Appendix B1 provides details on the CQCP. HME's CQC Manager will be responsible for the implementation of the CQCP. HME's Project Superintendent is responsible for the execution of the CQCP and will act as the Quality Control Representative. The Quality Control Representative shall conduct inspections of all aspects of the work specified and shall report to HME's General Superintendent.

Disposal information will be maintained for each barge load of material transported for disposal. Transportation by truck from the offload site at The Dalles to the landfill will be strictly monitored. Daily reports will include records of number of trucks loaded and total tonnage for each day transported to the landfill. Each truck load will be recorded for date loaded, ticket number for load, and tonnage loaded. All truck tickets and records will be retained and submitted.

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3.4 Health and Safety

HME will be responsible for managing site health and safety for the sediment dredging. The HME CHASP was prepared by a certified industrial hygienist, and a copy of the plan can be found in Appendix A1.

The plan assesses the risks associated with the dredging and sand layer work and details the safety plans to address them. The risks assessed are summarized under the following types, and the primary project-specific risk issues are listed below:

- Toxicity of chemicals of concern – Site-related chemicals are SVOCs in the form of PAHs, and heavy metals including lead and zinc. The primary concern is related to inhalation of dust or incidental exposure related to direct contact with sediment. These risks are addressed through dust control, good hygiene, and decontamination.
- Physical hazards – There are no unusual physical hazards associated with the project. Construction physical hazards are discussed and addressed in the CHASP.
- Biological hazards – There are no unusual biological hazards associated with the project. Construction biological hazards are discussed and addressed in the CHASP.
- Environmental hazards – There are no unusual environmental hazards associated with the project. Given the construction schedule, heat/sun-related hazards are of greatest concern. Construction environmental hazards are discussed and addressed in the CHASP.

The Site Safety Program will be set up by a Site Health and Safety Officer who will perform on-site monitoring periodically during the project. Other qualified management personnel may assume the duties of the Site Health and Safety Officer during periods of minimal activities onsite.

Copies of the CHASP will be made available to all HME personnel involved in field work on this project and all subcontractors and other non-employees who may need to work on the site.

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3.5 Environmental Protection

The environmental protection measures presented in Section 2.8 apply to the transport and offloading activities as well.

3.5.1 Fueling of Equipment

The equipment fueling measures presented in Section 2.8.1 apply to the transport and offloading activities as well.

3.5.2 Spill Control and Response

The spill control and response measures presented in Section 2.8.2 apply to the transport and offloading activities as well.

3.5.3 Best Management Practices

HME will ensure that the following minimum BMPs are implemented during transloading to minimize loss of sediments:

- Spill aprons, upland spill control curbing and collection systems, and other spill control measures will be used when transferring material from the haul barges to the transloading facility. If a bucket is used to offload dredged material from the barge, a dribble apron will be used to catch and collect any material dropped during offloading operations. No material will be allowed to re-enter the river at the offloading facility.
- The swing path of the crane will be maintained over constructed spill aprons of catch barges during material transfer, and Anchor will monitor for any spillage.
- Clean tarping at the truck loading area will be provided, as necessary, to prevent tire contact with materials.
- Following loading of each truck, the truck and area immediately around the truck will be visually inspected for spilled material. Spilled material will be cleaned up immediately.
- Cleaning of tires (if necessary), including dry brushing and/or tire/wheel washing, will occur before leaving the offloading site.
- Truck loads will be covered before leaving the site.

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- Street sweeping using non-compressed-air-type sweeper will occur from the loading area to the off-site street.
- HME will provide a disposable pad for any material loadout areas in order to keep the ground surface clean before the next truck is loaded.
- Once the truck is cleared to leave the facility following inspection and cleaning, if applicable, the load will be documented on a manifest that will be carried by the driver.
- Dock curbing will be used to prevent any potential spill material and rainwater from entering the river.
- Truck beds will be watertight and covered during transport to the disposal facility. Trucks will be loaded on disposable pads or tarps and underloaded to minimize loss during transport. Routine visual inspections of the loading area and access routes will be performed by HME and Anchor.

3.5.4 Offloading and Transportation Equipment Decontamination

Equipment decontamination will include the following procedures:

- The *Sea Vulture* and associated drip containment barges affixed to the Bernert Terminal will be cleaned as needed. Upon completion of the project, it is anticipated that only minor hand cleanup will be required to prepare this equipment for demobilization.
- The upland equipment will be thoroughly inspected and swept clean of latent sediment (if any) prior to demobilization. This equipment consists of an excavator, rubber-tired loaders for barge cleanup and the on-highway end-dump truck and trailers.
- All latent material will be loaded and hauled to the designated landfill for proper disposal.
- The barge transload facility will be the focal point of thorough dismantling and cleanup. The splash pans will be scraped and swept of any latent sediment; the transfer/surge box will have drying agent added to the bottom to facilitate any liquefied sediment for scrape-out with the transload excavator. Hand labor will be deployed as needed to sweep out any remaining sediment in the bottom of

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the box. Pressure-washing and vacuuming of the rinsate by Coast Marine Services will be the final step in the process prior to demobilization of the sediment transfer box.

- Containment linings will be gathered up for consolidation in a dump truck for disposal at the landfill.
- The entire site will be swept of any latent debris with acceptance of the agencies and owner.

3.6 Scheduling/Reporting

Schedule. Figure 5A presents the anticipated construction schedule for this work. The transload operation will run up to 14 hours per day, primarily 6 days per week, with an occasional Sunday as needed.

Reporting. The HME Project Superintendent is responsible for the reporting and has the sole authority for their review and approval. Standard reports include:

- Construction Reports (daily)
- Test Reports (daily)
- Calibration Records (weekly)
- Construction Photographs (weekly)
- Survey Records (bi-weekly)
- Corrective Action Reports (as generated)

All project documents, including QA/QC reports, will be controlled by the Project Superintendent and secured in the job-site office under his direct control. Current records of operations, activities, and tests performed will be maintained.

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4 HEAD OF SLIP 3 CAPPING

4.1 Capping Performance Standards

The intent of the cap is to isolate the surface sediments containing elevated contaminant concentrations from benthic communities and the aquatic environment by addressing appropriate long-term erosive, as well as contaminant transport, mechanisms. The cap will be designed to conform to USEPA and the U.S. Army Corps of Engineers (USACE) capping guidance documents, including *Assessment and Remediation of Contaminated Sediments (ARCS) Program Guidance for In Situ Subaqueous Capping of Contaminated Sediments* (Palermo et al. 1998). Specifically, the cap shall meet the following performance standards:

- Design the chemical isolation layer, where necessary, to contain sheens exiting from the shoreline.
- Design the armor layer of the cap to resist bed shear velocities induced by the largest of 100-year flood flow, 100-year waves, vessel-induced waves from typical passing vessels, and anticipated propeller wash from vessels that operate in the area.
- Use import cap material that meets defined chemical goals (presented in the Capping specification of DAR Appendix E; Section 352025).
- Conduct the work consistent with the BMPs listed in the Capping specification (DAR Appendix E; Section 352025), in order to minimize mixing of cap material with underlying contaminated sediments.
- Conduct the work consistent with the WQMP (DAR Appendix H) and the WQCCMP, in order to minimize water quality impacts outside the compliance boundary.

4.2 Capping Summary

Figure 10 shows a cross section through the cap at the Head of Slip 3. The cap section will consist of 870 tons of Type 3 cap material (sand and gravel mixed with organoclay) below 2,450 tons of Type 3 armor material. The cap will first be placed in front of the timber bulkhead to increase the stability.

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4.3 Equipment

The Slip 3 cap component will be performed with the dredge unit *Sea Horse* supplemented with the water crane *Sea Hawk* and a low-impact walking excavator (spider hoe) on the steep bank dry section for the Type 3 cap. The *Sea Horse* is a Manitowoc Vicon3900B pedestal mounted unit on a 110 foot by 48 foot by 8 foot high barge. The barge has two spuds for stability.

4.3.1 Fueling Requirements

The fueling requirements presented in Section 2.3.1 apply to the capping activities as well.

4.4 Materials

The imported processed capping materials will be supplied by Ross Island. The Type 2 aggregate material will be mined from their Avery, Washington, source located next to the Columbia River with a conveyed barge loading terminal. The unprocessed mine material is barged to Ross Island's southeast Portland facility for offloading and processing to produce material as specified.

Organoclay, a component of the Type 3 material, will be purchased by Ross Island and mixed to a homogeneous product at 10 percent by weight added to the specified aggregate with a batch mixing plant. Organoclay will be furnished as specified, by "CETCO" to Ross Island for the Type 3 material. The material will be shipped in 1,500-pound bulk bags to Ross Island's Portland yard. This material will arrive in late August for processing and delivery to the job site by barge.

The Avery source, located just a few miles upstream of the The Dalles, is adjacent to the Columbia River on Native American land owned by Confederated Tribes and Bands of the Yakama Nation. This is Ross Island's aggregate source for all of their products. Materials from this source have been used on numerous environmental cap projects, most notably the McCormick and Baxter Creosote Facility upland cap which covered a 24-acre site with a

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Resource Conservation and Recovery Act (RCRA) and Non-RCRA component sponsored by USEPA for DEQ.

Base Cap Type 2 material will be barged to a Ross Island Ready-Mix plant in three separate sized aggregate piles, 1-1/2- to 3/4-inch; 3/8-inch to #4; and Oregon Department of Transportation (ODOT)-spec sand. Each aggregate pile will be fed separately into a weight hopper until a predetermined weight is reached from each pile. Upon reaching the predetermined batch weight from each pile, a computer will document each individual weight for an accumulated batch weight of Base Cap Type 2 material. The predetermined weight of Organoclay for the 10 parts of Base Cap Type 2 to 1 part Organoclay will be added to the batch. The Organoclay and Base Cap Type 2 material will then be dumped into the primary concrete drum batch mixing plant and blended to produce the specification Base Cap Type 3. Certified batch ticket weights will be provided for each batch blended, similar to what is practiced in producing high-strength ready-mix concrete. It is the practice at Ross Island to recertify the hopper scales every 6 months. For this project, recertification of the hopper scales will be performed immediately prior to producing the Base Cap Type 3 material.

Riprap will be supplied by Rinker Materials (Rinker) from the historic Fisher Quarry source in Camas, Washington. This source has been in operation for over 100 years, providing armor and jetty rock for major projects in Oregon and southwest Washington along the Columbia River and Oregon coast. Rinker will deliver the material to the HME Vancouver yard for load-out onto one of HME's flat-deck barges for tow to the T4 location.

Imported material will need to meet the chemical criteria presented in Table 2. Section 4.6 describes the QA testing to be conducted on import materials.

4.5 Capping Methods and Procedures

The in-water portion of the Type 3 material at Slip 3 will be placed by the same method as discussed for the sand layer placement (see Section 2.5). As with the sand layer, the capping

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target button, upon depression, will fill the cell selected with color and store the completed location in the computer file.

Riprap will be placed with a skip box either by the *Sea Hawk* or *Sea Horse* on the water side of the existing wall at the head of Slip 3.

The land component will be performed in combination with the walking excavator and Type 3 material fed by a water crane via skip box for surgical placement and dressing in the sloped area. Initially, the walking excavator, equipped with a winch to tie off to a much heavier piece of mobile equipment at the top, will carefully remove the Class 100 riprap in the area(s) of placement.

The processed Type 3 material on the barge will be skip-placed in the segment to be capped within reach of the walking excavator. Cap material will then be spread from the base of the slope upward in each segment. Upon completion of the cap placement and inspection, the riprap will be rehandled and carefully replaced. The plan is to completely finish a section, across the total width, in three to four 30 to 40-foot lengths, then move to the next segment. By not opening the entire upland area, overall stability of the upper slopes is better maintained, greatly reducing the potential for needing movement in and out of the easily damaged existing planting areas.

4.6 Quality Assurance/Quality Control

Appendix B1 provides details on the CQCP. HME's CQC Manager will be responsible for the implementation of the CQCP. HME's Project Superintendent is responsible for the execution of the CQCP and will act as the Quality Control Representative. The Quality Control Representative shall conduct inspections of all aspects of the work specified and shall report to HME's General Superintendent.

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4.6.1 Pre-cap Survey and Progress Surveys

A pre-cap survey of the area to be capped will be taken by the Port within 1 month of beginning work. Multibeam data will be conducted by running lines on 50-foot spacing parallel with the berthing lines of the project.

HME will provide daily sounding and topographic cross sections of the previous day's work, at no greater than 25-foot trackline intervals, using a survey-grade depth sounder. The volume of material dredged and the area affected will be determined daily. Accuracy for measured depth will be +/- 0.25 foot; accuracy of horizontal positions will be +/- 3 feet at the 95 percent confidence interval.

HME will have a set of the previous day's surveys available to the Port for review at the HME's on-site project office the following day. Drawings will be prepared at a scale of 1 inch = 50 feet on plan sheets, and will depict the survey control lines. Cross-section plots will be prepared every 100 feet perpendicular to the capping area. The cross sections will be depicted on plan sheets.

4.6.2 Cap Material Tracking

Prior to any in-water placement of the cap materials, a dry run will be performed on the barge to test the swing speed and dimensions of bucket opening to dial in the rate of deployment and area coverage to produce the specified cover and depth. This dry run will facilitate visual inspection and verify that the method proposed will produce the specified thickness and cover area. Capping quality control in-water will be managed by the area to volume ratio completed on the crane computer system. A survey will be performed daily by HME to backup the computer-generated information.

The upland component will be visually verified as areas are completed to confirm that the desired coverage meets the specified requirements prior to replacement of the shoreline protection.

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Prior to any on-site placement, HME will complete a characterization of import materials. The characterization will include analysis of a source sample, site inspection, and site characterization. HME will also provide the Port with a 5-gallon sample of material from each borrow source—the Port may elect to do additional testing on this sample. Analysis will be for analytes required in the specifications. In addition, each load of imported material will be visually inspected by HME upon delivery for the presence of foreign, recycled, or reprocessed material. HME will collect certified tickets from the borrow source for each load of material brought to the site. Finally, one sample for every 20 percent of the total volume of each material imported will be taken and submitted for grain size analysis, chemistry, and total organic carbon.

4.6.3 Daily QA/QC Checks/Verification

Cap layer control equipment will be checked daily. Progress surveys from the previous day's work will also be reviewed daily to confirm conformance with the design documents. HME will maintain and submit Daily Quality Control Reports. HME will maintain current quality control records of all inspections and tests performed. These records will include factual evidence that the required inspections or tests have been performed, including the type and number of inspections or tests involved; results of inspections or tests; nature of defects, deviations, or causes for rejection; proposed remedial action; and corrective actions taken.

4.7 Health and Safety

HME will be responsible for managing site health and safety for the capping. The HME CHASP was prepared by a certified industrial hygienist, and a copy of the plan can be found in Appendix A1.

The plan assesses the risks associated with the capping work and details the safety plans to address them. The risks assessed are summarized under the following types, and the primary project-specific risk issues are listed below:

- Toxicity of chemicals of concern – Site-related chemicals are SVOCs in the form of PAHs, heavy metals including lead and zinc, and diesel. The primary concern is

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- related to inhalation of dust or incidental exposure related to direct contact with soil. These risks are addressed through dust control, good hygiene, and decontamination.
- Physical hazards – There are no unusual physical hazards associated with the project. Construction physical hazards are discussed and addressed in the CHASP.
 - Biological hazards – There are no unusual biological hazards associated with the project. Construction biological hazards are discussed and addressed in the CHASP.
 - Environmental hazards – There are no unusual environmental hazards associated with the project. Given the construction schedule, heat/sun-related hazards are of greatest concern. Construction environmental hazards are discussed and addressed in the CHASP.

The Site Safety Program will be set up by a Site Health and Safety Officer who will perform on-site monitoring periodically during the project. Other qualified management personnel may assume the duties of the Site Health and Safety Officer during periods of minimal activities onsite.

Copies of the CHASP will be made available to all HME personnel involved in field work on this project and all subcontractors and other non-employees who may need to work on the site.

4.8 Environmental Protection

The environmental protection measures presented in Section 2.8 apply to the head of Slip 3 capping activities as well.

4.9 Scheduling/Reporting

Schedule. Figure 5A presents the anticipated construction schedule for this work. The capping operation will run up to 8 to 12 hours per day, primarily 5 days per week. The capping work is anticipated to take 3 to 5 days to complete. Section 2.5 describes when the capping work will occur relative to the other Slip 3 activities.

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Reporting. The HME Project Superintendent is responsible for the reporting and has the sole authority for review and approval. Standard reports include:

- Construction Reports (daily)
- Test Reports (daily)
- Calibration Records (weekly)
- Construction Photographs (weekly)
- Survey Records (bi-weekly)
- Corrective Action Reports (as generated)

All project documents, including QA/QC reports, will be controlled by the PM and secured in the job-site office under his direct control. Current records of operations, activities, and tests performed will be maintained.

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5 WHEELER BAY SHORELINE STABILIZATION

5.1 Shoreline Stabilization Performance Standards

The intent of the Wheeler Bay shoreline stabilization work is to stabilize targeted shoreline areas to address long-term erosive mechanisms. Specific performance standards include:

- To the extent feasible, regrade banks to slopes that are naturally stable.
- For areas where armoring is necessary, design the armor layer to resist bed shear velocities induced by the largest of 100-year flood flow, 100-year waves, vessel-induced waves from typical passing vessels, and anticipated propeller wash from vessels that operate in the area.
- Use import material for fill and grading that meets defined chemical goals (presented in the DAR Appendix E Site Clearing, Earthwork and Shoreline Stabilization specification; Section 312000).
- Conduct the work consistent with the WQMP (DAR Appendix H) and the WQCCMP in order to minimize water quality impacts outside the compliance boundary.

5.2 Wheeler Bay Shoreline Stabilization Summary

Figures 11 and 12, detail the design and construction of the Wheeler Bay shoreline stabilization. Each of the different components of the shoreline work has a different total thickness. Figure 12 presents a detail showing how the different components will tie together to produce an even surface down the slope. The sequencing of the work will be as follows:

- The slope will be graded as shown on Figures 11 and 12. The northern portion of the slope will be graded to a 3 horizontal to 1 vertical (3H:1V) slope. An estimated 1,800 cy of excess material from the site grading will be removed from the site for recycling or disposal. The far southern portion of the slope will be graded to a 2H:1V slope. The northern portion will be a cut-and-fill exercise to achieve the 3H:1V grade. Establishing the 2H:1V slope in the respective portion will require filling.
- Once the 3H:1V slope is to grade, the surface treatments will be constructed on the graded surface. For the toe portion (from elevation 15 feet National Geodetic

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Vertical Datum (NGVD) down to the bottom of new grading), an armor layer over a filter layer will be placed. The armor will be covered with 1 foot of habitat material, large woody debris, and habitat logs.

- For the middle section (from elevation 15 to 20 feet NGVD) topsoil, coir erosion-control fabric, and willow plantings will be placed.
- The top portion (from elevation 20 feet NGVD to the slope top) will have a jute mat over composted soil and hydroseeding. A row of cottonwood pole plantings will occur at elevation 20 feet NGVD.

5.3 Equipment

The shoreline stabilization work in Wheeler Bay will be completed with land-based construction equipment. The equipment to be utilized for grading, filling and compacting, and landscape work includes:

- 75,000-pound excavator to excavate subgrade
- 75,000-pound long-reach excavator to excavate subgrade
- 30-ton articulated dump trucks to transport excavated and imported materials
- 35,000-pound dozer for the preparation of subgrade and installation of slope materials
- Backhoe for various activities onsite, including offloading and hauling of erosion-control materials, large woody debris, and anchor blocks
- Compactor for backfilling
- 3,500-gallon water truck for dust control and equipment decontamination

Equipment will be late-model and well maintained. All safety guards, power cutoffs, and alarms shall be verified to be in working order when the equipment first arrives at the site. Diesel equipment will be fueled with ultra low-sulfur diesel.

5.4 Materials

Project materials generally consist of earthwork and landscaping materials. Below the relevant information about materials to be used is summarized. The Construction

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Specifications (DAR Appendix E) present both physical and chemical parameters for the imported materials.

Material	Description	DAR Specification Section or Drawing*	Installed Location (Station 0+00 to 7+40 unless otherwise stated)	Quantity	Source
Demarcation Layer	New Plastic grid fencing	312000-2.7	Subgrade surface, elevation 10 feet to 30 feet	5,000 sy	Construction supplier; TBD
Filter Layer	4-inch minus sandy gravel	312000-2.3	Bottom layer, elevation 10 feet to 15 feet	600 cy	Knife River, Angell Quarry, 14545 NW St. Helens Rd., Portland, OR
Armor	100-pound rock	312000-2.5	Middle layer, elevation 10 feet to 15 feet; Top layer Station 7+40 to 8+50	1,000 cy	Knife River, Watters Quarry, 60371 Columbia River Hwy., St. Helens, OR
Habitat Material	2-inch minus sandy gravel	312000-2.6	Top layer, elevation 10 feet to 15 feet	400 cy	Knife River, Angell Quarry, 14545 NW St. Helens Rd., Portland, OR
Large Woody Debris	Natural wood materials salvaged from existing beach above elevation 10 feet	353200-2.1.A	Surface, elevation 10 feet to 15 feet	Whatever present at time of construction	Existing beach
Habitat Logs	Natural conifer logs minimum 12-inch diameter by 21 feet long with root wads; anchored	353200-2.1.B	Surface, elevation 10 feet to 15 feet	12 logs	TBD
Coir Fabric	Heavy erosion control fabric	329119-2.2	Elevation 15 feet to 20 feet	1,500 sy	Construction supplier; TBD
Jute Mat	Natural fiber erosion control fabric	329119-2.1	Elevation 20 feet to 30 feet	3,000 sy	Construction supplier; TBD
Topsoil	Loam-mulch mix	329119-2.5	Elevation 15 feet to 30 feet	1,700 cy	Commercial pit; TBD

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Material	Description	DAR Specification Section or Drawing*	Installed Location (Station 0+00 to 7+40 unless otherwise stated)	Quantity	Source
Willow	1-gallon containers of scouler, hooker, and Columbia River willow	Drawing L-2	Elevation 15 feet to 20 feet	750 plants	Commercial nursery; TBD
Cottonwood	2-gallon containers of black cottonwood	Drawing L-2	Elevation 20 feet	75 plants	Commercial nursery; TBD
Hydroseed	Native grass seed, cellulose, and binder in water	329219-Part 2	Elevation 20 feet to 30 feet	2,500 sy	Commercial nursery; TBD
Mulch	Ground fir or hemlock bark	329300-2.2.A	Elevation 15 feet to 20 feet	200 cy	Commercial supplier; TBD

* Design Analysis Report Appendices D and E; Anchor 2008
 sy = square yards, cy = cubic yards

Table 2 presents chemical goals for import materials. The table includes the Threshold Effects Concentration (TEC) criteria where they exist. The import material should meet TEC criteria or regional background concentrations as appropriate. In addition, concentrations of key bioaccumulative constituents, including polychlorinated biphenyls (PCBs), DDTs, and other chlorinated pesticides, should be undetectable using standard laboratory methods.

The CQCP for the Wheeler Bay shoreline stabilization in Appendix B2 outlines the test requirements, inspections, identification/documentation, and test frequencies to be conducted for the materials used for filling and landscape work.

5.5 Earthwork and Landscaping Methods and Procedures

The methods and procedures for the Wheeler Bay shoreline stabilization earthwork and landscaping are summarized below. BMPs for earthwork activities are discussed in the EPP in Appendix C2.

- **Erosion Control.** Erosion control will be installed prior to beginning any site earthwork. At a minimum, silt fence will be installed on the sides and downslope of

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- the project area. Construction fencing will delineate the project area along the railroad.
- **Dust Control.** Dust control will be provided at all times during onsite activities. Primary dust control will be by water truck and fire hose. Operational procedures will be adjusted during periods of high wind to maintain optimal dust control.
 - **Debris Removal.** Large woody debris within the project site will be removed from the beach and stockpiled on-site for future reuse. All other debris within the project area (generally consisting of concrete and treated wood but also including miscellaneous refuse) will be removed for recycling or disposal in accordance with Section 5.6.
 - **Grade Control.** Prior to the start of excavation, the area will be surveyed and staked by a third-party Professional Land Surveyor (PLS). Surveying and grade control performed during the excavation and fill process will be performed by Envirocon's in-house surveyor with oversight from the third-party PLS. See also Section 5.7.
 - **Clearing and Grubbing.** Clearing and grubbing will take place the first week onsite following installation of the erosion-control measures. The work will be performed with an excavator and articulated truck. Material generated during clearing and grubbing will be handled in accordance with Section 5.6.
 - **Subgrade Cut and Fill.** Subgrade cut and fill will begin the end of the first week onsite and will be performed with two excavators, an articulated truck, a water truck, and compaction equipment. Excess material generated during subgrade cut and fill activities will be handled in accordance with Section 5.6.
 - **Installation of Surface Materials (Elevation 10 feet to 15 feet).** The installation of the fill materials will commence following verification that the subgrade is at the appropriate elevation. The demarcation layer, select fill, armor stone, habitat cover, large woody debris, and habitat logs will be placed as depicted on the Drawings and described in the Construction Specifications (DAR Appendices D and E, respectively). Installation will be performed with an excavator, backhoe, dozer, articulated truck, water truck, and compaction equipment.
 - **Installation of Surface Materials (Elevation 15 feet to 30 feet).** Installation of the fill materials will take place once the toe has been constructed to elevation 15 feet.

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- Installation of the demarcation layer, topsoil, and coir fabric will be conducted per the plans and specifications. Installation will be performed with an excavator, backhoe, dozer, articulated truck, and water truck. Mulch will be installed between elevation 15 and 20 feet using a pneumatic blower to the depth specified in the Drawings and Construction Specifications (DAR Appendices D and E, respectively).
- **Planting and Seeding.** The installation of plant materials will begin in the end of the fourth week onsite. Planting will occur following the topsoil placement and will be performed under the supervision of a qualified landscaping professional. Willows will be planted between elevation 15 feet and 20 feet. Cottonwoods will be planted at elevation 20 feet. Hydroseeding and jute matting will be placed per the Drawings and Construction Specifications (DAR Appendices D and E, respectively) above elevation 20 feet.

5.6 Methods and Procedures for Transportation and Disposal of Excess Materials

Materials that may be generated for removal from the site include vegetation free of soil, rootballs and other grubbing materials containing soil, concrete debris, asphalt concrete debris, miscellaneous debris, and excess soil from subgrade cut and fill. Practices for on-site handling and off-site transportation of these materials are discussed in the EPP in Appendix C2 and the TDP in Appendix D2. These materials will be handled, transported, and recycled or disposed of in accordance with the following guidelines.

Handling. All materials bound for off-site recycling or disposal will be either direct-loaded into trucks for transportation to the landfill or stockpiled on-site pending loading and transport. If stockpiled outside the boundary of grading activities, waste materials (materials bound for off-site disposal at a landfill) will be placed on plastic. These stockpiles will be covered and secured with plastic if stockpiled for more than 1 day.

Materials bound for off-site recycling will be cleaned of soil using the following approach:

- Loading and hauling of debris for recycling is subject to inspection and approval of USEPA.

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- Debris will be gripped by the excavator and soil shaken loose at the point of removal.
- Debris will be stockpiled for inspection/cleaning prior to loading.
- Each debris piece will be inspected for attached soil. Attached soil will be removed by dry sweeping as necessary until free of visible soil (maximum of 5 percent of surface area covered with soil). After inspection, clean debris will be loaded for off-site transport.

Transportation. Materials will be transported by truck in accordance with U.S. Department of Transportation requirements. Trucks will weigh in, generating scale weights of each load for detailed recording.

Recycling or Disposal. Materials removed from the site will be recycled or disposed of in accordance with the following:

- Vegetation free of soil will be sized and transported to an approved wood waste recycler. The identified recycler is Waste Connections Wasco County Landfill.
- Concrete and asphalt concrete free of soil will be sized appropriately and transported to an approved recycling facility. The identified recycler is Porter W. Yett Co. of Portland, Oregon.
- Rootballs and other grubbing materials containing soil, miscellaneous debris, and excess soil from subgrade cut and fill will be transported as waste to Waste Connections Wasco County Landfill.

Best Management Practices. The following BMPs will be implemented during transport of materials from the site:

- All loose material will be dry-swept from the truck prior to leaving the site.
- Loads will be inspected to verify that there is no free water.
- All loads will be covered.
- If spillage occurs at the loading point, the material will be immediately hand shoveled and incorporated into the load.

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5.7 Quality Assurance/Quality Control

The Wheeler Bay shoreline stabilization's Quality Control System will be implemented by Envirocon's management team who are responsible for the project quality. The CQCP in Appendix B2 defines the tasks and responsibilities of the management team, including policies, procedures, inspections, and documentation.

5.7.1 Survey Control/Settlement Monitoring

Envirocon's Survey Control Plan begins with the coordination efforts of establishing project site reference points provided by the Port's Engineering Project Surveyor. From these reference points, the Envirocon licensed PLS subcontractor will establish a pre-existing surface model and also set construction reference stakes. Envirocon's in-house construction surveyor will work in coordination with the PLS.

5.7.2 Progress Surveys

Once pre-existing site conditions have been established and documented and the first set of construction reference stakes are set, Envirocon's construction surveyor will then lead construction staking as needed for each phase of work. When the work is completed, the PLS will resurvey for finish lines and grades. Final drawings will be submitted upon completion of work.

Material placement will be visually verified as areas are completed to confirm the desired coverage meets the specified requirements. Intermediate grades and layer thicknesses will be verified by the Envirocon construction surveyor prior to replacement of overlying layers.

5.7.3 Daily QA/QC Checks/Verification

The CQCP in Appendix B2 includes a description of the methods to manage the review, approval, and revision of documents and submittals. QA/QC reports on the work quality will be managed, protected, maintained, and submitted according to the Construction Specifications (DAR Appendix E). The Envirocon Project Superintendent will prepare daily construction reports that will include, but are not limited to:

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- Number of personnel working
- Site weather conditions
- Description of trades working on the project
- Work performed each day stating location, description, and by whom
- Currently active subcontractor(s) and the task/area of responsibility
- Type of equipment used each day stating location and description
- Off-site quarry inspections, including any actions taken or communications with the Quarry Operator
- Materials received at the site and their condition
- Test and/or control activities performed with results, specification requirements, and identification of deficiencies noted along with relevant corrective action(s)
- Instructions received from the Port representative
- Conflicts in drawings and/or specifications
- Delays, if any

The records will document contract compliance of workmanship, equipment, and materials. The records will include attached copies of reports and tests performed. The daily report will be reviewed and countersigned by the Envirocon project manager. Copies of the daily report will be given to the Port's representative, on the following day.

5.7.4 Import Material Characterization

Prior to any on-site placement, Envirocon will complete a characterization of import soil materials. The characterization will include analysis of a source sample, site inspection, and site characterization. Envirocon will also provide the Port with a 5-gallon sample of material from each borrow source—the Port may elect to do additional testing on this sample. Analysis will be for analytes required in the specifications. In addition, each load of imported material will be visually inspected by Envirocon upon delivery for the presence of foreign, recycled, or reprocessed material. Envirocon will collect certified tickets from the borrow source for each load of material brought to the site. Finally, one sample for every 20 percent of the total volume of each earthen material imported

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(excluding armor stone) will be taken and submitted for grain size analysis, chemistry, and total organic carbon.

5.8 Health and Safety

Envirocon will be responsible for managing site health and safety for the Wheeler Bay shoreline stabilization project. The Envirocon CHASP was prepared by a certified industrial hygienist, and a copy of the plan can be found in Appendix A2.

The plan assesses the risks associated with the stabilization work and details the safety plans to address them. The risks assessed are summarized under the following types, and the primary project-specific risk issues are listed below:

- Toxicity of chemicals of concern – Site-related chemicals are PAHs, metals, and pesticides. The primary concern is related to inhalation of dust or incidental exposure related to direct contact with soil. These risks are addressed through dust control, good hygiene, and decontamination.
- Physical hazards – There are no unusual physical hazards associated with the project. Construction physical hazards are discussed and addressed in the CHASP.
- Biological hazards – There are no unusual biological hazards associated with the project. Construction biological hazards are discussed and addressed in the CHASP.
- Environmental hazards – There are no unusual environmental hazards associated with the project. Given the construction schedule, heat/sun-related hazards are of greatest concern. Construction environmental hazards are discussed and addressed in the CHASP.

The Site Safety Program will be set up by a Site Health and Safety Officer, who will perform on-site monitoring periodically during the project. Other qualified management personnel may assume the duties of the Site Health and Safety Officer during periods of minimal activities onsite.

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Copies of the CHASP will be made available to all Envirocon personnel involved in field work on this project and all subcontractors and other non-employees who may need to work on the site.

5.9 Environmental Protection

The EPP and TDP for the Wheeler Bay shoreline stabilization project (Appendices C2 and D2, respectively) elaborate on the control measures to prevent environmental pollution and minimize environmental degradation during, and as a result of, construction operations. These plans include Envirocon's BMPs for construction work in the proximity of surface water and during transportation of materials on roadways. The plans detail the following control measures:

- Erosion and turbidity control BMPs
- Spill prevention
- Offsite tracking of sediment prevention
- Dust control
- Noise control
- Diesel smoke reduction

5.10 Scheduling/Reporting

Schedule. The Wheeler Bay shoreline stabilization work is expected to require approximately 5 to 6 weeks, depending on the rail schedule impacts. A proposed schedule for the Wheeler Bay shoreline stabilization is provided in Figure 5B. The schedule for the Wheeler Bay shoreline stabilization is summarized as follows:

- Mobilization beginning August 4, 2008 (2 days)
- Site preparation beginning August 5, 2008 (3 days)
- Shoreline stabilization beginning August 8, 2008 (15 days)
- Installation of vegetation beginning August 29, 2008 (7 days)
- Demobilization on September 10, 2008 (1 day)

To the extent practicable, the Wheeler Bay shoreline stabilization work will be performed simultaneously with the dredging in Slip 3 to minimize tenant impacts related to the rail

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along Wheeler Bay. When Kinder Morgan shuts down their activities at Berth 410/411, the rail activity adjacent to Wheeler Bay will also be shut down, allowing Envirocon better access to the stabilization area.

The Wheeler Bay stabilization crew is anticipated to work one shift, 5 days per week. The site hours of operation will be from 7:00 am until 5:30 pm.

Reporting. The Envirocon PM is responsible for the reporting and has the sole authority for report review and approval. Standard reports include:

- Construction Reports (daily)
- Test Reports (daily)
- Calibration Records (weekly)
- Construction Photographs (weekly)
- Survey Records (bi-weekly)
- Corrective Action Reports (as generated)

All Wheeler Bay project documents, including QA/QC reports, will be controlled by the Envirocon PM and secured in the job-site office under his direct control. Current records of operations, activities, and tests performed will be maintained.

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6 REPORTING/PROJECT COORDINATION

6.1 Project Team Roles and Responsibilities

Figure 13 presents the project team organization chart for construction. Each role is briefly described below:

USEPA and Port Roles

- **USEPA Project Manager – Sean Sheldrake**
 - USEPA is the regulatory authority and is the responsible agency for overseeing and authorizing the T4 Phase I Removal Action described herein. In this capacity, USEPA will review information described in the DAR (Anchor 2008) including the Drawings and Construction Specifications (DAR Appendices D and E, respectively), and this RAWP for consistency with the Phase I Removal Action Objectives (RAOs), the AOC, and applicable state and federal laws and regulations. The USEPA Project Manager, or a designee, will exercise project oversight for USEPA, coordinate comments developed by USEPA and other agencies, and communicate agency observations with the Port Project Manager (Nicole LaFranchise) and the Design Project Engineer (Anchor’s John Verduin). The USEPA Project Manager shall notify the Port if any concerns regarding the implementation of the Phase I Removal Action are identified. The Port will propose response measures or recommendations to USEPA as appropriate. USEPA, as appropriate, will make final decisions to resolve such issues or problems that may change the project scope.
 - USEPA is working cooperatively with other government agencies, including DEQ, other federal agencies, and tribal governments. The other agencies will continue to review documents and participate in decision making related to the Phase I Removal Action. Other agencies will provide their comments to the USEPA Project Manager for communication to the Port.
 - USEPA will utilize their oversight consultant, Parametrix, to assist with construction assessment. Ken Fellows will be the lead for Parametrix.

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- **Port Project Manager** – Nicole LaFranchise
 - The Port of Portland Project Manager (Port PM) is responsible for implementing the Phase I Removal Action in accordance with the Action Memorandum (USEPA 2006) and addressing the RAOs. The Port PM will review contractor work products, and be the point of contact with USEPA.
- **Port Engineering Technical Resource** – Marcel Hermans
 - The Port Engineering Technical Resource will provide technical advice on the project as requested. The Port Engineering Technical Resource will interface with the Port project staff, the Port’s consultant staff, and the contractor project staff as needed to collaboratively work towards solutions in the field during construction.
- **Port Project Engineer** – Roger Anderson
 - The Port Project Engineer is responsible for facilitating Requests for Information (RFIs) and providing technical/engineering support on the project. The Port Project Engineer interfaces with the project staff on engineering issues and provides change management documents related to construction. The Port Project Engineer is vital in getting record drawings finalized.
- **Port Contract Construction Manager** – John Durst
 - The Port Contract Construction Manager (CCM) is responsible for managing the construction contracts between the Port and its construction contractors to ensure that the contractors are in compliance with the contract documents. The Port CCM negotiates change orders with the contractors. It is recognized for this project that USEPA may have final authority on these matters and, therefore, any project scope changes will be handled as discussed above. The Port CCM manages the Port Construction Staff (i.e., Port Inspector).
- **Port Inspector** – Philip Bales
 - The Port Inspector will conduct daily construction field inspections consistent with the construction documents, including the RAWP. The Port Inspector will be in the field daily during construction activities and will document all associated activities as they occur.

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- **Water Quality Compliance Manager – Elizabeth Appy/Ben Hung**
 - The Water Quality Compliance Manager will be responsible for implementing the WQMP. The Water Quality Compliance Manager will have field staff available at both T4 and the offloading facility in The Dalles to complete the monitoring activities.
- **Construction Quality Assurance Officer (CQAO) – John Verduin**
 - The CQAO will be responsible for overseeing the implementation of the CQAP. In overseeing implementation of the CQAP, the CQAO is responsible for monitoring construction performance for compliance with construction performance standards and design requirements during implementation of the Phase I Removal Action, and is responsible for overseeing the required inspection and verification activities. The CQAO will review documentation submitted by and work completed by the contractors for adherence to performance standards and design requirements. The CQAO will be sufficiently familiar with the final design and the construction operations to recognize deviations from that design. This activity will be completed in coordination with the Port Inspector.
 - The CQAO will also be responsible for identifying those field conditions that may warrant deviation from the final design. In such circumstances, the CQAO will coordinate with the Port PM and the USEPA Project Manager to identify and agree upon any necessary deviations to meet the overall objectives of the design. Any agreed-upon deviations will be documented in the weekly progress reports to USEPA.
 - The CQAO will use Field CQA Representatives with the requisite expertise and experience to help perform the duties described above. This activity will be coordinated with the Port Inspector.
- **Design Project Engineer – John Verduin**
 - The Design Project Engineer is responsible for two main tasks. First, the Design Project Engineer is responsible for preparing the design of the Phase I Removal Action such that successful implementation of the design will result in achieving the RAOs and construction activity-specific objectives.

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- Additionally, the Design Project Engineer will provide consultation and observations during construction to assist with implementation of the Phase I Removal Action in conformance with the USEPA-approved design documents. During implementation of the Phase I Removal Action, potentially noncompliant construction activities will be referred to the Design Project Engineer. The Design Project Engineer is responsible for determining whether the allegedly noncompliant construction is acceptable within the design, unacceptable, or acceptable with a design modification. This activity will be completed through coordination with the Port Project Engineer. USEPA will have final authority to approve design modifications proposed by the Design Project Engineer.

Slip 3 Dredging and Capping Project

- **HME General Superintendent – Greg Speyer**
 - The HME General Superintendent is responsible for all project activities. The HME General Superintendent provides overall direction and support for field and technical activities and serves as the link between HME and the Port PM. He represents HME in technical and administrative issues and is authorized to negotiate change orders and make decisions on all aspects of the project.
- **HME CQC Manager– Dave Godel**
 - The HME CQC Manager will develop and implement a CQC Plan through which the Contractor ensures compliance with the requirements of the Drawings and Construction Specifications (DAR Appendices D and E, respectively). The CQC Plan will identify the duties and responsibilities assigned by the contractors to the HME CQC Manager and additional inspectors, as needed to monitor that the dredging and capping is implemented in accordance with the Drawings and Construction Specifications (DAR Appendices D and E, respectively).

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- **HME Health and Safety Supervisor – Dave Godel**
 - The HME Health and Safety Supervisor will develop and implement the dredging and capping CHASP and ensure that requirements of the CHASP are carried out in the field.
- **HME Project Superintendent/Terminal 4 Supervisor – Darrell Jamieson**
 - The HME Project Superintendent/Terminal 4 Supervisor will be responsible for executing the work in full compliance with the Drawings and Construction Specifications (DAR Appendices D and E, respectively). He will work to resolve job-related problems and day-to-day project management.
 - The HME Project Superintendent/Terminal 4 Supervisor may utilize one or more foremen to directly supervise the major construction activities. He will exercise supervision over subcontractors, if subcontractors are utilized.
- **HME The Dalles Offload Supervisor – Al Halstrom**
 - The HME The Dalles Offload Supervisor will be responsible for executing the work at the sediment offloading facility in The Dalles in full compliance with the Drawings and Construction Specifications (DAR Appendices D and E, respectively). He will work to resolve job-related problems and work with the HME Project Superintendent.

Wheeler Bay Shoreline Stabilization Project

- **ACA Project Manager – Herb Clough**
 - The ACA Project Manager is responsible for all aspects of the Wheeler Bay shoreline stabilization project. He is the direct line of communication between the Envirocon PM and the Port PM. He represents ACA in all technical and administrative issues. He is authorized to negotiate changes orders both with the Port and with Envirocon. He can delegate authority to the ACA Field Representative.
- **ACA Field Representative – Douglas Urquhart**
 - The ACA Field Representative will be on site full-time during construction. His role is to verify that the project is proceeding in accordance with the

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project Drawings and Construction Specifications (DAR Appendices D and E, respectively). He attends daily meetings, is the communication link between the Port inspector and Envirocon, and is the ACA Project Manager's on-site representative.

- **Envirocon Project Manager (PM)/CQC Supervisor – Skip Simpson**
 - The Envirocon PM/CQC Supervisor is responsible for all project activities. The Envirocon PM/CQC Supervisor provides overall direction and support for field and technical activities and serves as the link between Envirocon and ACA. He represents Envirocon in technical and administrative issues and is authorized to negotiate change orders and make decisions on all aspects of the Wheeler Bay shoreline stabilization project.
- **Envirocon Health and Safety Supervisor (HSS) – Kathie Lavaty**
 - The Envirocon HSS is responsible for compliance with the site specific Health and Safety requirements, including OSHA 1910.120 – Hazardous Waste Site Operations, OSHA 1926 – Construction Safety, and other requirements intended to assure the health and safety of site workers and the public.
- **Envirocon Project Superintendent (PS) – George Lotze**
 - The Envirocon PS is responsible for supervising all construction field activities, including Envirocon employees, subcontractors and off-site material suppliers. The Envirocon PS operates at the discretion of the Envirocon PM/CQC Supervisor; his authority is delegated by the Envirocon PM/CQC Supervisor.
- **Envirocon Project Engineer (PE) – Suzanne Starkey**
 - The Envirocon PE is responsible for tracking submittals and overseeing task plans and operating procedures, in coordination with the Envirocon PS, that involve quality control procedures, tracking, testing, and other documentation necessary to meet specifications and requirements of the CQC Plan. The Envirocon PE operates at the discretion of the Envirocon PM/CQC Supervisor; her authority is delegated by the Envirocon PM/CQC Supervisor.

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6.2 Project Coordination

The following coordination will be met before, during, and immediately after construction:

- Notification to USEPA of anticipated start of construction
- Preconstruction meetings/initial safety meetings
- Weekly construction meetings
- Weekly progress reports to USEPA during construction
- Verbal and written notification to USEPA of completion of construction
- Remedial Action Completion Report (RACR)

USEPA will be present for the preconstruction meeting and will inspect the progress of construction activities throughout the course of the project. A designated person from USEPA will receive weekly progress reports and be available for any design modification questions and approvals as construction progresses.

USEPA has legal authority over the project work and the contractors will allow unrestricted access to USEPA employees and its contractor staff (collectively referred to in the remainder of this paragraph as USEPA) to observe the work. The contractors will coordinate and cooperate with USEPA to the maximum extent possible. The contractors will neither temporarily nor permanently withhold any relevant data, observations, or information from USEPA. USEPA will not provide, nor will the contractors accept, verbal direction regarding the means and methods of the work, except that the contractors will immediately heed USEPA upon USEPA's direction to the contractors to shut down the work and standby until further notice. Other than shutting down the work, USEPA will communicate all direction regarding means and methods and other contractual issues relevant to the contractors through the Port.

Preconstruction Meeting. A preconstruction meeting will take place and will include:

- Review methods for documenting and reporting data, and compliance with specifications and drawings, including methods for processing design changes and securing USEPA review and approval of such changes as necessary
- Review methods for distributing and storing documents and reports

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- Review work area security and safety protocols, as appropriate
- Discussion of formal implementation of project HASPs/CHASPs
- Demonstrate that construction management is in place, and discuss any appropriate modifications of the CQAP to ensure that project-specific considerations are addressed
- Discuss methods for direct measurement, including confirmation sampling of construction work to be used to ensure that performance standards are met
- If requested, conduct a RAA tour with USEPA in the project area to verify that the design criteria, drawings, and specifications are understood, and to review material and equipment storage locations, as appropriate

The roles and responsibilities of all of the personnel involved in the Phase I Removal Action will also be reviewed at the preconstruction meeting. The lines of communication between USEPA, the Port, and the various contractors will be confirmed to facilitate successful implementation of the design. The requirements of the design documents, including the CHASPs, will be reviewed.

Weekly Construction Meetings. During implementation, weekly construction meetings will occur. Topics to be covered at the meeting include, but are not limited to the following:

- Review and approved minutes from last meeting
- Old Business –Action Items
 - Discuss status of each action item
- Discussion points:
 - Schedule
 - Overall project schedule update
 - 3-week look-ahead schedule
 - Upcoming meetings
 - Resource allocation
 - Submittals
 - Safety issues
 - Monitoring and enforcement of CHASPs

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- Technical concerns (e.g., structural, mechanical, or civil)
- As-built updates
- RFIs
- Environmental protection procedures

Progress Reports. During implementation, all activities will be monitored for compliance with the design documents and RAWP, and the Port will provide weekly progress reports to USEPA. The weekly progress reports will identify:

- Activities performed during the reporting period
- Problems encountered and proposed corrective actions
- Water quality monitoring results
- Anticipated work to be performed during the following week

Construction Completion Notification. Within 7 days of completing construction, the Port will verbally notify USEPA that the action is complete and schedule a final inspection/meeting. At the close of the meeting, the Port and USEPA will agree to a list of outstanding items, if applicable. Within 14 days of the final inspection, the Port will notify USEPA in writing that the action is complete, including identifying how each of the action items from the final inspection was addressed, if applicable.

Removal Action Closure Report. The RACR will be prepared after completion of construction and will document the successful completion of the removal action. If applicable, design modifications will be identified in the RACR. Any problems encountered in implementing the removal action, as well as corrective actions implemented, will be described in the RACR. As-built drawings will document the dredging and grading dimensions and the dimensions of any cap as installed. The volume of materials removed and final disposition of those materials will be documented in a table, and trip tickets or manifests will be maintained to support the tabular summary. The results of all testing performed to monitor the construction will be summarized in tables as well, and original laboratory reports will be maintained to support the summaries. The individual as-built drawings and the RACR will be sealed by a professional engineer registered in Oregon.

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6.2.1 Scheduling

The contractors will supply weekly updates to the project construction schedule and provide 3-week look-ahead schedules at each weekly construction meeting.

6.2.2 Quality Assurance/Quality Control

The CQAO, as administered by the Field CQA Representative, will maintain a daily field log to record observations, measurements, inspections completed, data received, communications with other members of the project team or USEPA, any water quality exceedances, additional environmental controls that were implemented, problems encountered, and resolutions. The daily field log will be supported by submittals received from the contractors, such as survey results and weigh tickets, chain of custody forms for water quality monitoring samples collected, laboratory data received, inspection reports, and written communication from members of the project team or USEPA.

The CQAO, in cooperation with the contractors, will prepare weekly summaries of progress. These summaries will facilitate the preparation of the RACR. The Weekly Summary Report will identify progress organized by activity:

- Dredging
 - Area worked (supported by contractor's log)
 - Volume of material removed (supported by contractor's log)
 - Surveys completed (supported by contractor's log)
 - Problems encountered
 - Corrective actions
- Shoreline Stabilization and Cap
 - Area worked (supported by contractor's log)
 - Weight/volume of material removed (supported by contractor's log)
 - Weight/volume of material placed (supported by contractor's log)
 - Problems encountered
 - Corrective actions
- Environmental Controls

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- Samples collected
- Summary of analytical results
- Problems encountered
- Corrective actions

6.2.3 Environmental Protection

Environmental protection measures are outlined in the EPPs of Appendices C1 and C2. The WQMP is presented in Appendix H. The Water Quality Compliance Manager will prepare weekly summaries of water quality results. The weekly summaries will be based on the daily water quality monitoring reports and will facilitate the preparation of the RACR. The weekly summary report will identify monitoring results by construction activities.

6.2.4 Health and Safety

Appendices A1 and A2 detail the health and safety activities to be completed for the project. Tailgate health and safety meetings will be completed daily. Each construction contract will have a unique health and safety representative (see Figure 13).

6.3 Project Reporting/Recordkeeping

6.3.1 Daily Report

During construction activities, the contractor will prepare a Daily Quality Control Report and submit it to the CQAO. The contractor's daily report will record at a minimum:

- Identification of personnel on site
- Activities completed
- Any changes to BMPs or environmental controls
- Materials delivered or used
- Equipment used
- Construction progress
- Materials dredged and disposed of off-site
- Debris removed and disposed of off-site

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- Surveys completed
- Results of any quality control inspections, tests, or other monitoring activities
- Problems encountered and resolution of problems
- Any USEPA-authorized deviations from the final design
- Weather
- Tides/river levels
- Accidents

Daily Quality Control Reports will be sent to USEPA on a weekly basis as part of the Weekly Summary Report as discussed in Section 6.2.

6.3.2 Resource Tracking/Allocation

The contractors and Field CQA representatives will note in their daily reports the following information:

- Personnel on site
- Equipment used
- Materials imported and exported
- Project progress and any potential work progress issues that need to be addressed/resolved

The Contractors will provide construction schedule resource updates at the weekly construction meeting (see Section 6.2).

6.3.3 Monthly Update Reports

Each contractor (ACA and HME) will prepare monthly update reports consisting of:

- An updated schedule incorporating Port-accepted changes in schedule.
- A narrative describing the work actually completed and reflects the progress along the critical path in terms of days ahead of or behind the contract milestone dates. Address reasons for actual/potential delays, changes in schedule, activities proposed to be added or deleted from the work, and executed change orders.

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- If the latest completion time for any required contract milestone date as indicated by the current Monthly Update Report does not fall within the time allowed by the contract, submit a plan to recover the lost time.

6.3.4 Submittals and Design Changes

The contractors will utilize the Port's submittal tracking process for all submittals. The progression of the process can be followed on Figure 13 as follows:

- All submittals will be generated or approved by the contractor's PM (ACA) or General Superintendent (HME).
- The submittals will be given to the Port PM by the contractor's PM (ACA) or General Superintendent (HME).
- The CQAO, Design Project Engineer, and Port Project Engineer will review all submittals for compliance to the project design documents and the RAWP.
- If the submittal is felt to be in compliance, the Port PM will provide the submittal to the USEPA Project Oversight PM for their approval.
- The contractor's PM (ACA) or General Superintendent (HME) will be notified of the approval, denial, or requested modification after USEPA's review is completed.

Design changes that come about due to changed conditions or value engineering in the field will follow the Port's web-based RFI process. This process is as follows:

- All RFIs will be generated by the contractor's PM (ACA) or General Superintendent (HME).
- The RFIs will be given to the Port PM by the contractor's PM (ACA) or General Superintendent (HME).
- The CQAO, Design Project Engineer, and Port Project Engineer will review RFIs for compliance to the project objectives and the RAWP.
- For responses that change the project design, the Port PM will provide a response to the USEPA Project Oversight PM for their approval.
- The contractor's PM (ACA) or General Superintendent (HME) will be notified of the response to the RFI after USEPA's review is completed.

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All documentation for submittals and design changes will be included in the RACR.

6.4 Files and Records Management

Each contractor (ACA and their subcontractor Envirocon, and HME) will maintain on-site files. A record copy of the drawings and specifications will be maintained during the life of the project, including any addenda, change orders, and other modifications. All project correspondence, Requests for Clarification, RFIs, shop drawings, contractor submittals, product data, samples, submittals, purchases, weigh tickets, applicable handbooks, operations and maintenance (O&M) manuals, related documents, and revisions will be maintained in the project files located on site.

All submittals are submitted to the Port in accordance with the process described in Section 6.3.4. Originals are filed in the Port's Construction File. Each submittal is uniquely numbered and a log of submittals is maintained for ready access.

6.5 Closeout

The Contractor will notify the Port in writing when they consider the project ready for intended use. Within 15 days thereafter, the Contractor, the Port, and USEPA will make an inspection of the work to determine the status of completion. If the Port and USEPA consider the work Substantially Complete, the Port will, within 15 days of the date of inspection, execute and deliver to the Contractor a letter confirming Substantial Completion with a list of items to be completed or corrected. If the Port or USEPA does not consider the work Substantially Complete, the Port will notify the Contractor in writing giving reasons therefore. The Contractor will address any deficiencies and the process will be repeated if necessary.

Upon Substantial Completion, the Contractor will remove stakes and painted markings used in construction layout, remove debris from the staging and work areas, and thoroughly sweep paved areas prior to final acceptance.

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When the Contractor considers the work to be complete, the Contractor shall certify, in writing, that the work is complete and request a letter granting Final Acceptance. Within 15 days after receipt of the Contractor's certification, the Port will inspect the work and will notify the Contractor, in writing, of Final Acceptance or of all particulars in which the inspection revealed that the work is incomplete. The Contractor will immediately address such deficiencies.

The Contractor's certification of completion will be accompanied by two drawing sets showing all as-constructed changes and information. One set will be given to USEPA from the Port for their review.

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7 REFERENCES

- Anchor. 2007. Abatement Measures Proposal: Terminal 4 Removal Action Project. Prepared for the Port of Portland, by Anchor Environmental. October 25, 2007.
- Anchor. 2008. Final Design Analysis Report: Terminal 4 Phase I Removal Action. Prepared for the Port of Portland by Anchor Environmental. June 2008.
- Ash Creek/NewFields. 2007. Source Control Alternative Evaluation, Terminal 4 Slip 1 Upland Facility, Operable Unit 2. Port of Portland, Oregon. February 2007.
- BBL. 2005. Terminal 4 Early Action Engineering Evaluation/Cost Analysis, Public Review Draft. Port of Portland, Portland Oregon.
- Palermo, M. R., J. Miller, S. Maynard, and D. Reible. 1998. Assessment and Remediation of Contaminated Sediments (ARCS) Program Guidance for In Situ Subaqueous Capping of Contaminated Sediments. USEPA 905/B-96/004. Prepared for the Great Lakes National Program Office, United States Environmental Protection Agency, Chicago, Illinois. Website: <http://www.epa.gov/glnpo/sediment/iscmain>.
- USEPA. 2006. Action Memorandum for Removal Action at the Port of Portland Terminal 4 site within the Portland Harbor Superfund Site, Portland, Multnomah County, Oregon. May 11, 2006.
- USEPA. 2007. August 22, 2007 Request for Realignment of T4 Removal Schedule; Resolution of 60% Design Disputed Comments; Administrative Order on Consent for Removal Action (AOC), Docket No. 10-2004-0009. Letter from Deborah Yamamoto of USEPA Region 10 to Tom Imeson of the Port of Portland. November 15, 2007.

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TABLES

Table 1
Terminal 4 Sediment Quality Guidelines

Substance	PEC	TEC
Metals (in mg/kg)		
Arsenic	33	9.79
Cadmium	4.98	0.99
Chromium	111	43.4
Copper	149	31.6
Lead	128	35.8
Mercury	1.06	0.18
Nickel	48.6	22.7
Zinc	459	121
Polycyclic aromatic hydrocarbons (in µg/kg DW)		
Anthracene	845	57.2
Fluorene	536	77.4
Naphthalene	561	176
Phenanthrene	1,170	204
Benzo(a)anthracene	1,050	108
Benzo(a)pyrene	1,450	150
Chrysene	1,290	166
Dibenzo(a,h)anthracene	---	33
Fluoranthene	2,230	423
Pyrene	1,520	195
Total PAHs	22,800	1,610
Polychlorinated biphenyls (in µg/kg DW)		
Total PCBs	676	59.8
Organochlorine pesticides (in µg/kg DW)		
Chlordane	17.6	3.24
Dieldrin	61.8	1.9
Sum DDD	28	4.88
Sum DDE	31.3	3.16
Sum DDT	62.9	4.16
Total DDTs	572	5.28
Endrin	207	2.22
Heptachlor Epoxide	16	2.47
Lindane (gamma-BHC)	4.99	2.37

**Table 2
Import Material Chemical Goals**

Chemical Name	Proposed Borrow Source Criteria	Rational for Criteria
Metals (mg/kg)		
Arsenic ³	9.79	1
Cadmium	0.99	1
Chromium	43.4	1
Cobalt	NC	4
Copper	31.6	1
Iron	NC	4
Lead	35.8	1
Mercury	0.18	1
Nickel	22.7	1
Selenium	NC	4
Silver	0.5	2
Zinc	121	1
PCBs (µg/kg)		
Total PCBs	10	2
Pesticides (µg/kg)		
Sum DDD	2	2
Sum DDE	2	2
Sum DDT	2	2
Aldrin	2	2
alpha-BHC	2	2
alpha-Chlordane	2	2
beta-BHC	2	2
beta-Chlordane	2	2
Campechlor	200	2
cis-Nonachlor	4	2
delta-BHC	2	2
Dieldrin	1.9	1
Endosulfan I	2	2
Endosulfan II	4	2
Endosulfan Sulfate	4	2
Endrin	2.22	1
Endrin aldehyde	4	2
Endrin ketone	4	2
gamma-BHC (Lindane)	2.37	1
Heptachlor	2	2
Heptachlor Epoxide	2.47	1
Hexachlorobenzene	10	2
Hexachlorobutadiene	10	2
Methoxychlor	20	2
Oxychlordane	4	2
trans-Nonachlor	4	2
SVOC (µg/kg)		
1-Methylnaphthalene	20	2
2-Methylnaphthalene	20	2
Acenaphthene	20	2
Acenaphthylene	20	2
Anthracene	57.2	1
Benzo(a)anthracene	108	1
Benzo(a)pyrene	150	1
Benzo(b)fluoranthene	20	2
Benzo(g,h,i)perylene	20	2
Benzo(k)fluoranthene	20	2

Table 2
Import Material Chemical Goals

Chemical Name	Proposed Borrow Source Criteria	Rational for Criteria
bis(2-Ethylhexyl)phthalate	100	2
Butylbenzylphthalate	20	2
Chrysene	166	1
Dibenzo(a,h)anthracene	33	1
Dibenzofuran	20	2
Diethylphthalate	20	2
Dimethylphthalate	20	2
Di-n-butylphthalate	20	2
Di-n-octylphthalate	20	2
Fluoranthene	423	1
Fluorene	77.4	1
Indeno(1,2,3-cd)pyrene	20	2
Phenanthrene	204	1
Pyrene	195	1
Total PAHs	1610	1
TPH (mg/kg)		
TPH - Residual Range	50	3
TPH - Diesel Range	50	3
VOC (µg/kg)		
1,1,1,2-Tetrachloroethane	20	2
1,1,1-Trichloroethane	20	2
1,1,2,2-Tetrachloroethane	20	2
1,1,2-Trichloroethane	20	2
1,1,2-Trichlorotrifluoroethane	20	2
1,1-Dichloroethane	20	2
1,1-Dichloroethene	20	2
1,1-Dichloropropene	20	2
1,2,3-Trichlorobenzene	20	2
1,2,3-Trichloropropane	20	2
1,2,4-Trichlorobenzene	20	2
1,2,4-Trimethylbenzene	20	2
1,2-Dibromo-3-chloropropane	20	2
1,2-Dibromoethane	20	2
1,2-Dichlorobenzene	20	2
1,2-Dichloroethane	20	2
1,2-Dichloropropane	20	2
1,3,5-Trimethylbenzene	20	2
1,3-Dichlorobenzene	20	2
1,3-Dichloropropane	20	2
1,4-Dichlorobenzene	20	2
2,2-Dichloropropane	20	2
2-Butanone (MEK)	20	2
2-Chloroethylvinylether	20	2
2-Chlorotoluene	20	2
2-Hexanone	20	2
4-Chlorotoluene	20	2
4-Isopropyltoluene	20	2
4-Methyl-2-pentanone (MIBK)	20	2
Acetone	20	2
Acrolein	20	2
Acrylonitrile	20	2
Benzene	20	2
Bromobenzene	20	2

Table 2
Import Material Chemical Goals

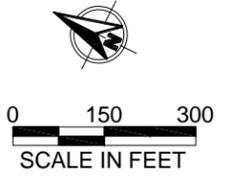
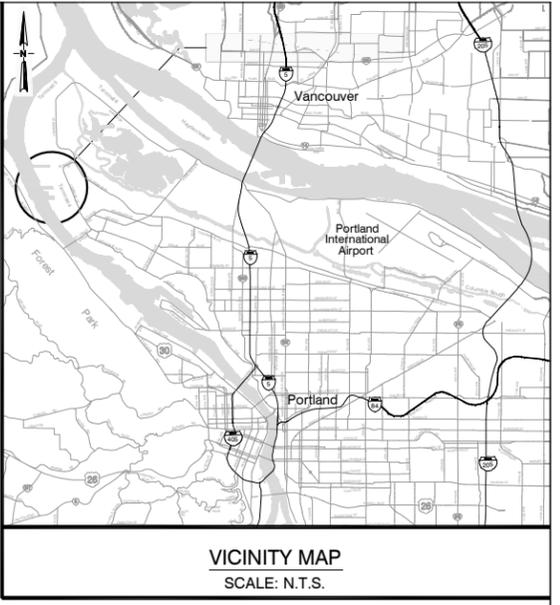
Chemical Name	Proposed Borrow Source Criteria	Rational for Criteria
Bromodichloromethane	20	2
Bromoethane	20	2
Bromoform	20	2
Bromomethane	20	2
Carbon disulfide	20	2
Carbon tetrachloride	20	2
Chlorobenzene	20	2
Chloroethane	20	2
Chloroform	20	2
Chloromethane	20	2
cis-1,2-Dichloroethene	20	2
cis-1,3-Dichloropropene	20	2
Dibromochloromethane	20	2
Dibromomethane	20	2
Dichloromethane	20	2
Dichlorodifluoromethane	20	2
Ethylbenzene	20	2
Hexachlorobutadiene	10	2
Iodomethane	20	2
m,p-Xylenes	20	2
Naphthalene	176	1
n-Butylbenzene	20	2
n-Propylbenzene	20	2
o-Xylene	20	2
sec-Butylbenzene	20	2
Styrene	20	2
tert-Butylbenzene	20	2
Tetrachloroethene	20	2
Toluene	20	2
trans-1,2-Dichloroethene	20	2
trans-1,3-Dichloropropene	20	2
trans-1,4-Dichloro-2-butene	20	2
Trichloroethene	20	2
Trichlorofluoromethane	20	2
Vinyl Acetate	20	2
Vinyl chloride	20	2

Notes:

1. The proposed criteria are Threshold Effects Concentrations (TECs), if available.
2. If TECs are not available, then the criteria for the remaining parameters are based on NW Regional SEF Sample Quantitation Limits (SQLs) from Table 7-2, REST 2006 if available, with consideration of chemical-specific analytical response within the same analytical group.
3. If TECs and SQLs are not available, then the criteria for the remaining parameters are based on the Portland Harbor Proposed Effects Level 2 SQV's (PHL2 SQVs).
4. NC = No criteria proposed. If TECs, SQLs, and PHL2 SQVs are not available, no criteria are proposed.

FIGURES

K: Jobs 050332-PORT_OF_PORTLAND 05033201 TERMINAL 4 _Phase 1 PH_1-GI-1_GI-2.dwg RAWP FIG 1 Jun 19, 2008 10:53am tgriga

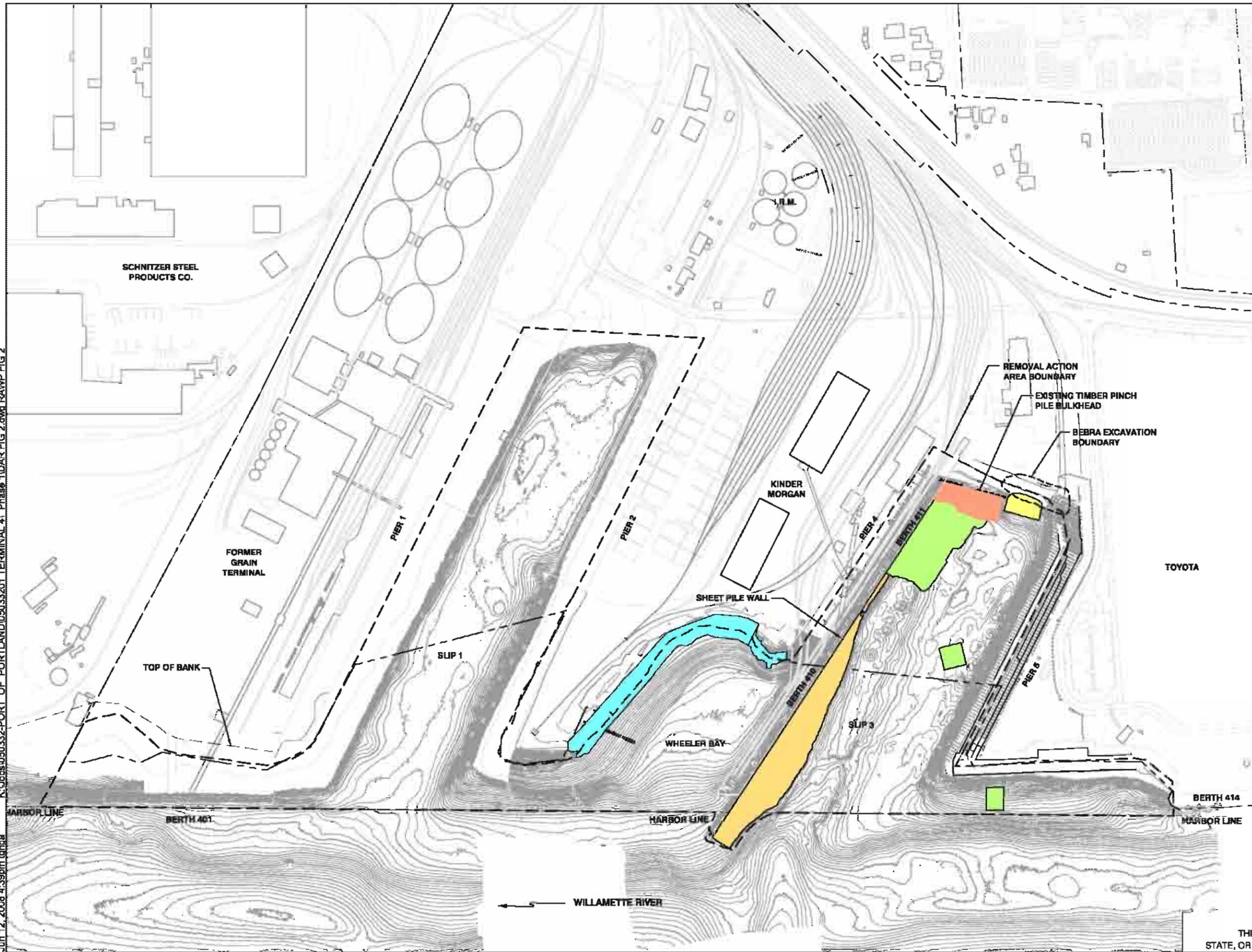


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Figure 1
 Site Plan and Vicinity Map
 Terminal 4 Phase I Removal Action - Removal Action Work Plan
 Portland, Oregon

K:\Jobs\050332-PORT OF PORTLAND\05033201 TERMINAL 4\ Phase 1\ DAR FIG 2.dwg RAWP FIG 2
Jun 12, 2008 4:39pm lortica

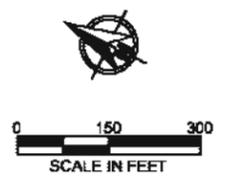


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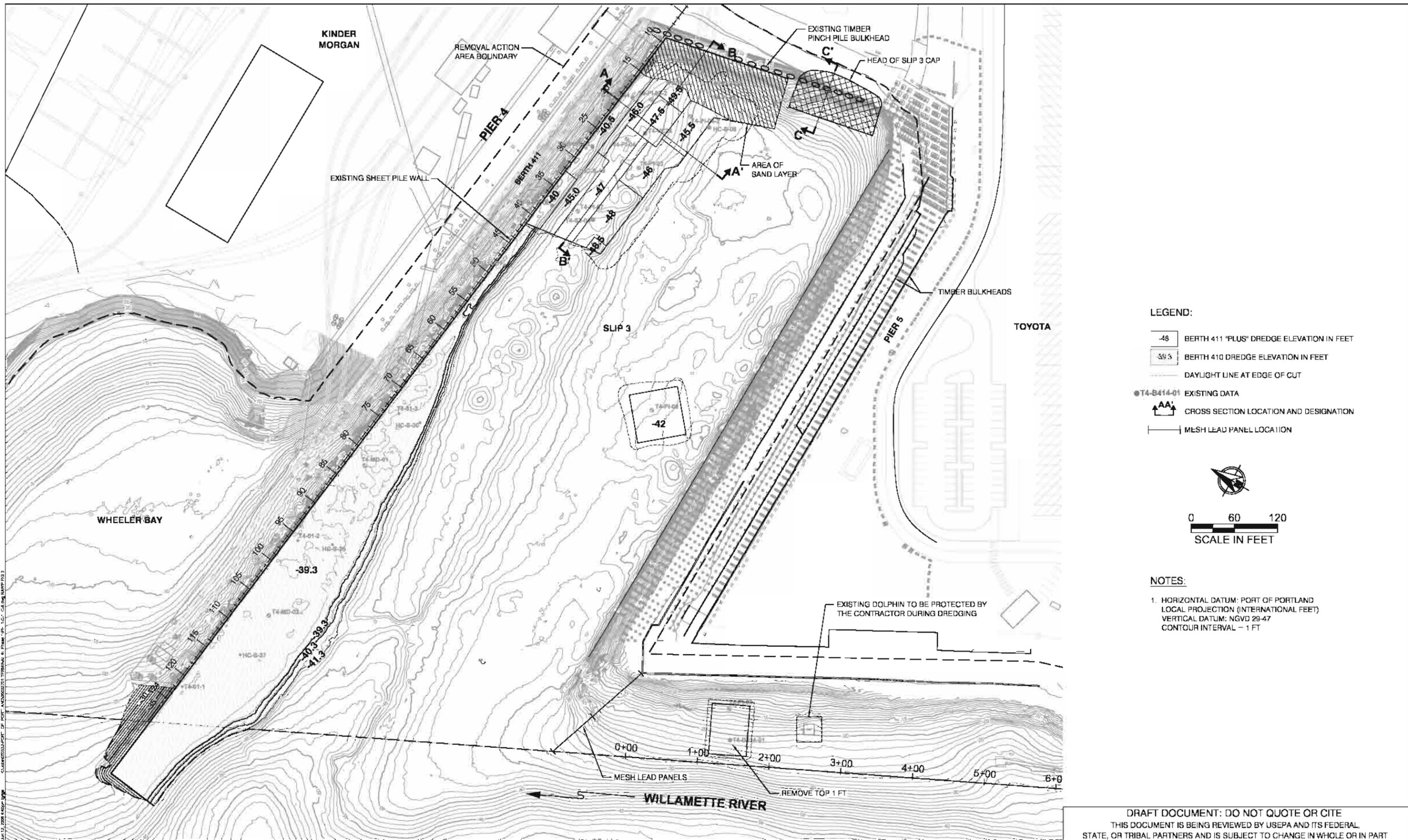
- WHEELER BAY SHORELINE STABILIZATION
- HEAD OF SLIP 3 CAP
- BERTH 411 "PLUS" DREDGING
- SAND LAYER
- BERTH 410 DREDGING
- DSL PROPERTY LINE

NOTES:

1. HORIZONTAL DATUM: PORT OF PORTLAND LOCAL PROJECTION (INTERNATIONAL FEET)
VERTICAL DATUM: NGVD 29-47
CONTOUR INTERVAL = 1FT
2. BATHYMETRIC SURVEY BY PORT OF PORTLAND DATED MAY, 2007



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LEGEND:

- 48 BERTH 411 "PLUS" DREDGE ELEVATION IN FEET
- 39.3 BERTH 410 DREDGE ELEVATION IN FEET
- DAYLIGHT LINE AT EDGE OF CUT
- T4-B414-01 EXISTING DATA
- AA↑↑ CROSS SECTION LOCATION AND DESIGNATION
- MESH LEAD PANEL LOCATION



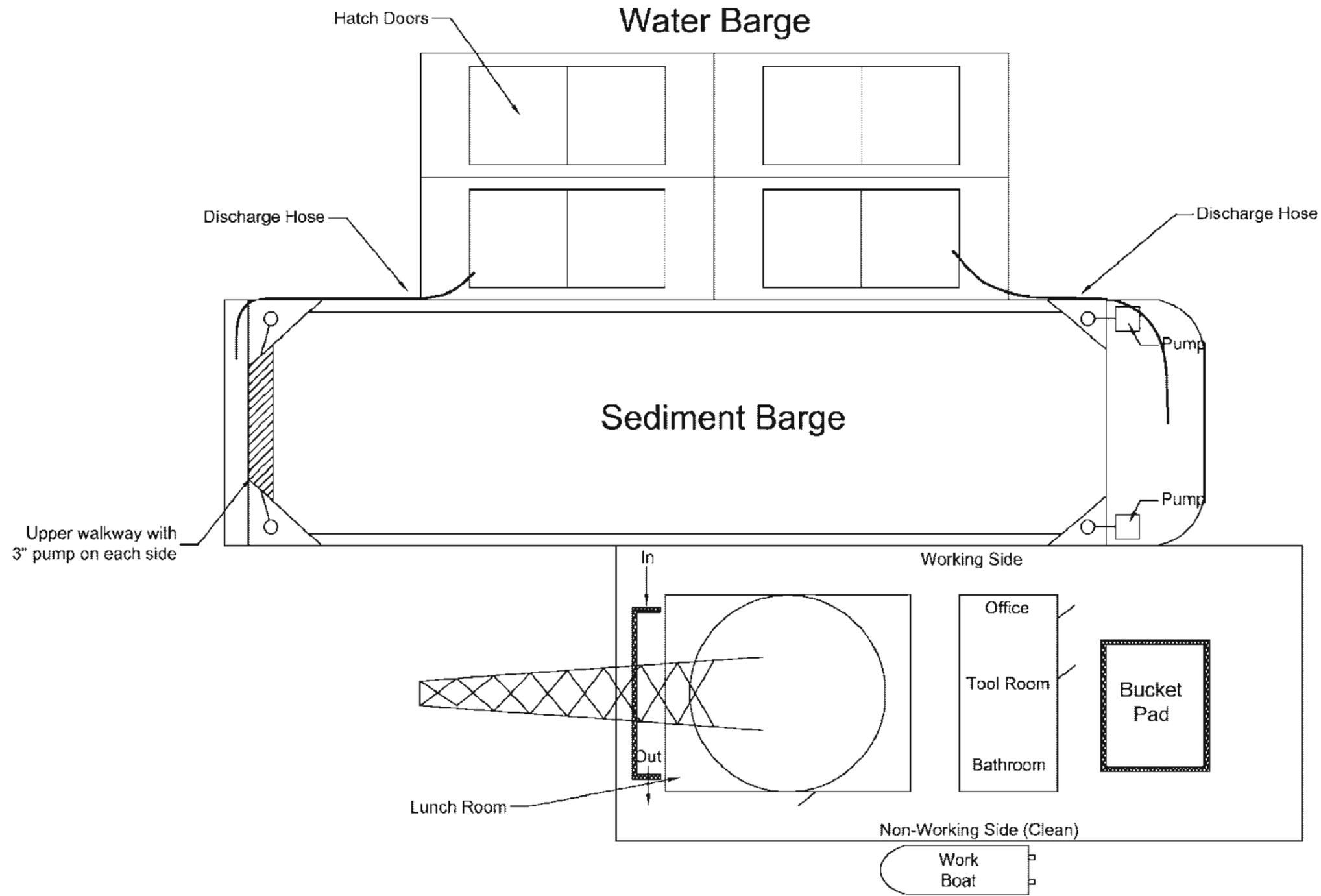
0 60 120
SCALE IN FEET

NOTES:

1. HORIZONTAL DATUM: PORT OF PORTLAND LOCAL PROJECTION (INTERNATIONAL FEET)
VERTICAL DATUM: NGVD 29-47
CONTOUR INTERVAL - 1 FT

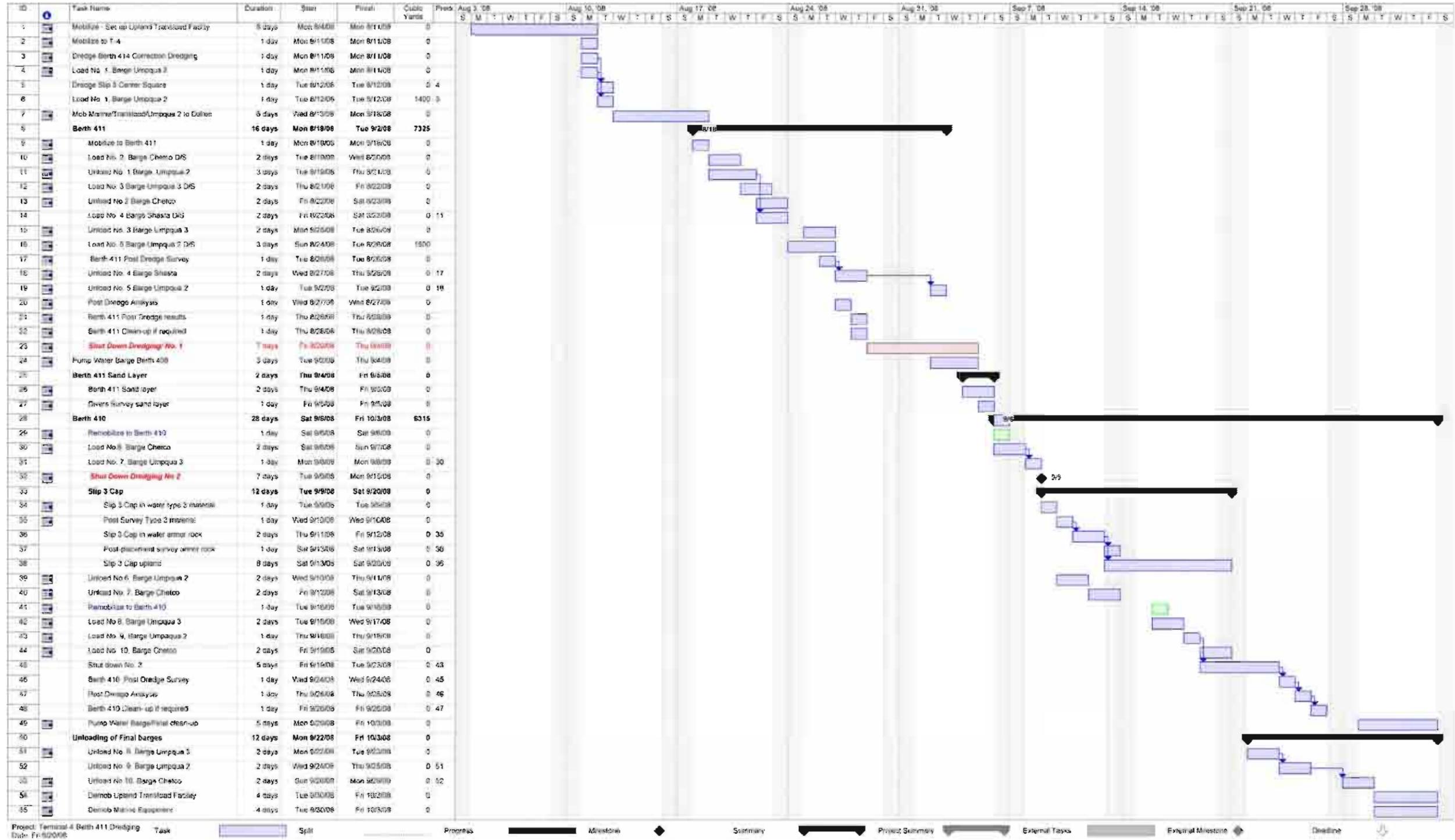
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T-4 DREDGE SITE



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K:\Jobs\050332-PORT_OF_PORTLAND\05033201 TERMINAL 4\Phase 1\RAWP FIG 4-9.dwg RAWP FIG 4
 Jun 12, 2008 4:55pm tgriga



Project: Terminal 4 Berth 411 Dredging Task Split Progress Milestone Summary Project Summary External Tasks External Milestone Deadline

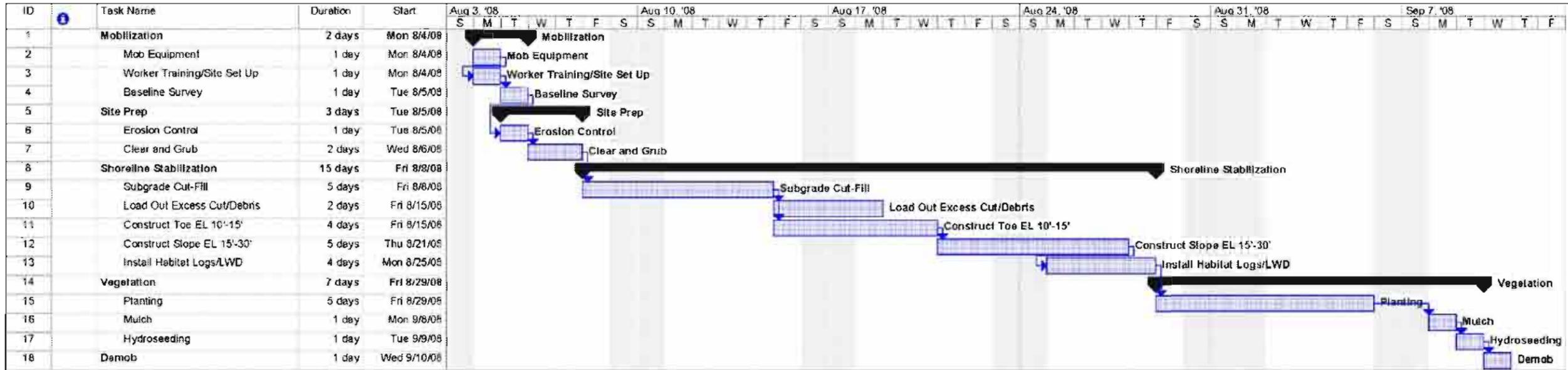
Port of Portland Schedule with Shutdown

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K:\Jobs\050332-PORT_OF_PORTLAND\05033201 TERMINAL 4 Phase I RAWP FIG 4-9.dwg RAWP FIG 5a Jun 20, 2008 11:35am tgriga



Figure 5a
Contractor's Proposed Construction Schedule
Terminal 4 Phase I Removal Action - Removal Action Work Plan
Portland, Oregon



Project: Ash Creek-Wheeler Bay
Date: Tue 6/10/08

Task: [Blue Box] Progress: [Black Bar] Summary: [White Arrow] External Tasks: [Grey Box] Deadline: [Down Arrow]

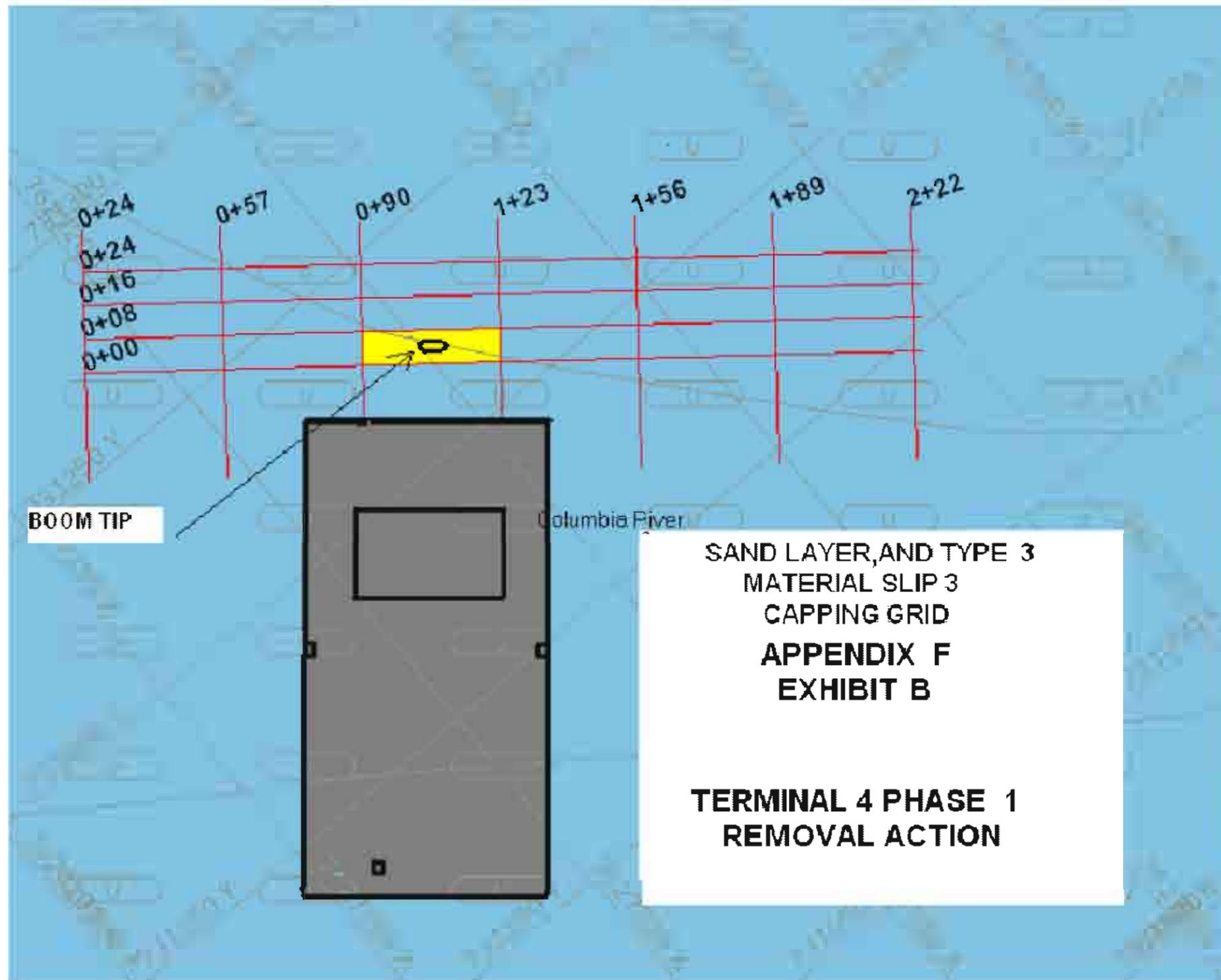
Spill: [Dotted Line] Milestone: [Black Diamond] Project Summary: [White Arrow] External Milestone: [Black Diamond]

Page 1

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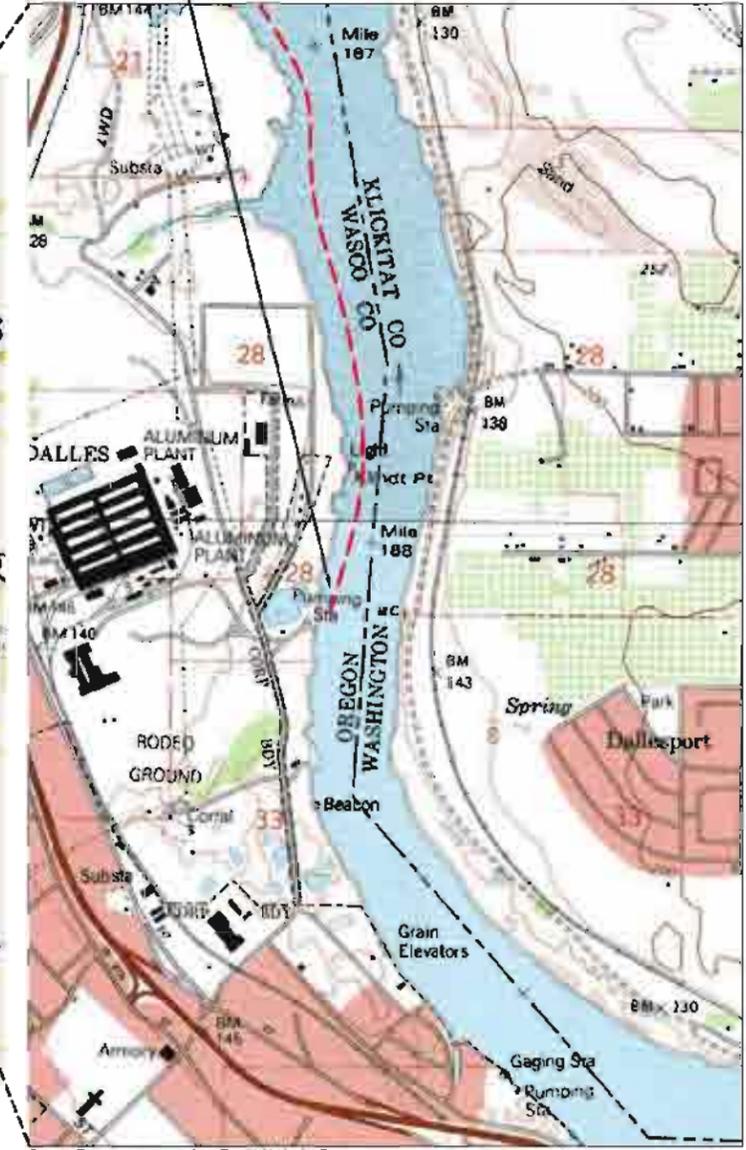
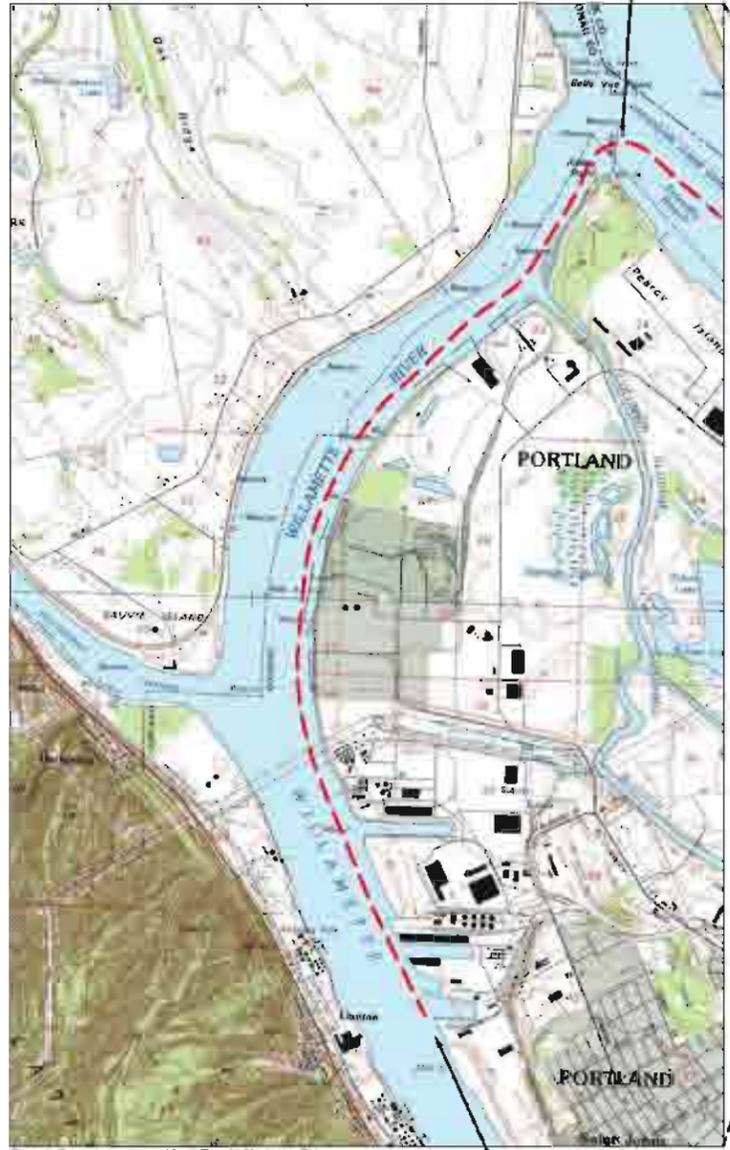
Figure 5b
Contractor's Proposed Construction Schedule - Wheeler Bay Stabilization
Terminal 4 Phase I Removal Action - Removal Action Work Plan
Portland, Oregon



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2. DOWNSTREAM TO WILLAMETTE RIVER
MILE 0 / COLUMBIA RIVER MILE 101.5

3. UPSTREAM TO BERNERT
BARGE FACILITY IN THE DALLES,
OR, COLUMBIA RIVER MILE 189



Source: Base map prepared from Terrain Navigator Pro
USGS 7.5 minute quadrangle maps Linnton and Sauvie Island.

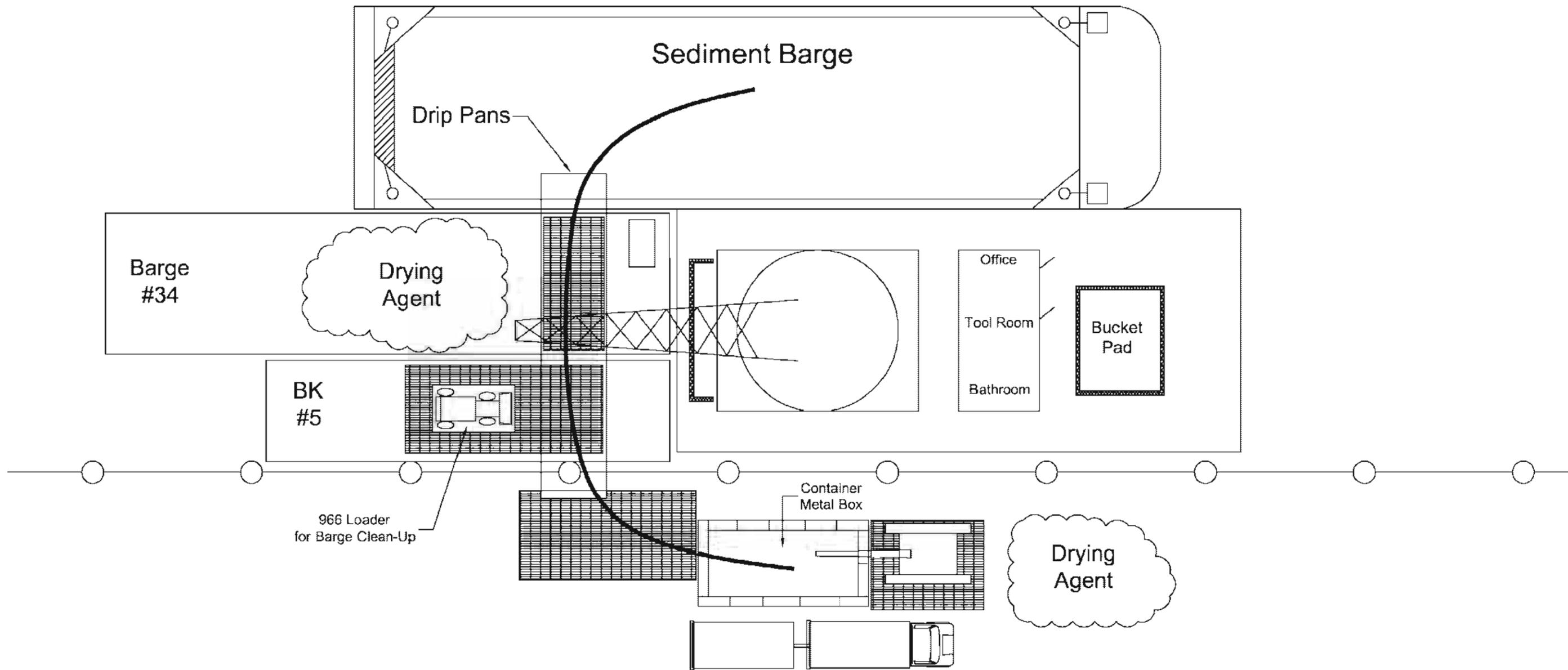
©2008 Google - Map data ©2008 NAVTEQ™ - Terms of Map

Source: Base map prepared from Terrain Navigator Pro
USGS 7.5 minute quadrangle maps The Dalles North and South.

1. START TRANSPORT AT WILLAMETTE RIVER MILE 4

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THE DALLES OFFLOAD SITE



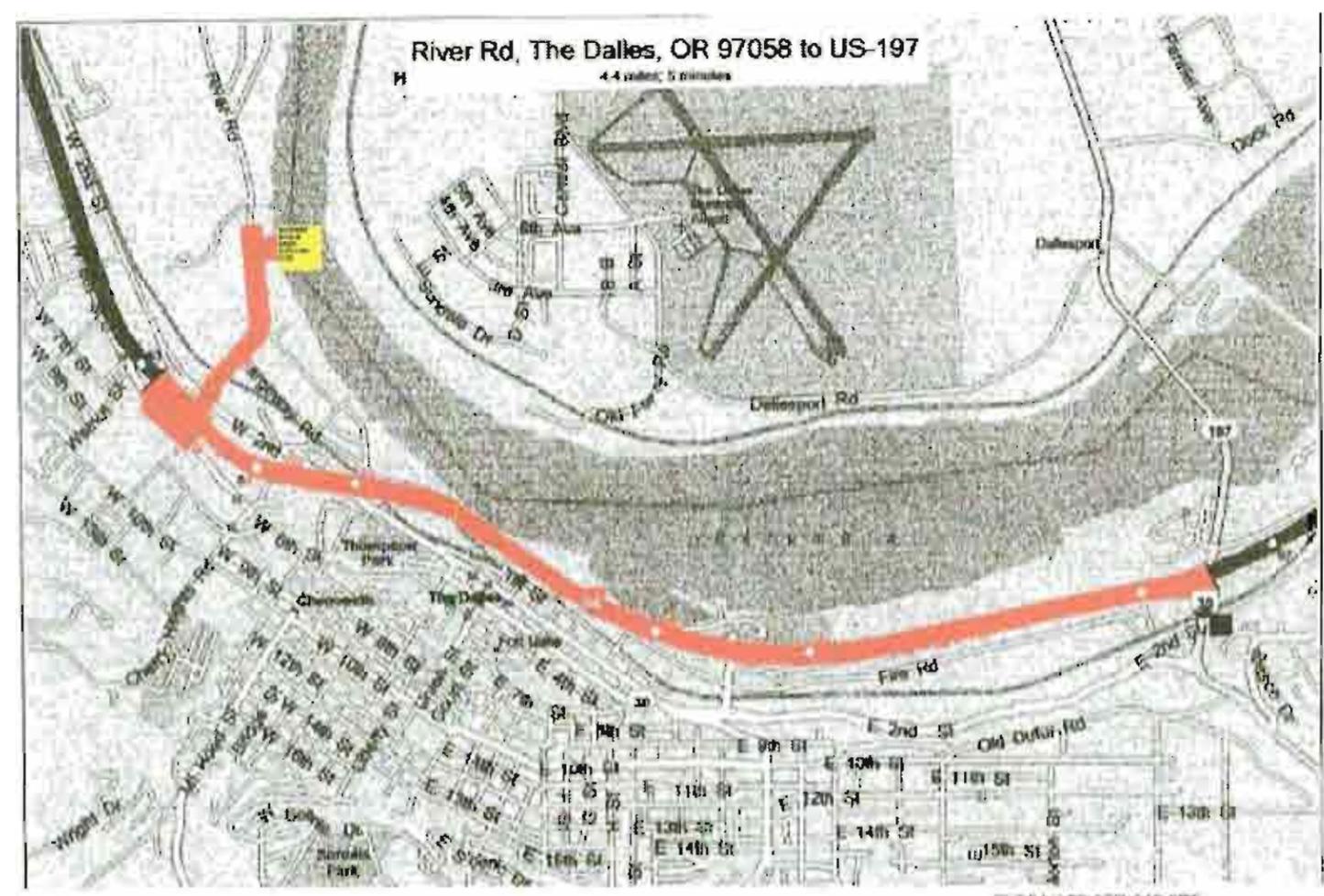
K:\Jobs\050332-PORT_OF_PORTLAND\05033201 TERMINAL 4\Phase 1\RAWP FIG 4-9.dwg RAWP FIG 8

Jun 12, 2008 4:54pm tgriga

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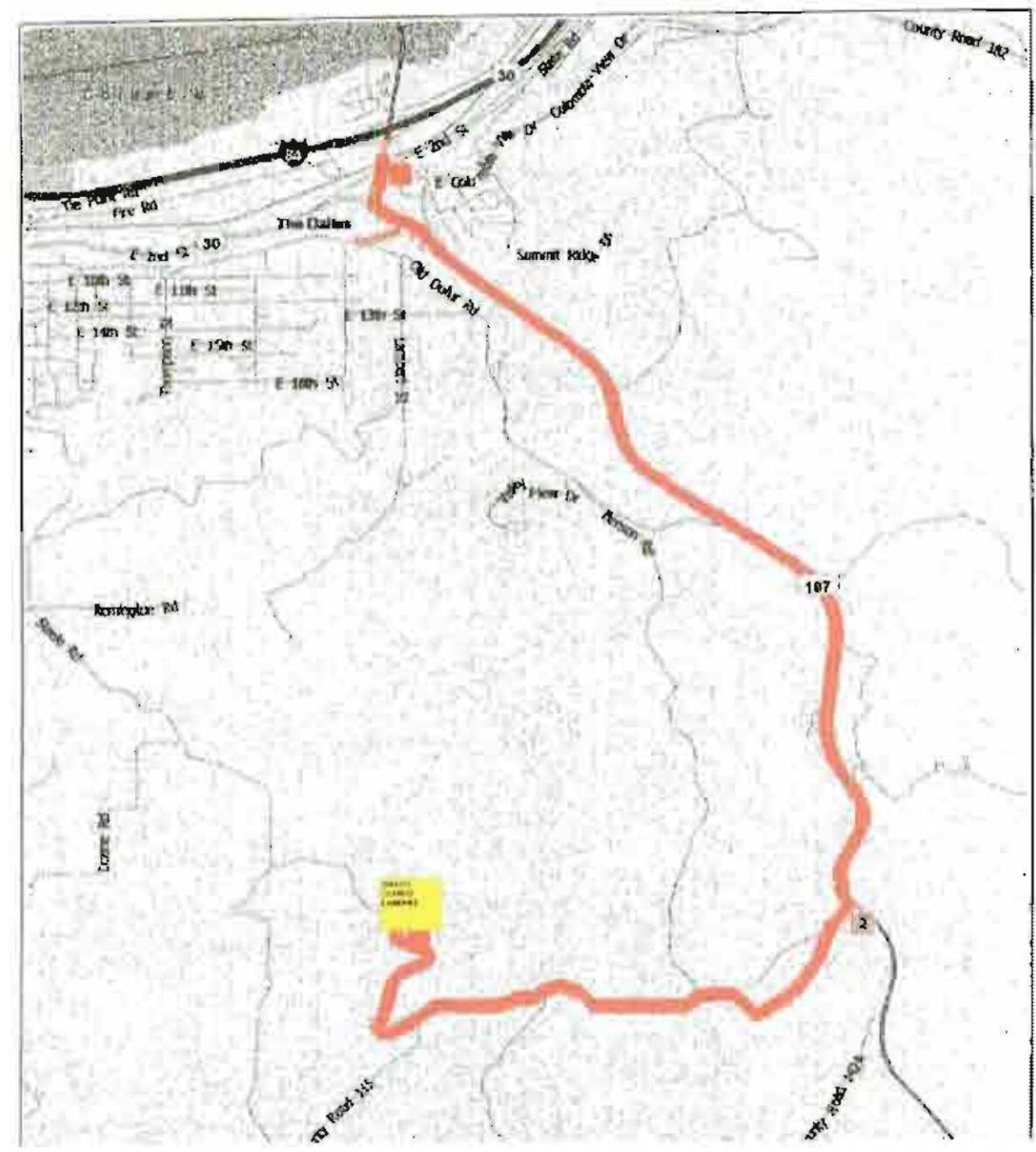
C:\DOCUMENTS\Nigral\LOCALS-1\Temp\AcPublish_3198\RAWP FIG 4-9.dwg RAWP FIG 9 Jun 12, 2008 4:37pm tgriga

US-197 to Steele Rd, The Dalles, OR 97058
0.3 miles, 11 minutes



- 9:00 AM 0.0 mi ■ Depart River Rd, The Dalles, OR 97058 on River Rd (South) for 0.6 mi
- 9:01 AM 0.5 mi Bear RIGHT (South West) onto US-30 [Webber St] for 0.1 mi
- 9:02 AM 0.7 mi Turn RIGHT (North-West) onto US-30 [W 6th St] for 0.1 mi
- 9:02 AM 0.8 mi Take Ramp (RIGHT) onto I-84 for 3.3 mi towards I-84 / Pendleton
- 9:05 AM 4.1 mi At exit 67, turn RIGHT onto Ramp for 0.2 mi towards US-197 / Dubar / Bend
- 9:05 AM 4.3 mi Turn RIGHT (South) onto US-197 [US-30] for 120 yds
- 9:05 AM 4.4 mi ■ Arrive US-197

THE DALLES OFFLOAD SITE
TRUCK ROUTE
APPENDIX D1.E
EXHIBIT F
PAGE 1 OF 2



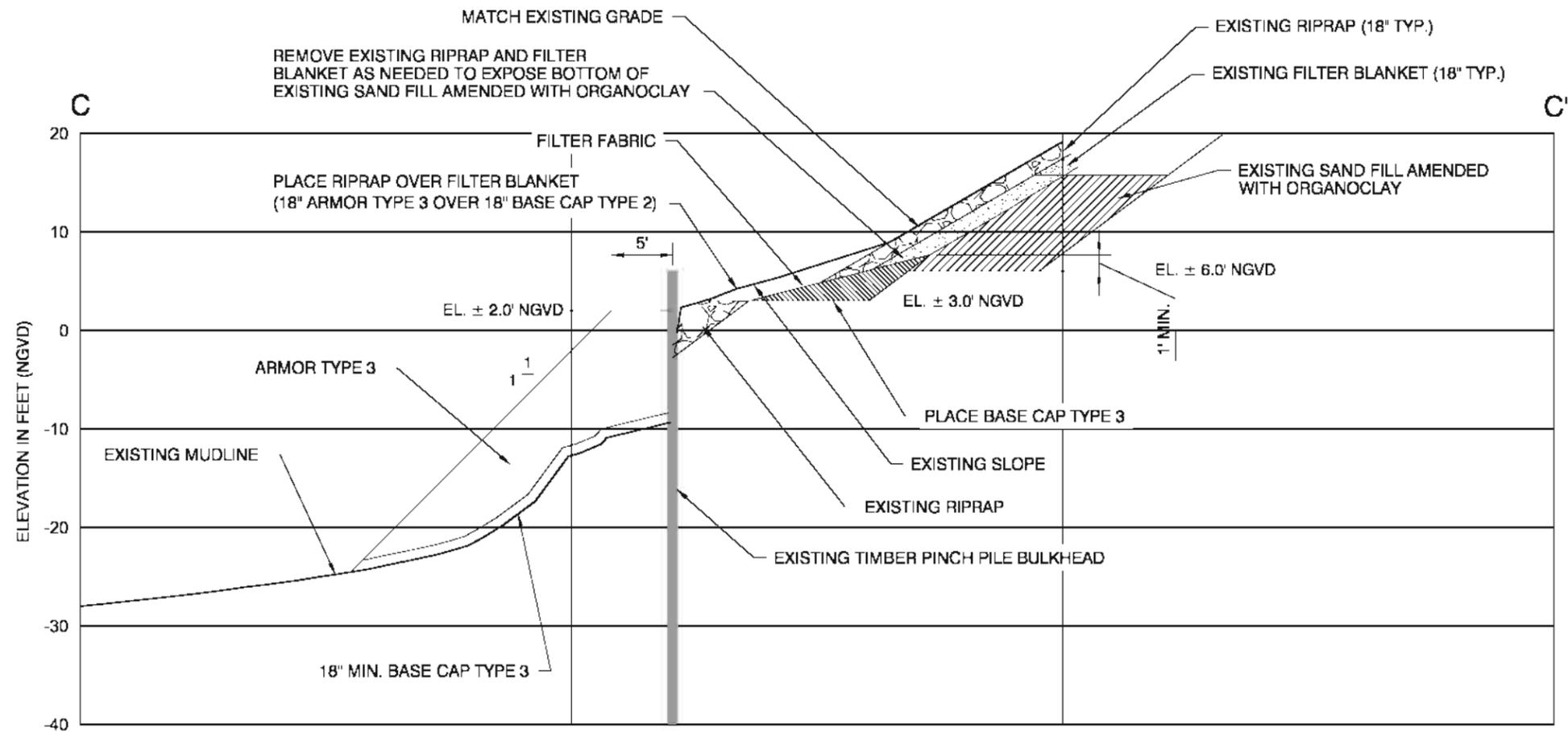
- 9:00 AM 0.0 mi ■ Depart US-197 on US-197 [US-30] (South) for 0.2 mi
- 9:00 AM 0.2 mi Turn LEFT (South-East) onto US-197 for 3.5 mi
- 9:04 AM 3.6 mi Turn RIGHT (South-West) onto County Road 115 [Five Mile Rd] for 142 yds
- 9:05 AM 3.7 mi ■ At 2020 County Road 116, The Dalles, OR 97058, stay on County Road 115 [Five Mile Rd] (South-West) for 1.8 mi
- 9:09 AM 5.6 mi Keep STRAIGHT onto Steele Rd for 0.7 mi
- 9:11 AM 6.3 mi ■ Arrive Steele Rd, The Dalles, OR 97058

PAGE 2 OF 2

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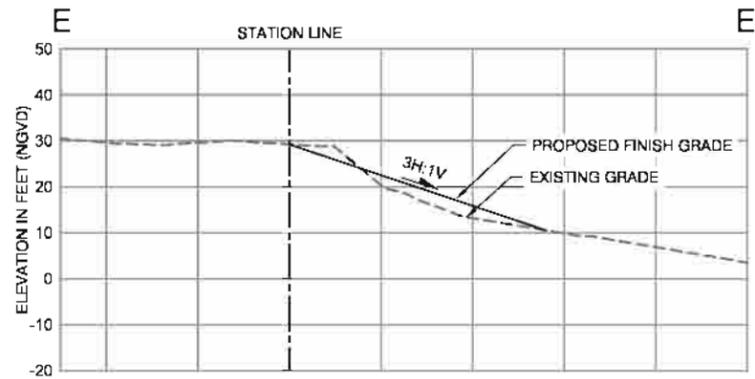
Figure 9
Truck Haul Route
Terminal 4 Phase I Removal Action - Removal Action Work Plan
Portland, Oregon



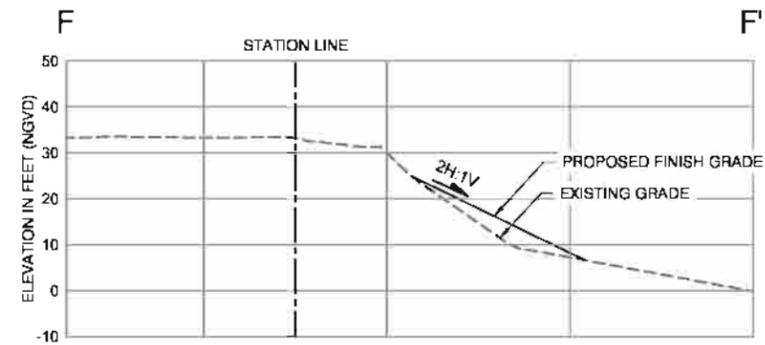
Section C-C'
 0 15
 SCALE IN FEET

- NOTES:
1. HORIZONTAL DATUM: PORT OF PORTLAND LOCAL PROJECTION (INTERNATIONAL FEET)
 VERTICAL DATUM: NGVD 29-47
 CONTOUR INTERVAL - 1 FT
 2. BATHYMETRIC SURVEY BY PORT OF PORTLAND DATED MAY, 2007

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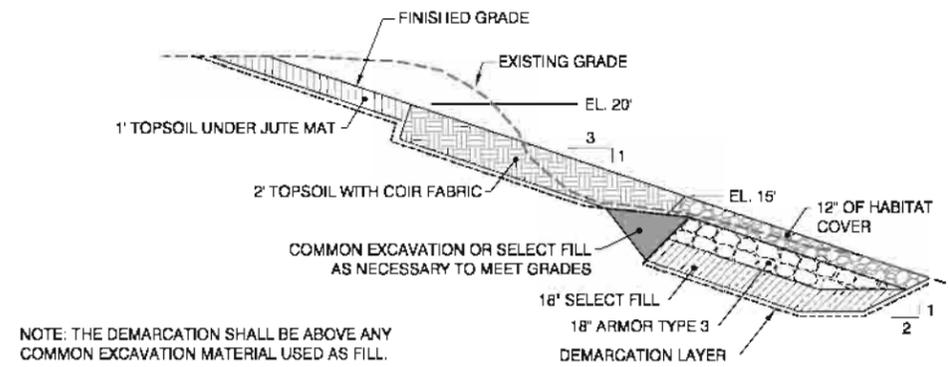
Section E-E'



Section F-F'

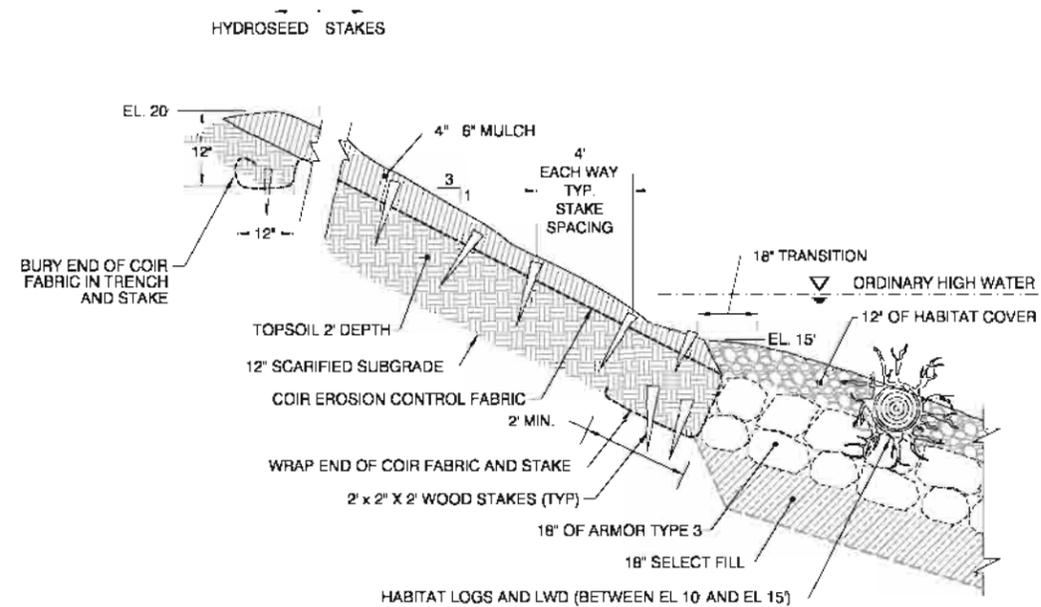
NOTES:

1. HORIZONTAL DATUM: PORT OF PORTLAND LOCAL PROJECTION (INTERNATIONAL FEET)
VERTICAL DATUM: NGVD 28-47
CONTOUR INTERVAL - 1 FT
2. BATHYMETRIC SURVEY BY PORT OF PORTLAND DATED MAY, 2007



NOTE: THE DEMARCATION SHALL BE ABOVE ANY COMMON EXCAVATION MATERIAL USED AS FILL.

Typical Wheeler Bay Section for Section E-E'
NTS



Typical Plantings and Armoring for Section E-E'
NTS

DRAFT DOCUMENT: DO NOT QUOTE OR CITE
THIS DOCUMENT IS BEING REVIEWED BY USEPA AND ITS FEDERAL,
STATE, OR TRIBAL PARTNERS AND IS SUBJECT TO CHANGE IN WHOLE OR IN PART

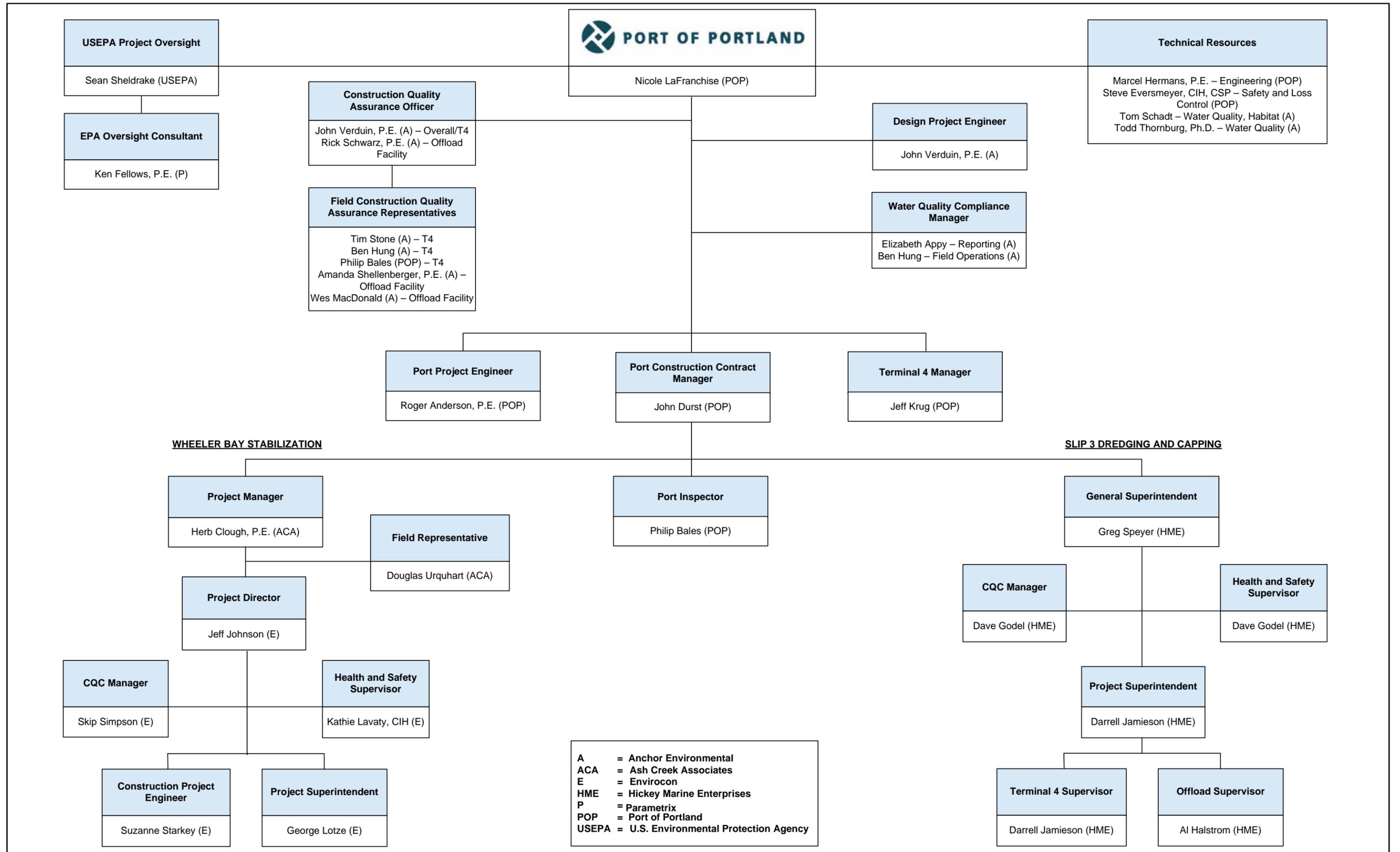


Figure 13
Organization Chart
Terminal 4 Phase I Removal Action – Removal Action Work Plan
Portland, Oregon

APPENDIX A1

**DREDGING AND CAPPING (HICKEY MARINE)
HEALTH AND SAFETY PLAN (HASP)**



**CONTRACTOR HEALTH AND SAFETY PLAN
Phase 1, Terminal 4 Removal Action
Dredging and Capping Project
Port of Portland**

Prepared for:

Hickey Marine Enterprises, Inc.
6801 NW Old Lower River Road
Vancouver, Washington 98660

Submitted by:

AMEC Earth & Environmental, Inc.
7376 SW Durham Road
Portland, Oregon 97224
(503) 639-3400

June 2008

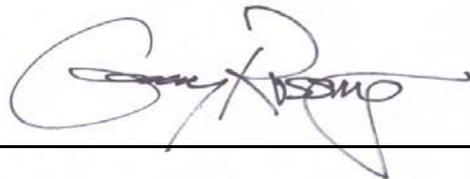
8-61M-118240

Contractor Health and Safety Plan Port of Portland Portland, Oregon

This site-specific Contractor Health and Safety Plan (CHASP) has been developed in accordance with OAR 437 Division 2 and Division 3 regulations and has been streamlined to avoid duplication of existing Hickey Marine documents. The CHASP will be reviewed and updated annually and modified periodically when new tasks are introduced to the project. It is a project manager's responsibility that the CHASP is current and covers all work activities at the Site.

REVIEW AND APPROVALS

Prepared by:



(
Associate / Certified Industrial Hygienist
AMEC Earth & Environmental, Inc.

June 4, 2008

Date

Approved by:

Greg Speyer
Project General Superintendent

Date

Dave Godel
Safety/Regulatory Manager

Date



CHASP EMERGENCY SUMMARY SHEET

The Site Health and Safety Coordinator (SHSC) (Dave Godel) and the Project General Superintendent (Greg Speyer) shall be notified immediately if worker exposure, accidents, or site conditions not anticipated in this document are encountered.

RESPONDING EMERGENCY AGENCIES

Service	Telephone Number
Ambulance	911
Fire Department	911
Police Department	911

PROJECT EMERGENCY CALL LIST

Title	Name	Telephone Number
Project General Superintendent	Greg Speyer	(360) 695-4553 (360) 772-4068 cell
Project Superintendent	Darrell Jamieson	(360) 695-4553 (360) 772-4072 cell
Site Supervisor/The Dalles	Al Hallstrom	(360) 695-4553 (360) 772-4071 cell
Site Health and Safety Coordinator (SHSC)	Dave Godel	(360) 695-4553 (360) 901-2622 cell
Corporate Health and Safety Director (CHSD)	Dave Godel	(360) 695-4553 (360) 901-3622 cell
Health and Safety Representative	Garry Rossing, CIH AMEC Earth & Environmental	(503) 639-3400 (503) 816-9254 cell
Port of Portland	John Durst	(503) 460-4847
<p>* In the event of an occupational accident or incident, please indicate to the medical facility that this is a Workers' Compensation case; that your employer is Hickey Marine; and insurance administrator information is available from SeaBright Insurance Company in the Vancouver, Washington office. All other insurance is covered by Durham and Bates Insurance Company in Portland, Oregon.</p>		

EMERGENCY TELEPHONE NUMBER LIST

Organization	Telephone Number
OR-OSHA	(503) 229-5910 (Oregon)
Poison Control Center	1-800-222-1222
National Response Center	1-800-424-8802

SUBCONTRACTOR'S EMERGENCY TELEPHONE NUMBER LIST

Organization	Onsite H&S Representative/ Competent Person	Telephone Number
Tidewater	Craig Nelson	(360) 693-1491
Waste Connection	Dean Large	(360) 695-4858

Nearest Phone: The Project General Superintendent, Site Safety and Health Coordinator and Project Superintendent will carry cellular phones while working in the Project Areas.

Nearest Water: Carry water or an eyewash station is located on each dredge.

POTENTIAL PHYSICAL HAZARDS: Includes but not limited to: back injuries, heat stress, dredges and heavy equipment operation, electrocution, entanglement, ergonomic stress, falls from elevated surface, falls into waterways, fire and explosion, vehicles, inclement weather and shut-down condition, noise, slips, trips, and falls and UV exposure.

POTENTIAL CHEMICAL HAZARDS: Includes but not limited to: semi-volatile organic compounds (SVOCs) in the form of polycyclic aromatic hydrocarbons (PAHs), heavy metals including lead and zinc, and diesel.

CHEMICAL MATERIALS HANDLED AT THE SITE: Includes but not limited to: Gasoline, Diesel, Hydraulic fluid, Motor oil, and equipment lubricant (grease) (copies of MSDSs are provided in the offices of the dredges). Subcontractors are responsible for providing documentation to the Site Project Manager of all hazardous substances brought to the Project Areas. Copies of all MSDSs are located on each derrick barge used for this project.

RECOMMENDED AIR MONITORING EQUIPMENT: Photo Ionization Detector, Airborne dust monitor (TSI DustTrak). Routine air monitoring is not anticipated. If strong solvent type odors are detected or visible airborne dust, monitoring will be performed to determine if airborne concentrations are below the action levels.

REQUIRED PERSONAL PROTECTIVE EQUIPMENT AND AIR MONITORING

EQUIPMENT: Level D and specified in Job Safety Analyses (JSAs) (Appendix 4).

Task	Level of PPE Guideline*	Air Monitoring Requirement/Type
<u>Field Activities</u>		
Transport to and from the Dredge	Level D	No
Dredging	Level D	No
Water Pumping Activities	Level D	No
Maintenance of the Dredge Bucket	Level D	No
Transport of Sediment Barges to The Dalles	Level D**	No
Offloading into Metal Box Container	Level D	No
Clean up of Sediment Barge with 966 Loader	Level D	No
Lining Trucks and Maintaining Loading Area	Level D	No
Loading Trucks & Transport to Landfill	Level D**	No
Decontamination	Level D	No
Handling IDW Materials	Level D	No
Capping Activities	Level D	No

Note:

Air monitoring will be performed if strong solvent-type odors are detected or there is visible airborne dust. After initial CIH determinations on air monitoring the Site Supervisor and/or Project Superintendent will be responsible for determining if odors or dusts are being generated.

* - task specific PPE is noted in each job safety analysis (JSA) - see Appendix 4.

** - PPE utilized by subcontract workers only involved with transportation of the sediment shall follow requirements of their company.

ACTION LEVELS AND ACTION

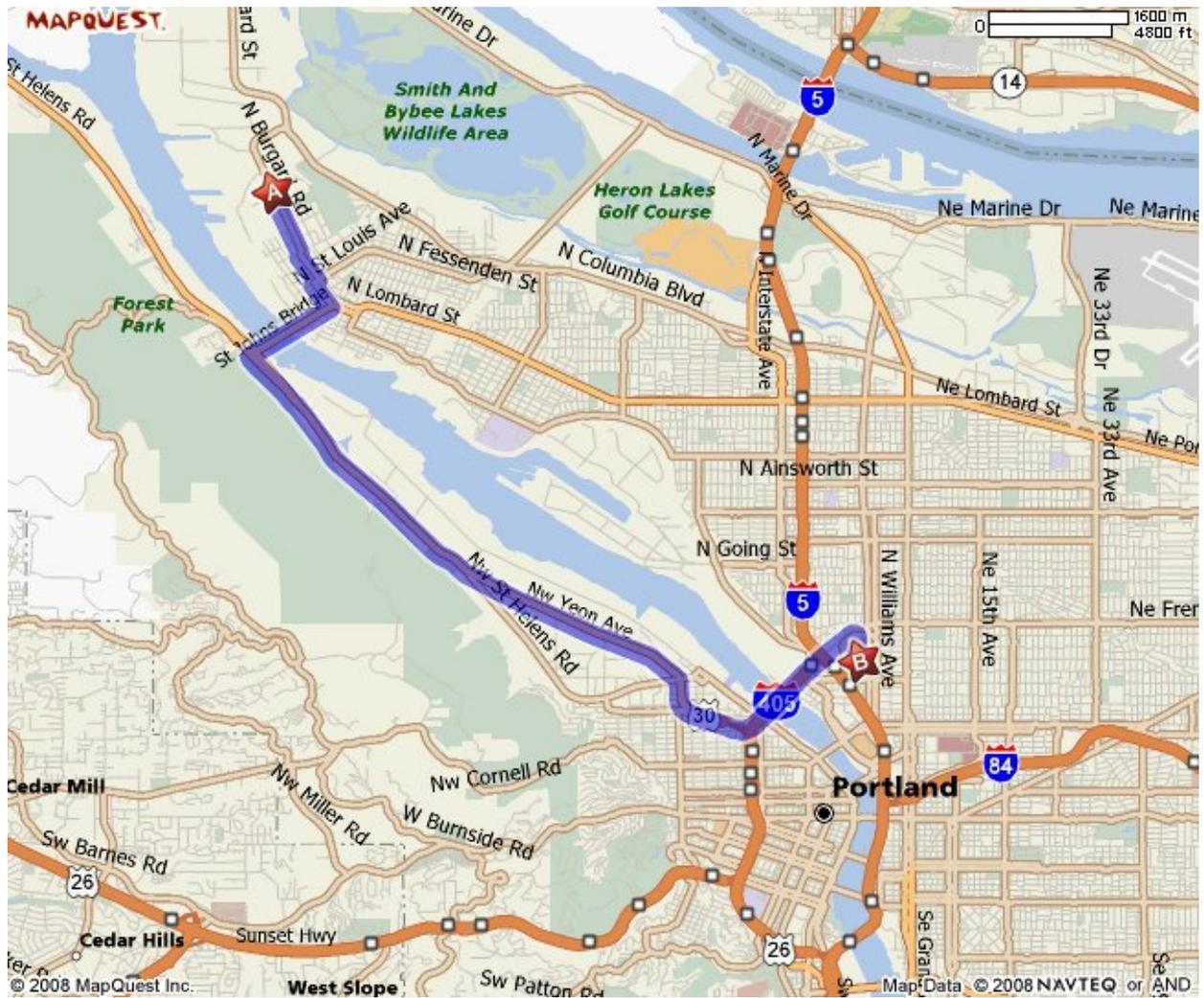
Equipment	Action Level	Action To Be Taken
Dust Monitor	<1.5 mg/m ³ in BZ	Maintain Level D PPE.
	> 1.5 mg/m ³ in BZ	Institute methods to reduce overall dust levels and upgrade to Level C.
	> 15 mg/m ³ in BZ	Cease operations and determine additional engineering controls or changes in work to reduce levels below 15 mg/m ³
Equipment	Action Level	Action to be Taken
PID	<13 ppm-equivalent above background in the breathing zone (BZ)	Maintain Level D or Modified Level D (Mod D).
	>13 ppm-equivalent above background in the BZ	Upgrade to Level C personal protective equipment (PPE).
	>130 ppm-equivalent above background in the BZ	Cease operations until levels fall to within background readings, and/or perform additional investigation.

BZ - Breathing zone
mg/m³ - milligrams of dust per cubic meter of air
ppm - parts per million

SITE CONTROL for this project will consist of:

- Exclusion Zone (EZ) consisting of the immediate area around sediment handling activities and where serious physical hazards exist.
- Contamination Reduction Zone Area (CRZ) for equipment & personnel will be located on the dredges.
- Support Area consisting of the areas outside of the Exclusion Zones and Contamination Reduction Zones.

Hospital Route Map:



**IN CASE OF LIFE THREATENING INJURIES, CALL 911
USE AMBULANCE TO CLOSEST TRAUMA CENTER**

NOTE: In case of any hazard exposure during and/or prior to medical attention, the hospital and any emergency response personnel shall be notified that patient and/or the patient's clothing may be contaminated.

Nearest Medical Facility (The Dalles): Mid-Columbia Medical Center
1700 E 19th Street
The Dalles, Oregon 97058

Emergency Phone Number: 911

Information Phone Number: (541) 296-1111

Medical Route:

 Start out going SOUTH on RIVER RD toward BARGEWAY RD. (0.5 mi)

 RIVER RD becomes WEBBER ST. (0.3 mi)

 Turn LEFT onto W 2ND ST/US-30. Continue to follow US-30 E. (0.9 mi)

 Turn RIGHT onto LINCOLN ST/US-30 E. (0.0 mi)

 Turn LEFT onto W 3RD ST/US-30 E. Continue to follow US-30 E. (0.8 mi)

 Turn SLIGHT RIGHT onto BREWERY GRADE. (0.3 mi)

 Turn RIGHT onto DRY HOLLOW RD. (0.3 mi)

 Turn LEFT onto E 14TH ST. (0.0 mi)

 Turn RIGHT onto MONTANA ST. (0.1 mi)

 Turn LEFT onto E 15TH ST. (0.0 mi)

 Turn RIGHT onto NEVADA ST. (0.2 mi)

 End at 1700 E 19th St the Dalles, OR 97058-3317

Estimated Time: 9 minutes Estimated Distance: 3.44 miles

Hospital Route Map:



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1.0 INTRODUCTION

1.1 General Information

Client:
Port of Portland
7201 N. Marine Drive
Portland, Oregon 97203

Client Contact:
John Durst

Site Name & Location:
Terminal 4

Client Tel. #:
(503) 460-4847

Site Project General Superintendent:
Greg Speyer

Project Superintendent:
Darrell Jamieson

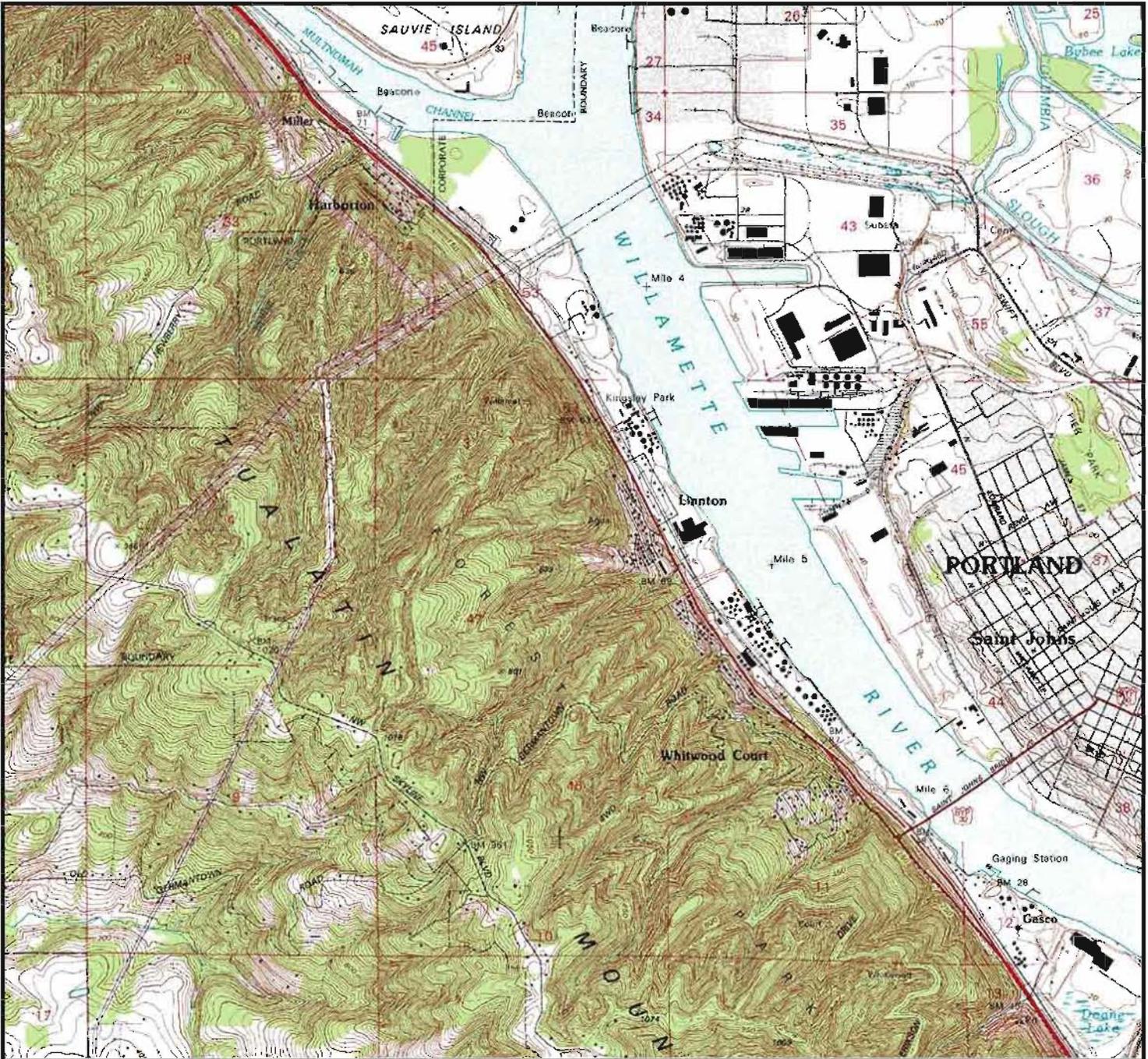
Site Health and Safety Officer:
Dave Godel

Project Supervisor:
Al Halstrom

1.2 Project Area and Site Description and Features

The project is located at Terminal 4 of the Port of Portland, Portland, Oregon and consists of dredging approximately 13,640 cubic yards of sediments from Slip 3 berths 410 and 411, loading the sediments onto barges and transporting the sediments to 2649 River Road in The Dalles, Oregon. The sediments will then be offloaded from the barges to a containment box and loaded onto trucks with an excavator for transport to The Dalles Landfill for disposal. The second component of the project involves installation of a sand layer at the head of berth 411 and cap at the head of Slip 3.

Figure 1: Site Location Map



ROAD CLASSIFICATION

Heavy-duty		Light-duty	
Medium-duty		Unimproved dirt	
U.S. Route	State Route	Interstate Route	

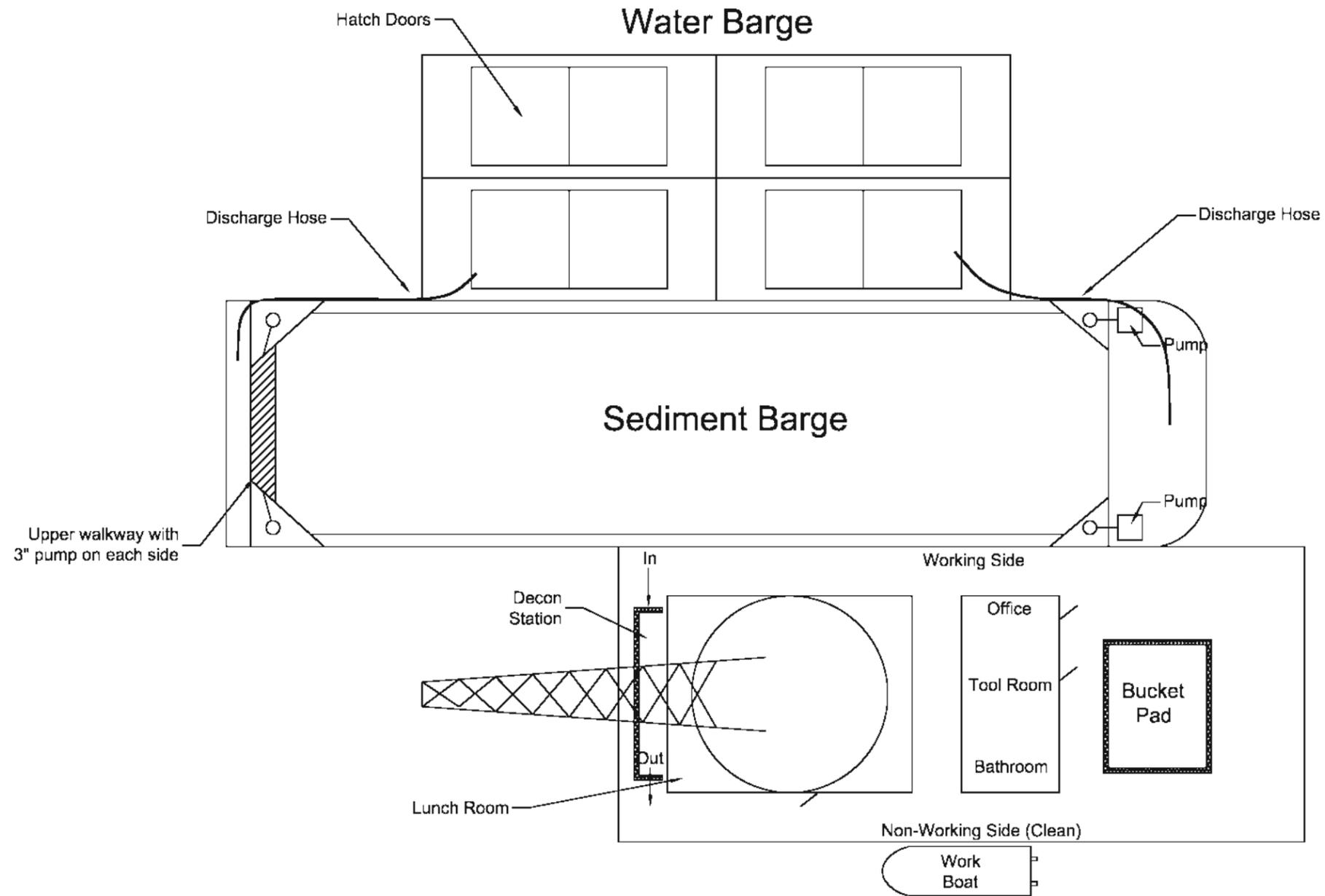
MAP SOURCE: TERRASERVER USA



AMEC Earth & Environmental 7376 SW DURHAM ROAD PORTLAN, OR 97224				CLIENT HICKEY MARINE	
TITLE SITE LOCATION MAP		DWN BY: PM		DATUM: -	
PROJECT PORT OF PORTLAND TERMINAL 4 REMOVAL ACTION PHASE I, DREDGING AND CAPPING PROJECT		CHK'D BY: GR		DATE: MAY 2008	
		PROJECTION: -		PROJECT NO.: 8-61M-118240	
		SCALE: NOT TO SCALE		FIGURE No. 1	

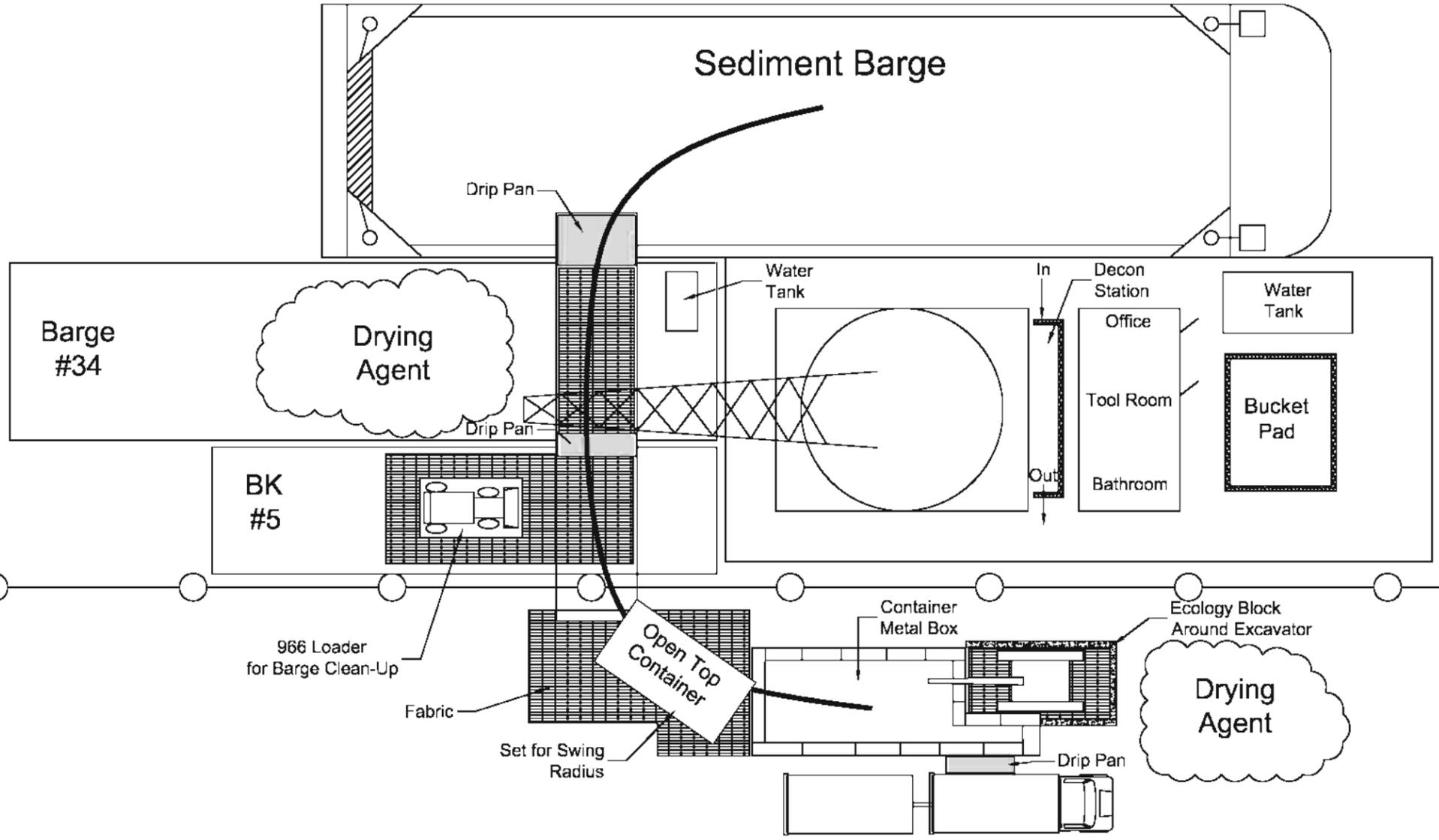
Figures 2 and 3: Project Area Maps

T-4 DREDGE SITE



	CLIENT:	HICKEY MARINE	DWN BY:	PM	PROJECT	PORT OF PORTLAND TERMINAL 4 REMOVAL ACTION PHASE I, DREDGING AND CAPPING PROJECT	DATE:	MAY 2008
			CHK'D BY:	GR			PROJECT NO:	8-61M-118240
	AMEC Earth & Environmental 7376 SW DURHAM ROAD PORTLAND, OR 97224		DATUM:	-	TITLE	SITE PLAN	REV. NO.:	-
			PROJECTION:	-			FIGURE No.	2
			SCALE:	NOT TO SCALE				

THE DALLES OFFLOAD SITE



	CLIENT:	HICKEY MARINE	DWN BY:	PM	PROJECT	PORT OF PORTLAND TERMINAL 4 REMOVAL ACTION PHASE I, DREDGING AND CAPPING PROJECT	DATE:	MAY 2008
			CHK'D BY:	GR			PROJECT NO.:	8-61M-118240
			DATUM:	-	TITLE	SITE PLAN	REV. NO.:	-
			PROJECTION:	-			FIGURE No.	3
			SCALE:	NOT TO SCALE				
		AMEC Earth & Environmental 7376 SW DURHAM ROAD PORTLAND, OR 97224						

1.3 Background/Site History

Terminal 4 has routinely been used in the past to offload pencil pitch and other materials. Minor quantities of these materials have been released during routine offloading activities and have accumulated in the river sediment.

Hickey Marine has previously performed dredging activities at this site and is experienced with the type of materials to be dredged and the potential for airborne releases and other potential exposures to personnel performing the dredging activities. Based on their experience, the dredged sediments stay in a mud-like consistency throughout the dredging, barge transport, offloading, and disposal process. It is not anticipated that airborne dust will be produced.

1.4 Scope of Work/Planned Site Activities

This Contractor Health and Safety Plan (CHASP) is limited to dredging and capping activities in the Project Areas for 2008. Planned activities include the following tasks. If additional tasks are added for this project, a job safety analysis (JSA in Appendix 4) should be completed and added to this CHASP **prior** to field activity.

Task	Hickey Marine/Subcontractor Task Responsibilities
Transport to and from the Dredges	Hickey Marine
Dredging Contaminated Sediments	Hickey Marine
Water Pumping Activities	Hickey Marine
Maintenance of Dredge Buckets	Hickey Marine
Transport of Sediment Barges to The Dalles	Tidewater
Offloading Contaminated Sediment into Metal Box Container	Hickey Marine
Clean up of Sediment Barges with 966 Loader	Hickey Marine
Lining Trucks and Maintaining Loading Area	Hickey Marine
Loading Trucks & Transport to Landfill	Waste Connections
Decontamination	Hickey Marine
Handling IDW Materials	Hickey Marine
Capping Activities	Hickey Marine

1.5 Scheduled Project Area Personnel and Contractors

Substitutions will be made with similarly qualified personnel; the Record of Change (ROC) must reflect all personnel changes.

*Scheduled Project Area Personnel**

Name	Company	Project Title
Greg Speyer	Hickey Marine	Project General Superintendent
Darrell Jamieson	Hickey Marine	Project Superintendent
Al Halstrom	Hickey Marine	Project Supervisor
Dave Godel	Hickey Marine	Site Health and Safety Coordinator

* All personnel requiring access to controlled work areas must have completed all applicable training requirements.

*Scheduled Project Subcontractors**

Company	Contact Information	Project Contracting Task
Tidewater	Craig Nelson (360) 693-1491	Transport of sediment barges to the offload site
Waste Connections	Dean Large (360) 695-4858	Transport of contaminated sediment from offload site to the landfill

* All personnel requiring access to project work areas must have completed all applicable training requirements. The Site Project Manager or Project Superintendent should review and approve subcontractor's special training programs.

1.6 Personnel Responsibilities

Site Health and Safety Coordinator (SHSC)

The SHSC reports to the Project General Superintendent for all aspects of the project and is the primary contact for health and safety during all field activities. The SHSC has the authority to stop all work if conditions are judged to be hazardous to personnel or the public within the Project Area, and reports and investigates accidents and near misses. The SHSC or designee must carefully document the implementation of this CHASP by maintaining the project health and safety files. The SHSC is responsible for the following activities:

- Establishes work zones, evacuation routes, and assembly areas.
- Makes the day-to-day decision to modify levels of protection provided in the CHASP based on Project Area conditions or monitoring data.

- Provides necessary support to any emergency response personnel.

Corporate Health and Safety Director (CHSD)

The CHSD is responsible for coordinating the implementation of health and safety procedures through supervision of the SHSC, and is responsible for approval of all changes made to this CHASP.

Project General Superintendent & Project Superintendent

The Project General Superintendent, Project Superintendent, and Site Supervisor are responsible for all field activities for enforcing safe work practices and for ensuring that weekly tailgate meetings are conducted (either by the Project Superintendent, Site Supervisor or a rotation of field team members and subcontractor team members). For this project the Project General Superintendent also serves as the SHSC Emergency Coordinator in emergency situations. The Project General Superintendent will assign to a qualified person the SHSC duties and responsibilities when not at the Project Area.

The Project General Superintendent and/or Project Superintendent is responsible for conducting accident investigations and completing the required forms in accordance with Hickey Marine's Health and Safety Manual.

Technical Staff and Subcontractors

All Hickey Marine and subcontracting personnel are responsible for compliance with all Safety and Health Regulations of the Oregon Occupational Safety and Health Division (OR-OSHA), including all amendments and modifications thereto. In the event there is a conflict between the safety and health provisions of a state or local regulation and Hickey Marine's CHASP and Safety Policy, or subcontractor's CHASP and Safety Policy, the more stringent applicable provision shall prevail.

All Hickey Marine and subcontracting personnel are responsible for taking all reasonable precautions to prevent injury to themselves and to their fellow employees and for being alert to potentially harmful situations. Project Area workers are expected to perform only those tasks that they believe can be done safely and to immediately report any accidents, near misses, and/or unsafe conditions to the SHSC or the Project Superintendent.

The Hickey Marine subcontractors are responsible for participating in and enforcing the safety and loss prevention programs established for the project that will cover all work performed by it and its sub-subcontractors in accordance with the Safety Policy outlined in Hickey Marine's Health and Safety Manual. Each subcontractor shall

designate a responsible member of its organization whose duties shall include loss and accident prevention and who shall have the responsibility and full authority to enforce their program. This person shall ensure that all sub-subcontractor employees understand and comply with their health and safety programs and CHASPs. Subcontractor shall cooperate fully with Hickey Marine, the Port of Portland, and all insurance carriers and loss prevention engineers on loss and accident prevention. Subcontractors shall perform all parts of its contract while assuming total responsibility for complying with all applicable federal, state, and local health, safety, and environmental standards, regulations, rules or guidelines.

1.7 Required on-Site Emergency Postings

The following information is available with the SHSC and is kept inside the offices on each dredge. Additionally, this CHASP contains these items.

- Hospital Route Map
- Emergency Call List
- Project Area Maps
- Material Safety Data Sheets (MSDSs)

2.0 HAZARD EVALUATION

An evaluation of the chemical, physical, and operational safety hazards is presented in the following subsections. The appendices listed below provide further details that support the task-specific hazard analyses.

- **Appendix 1** - Contains a Project Area characterization overview of the contaminants of potential concern and other potential hazards at the Project Areas.
- **Appendix 2** - Provides chemical properties and exposure assessment data.
- **Appendix 3** - Contains a summary the physical and operational safety hazards and control measures identified for this project.
- **Appendix 4** - Contains a complete job safety analysis (JSA) of each major work task and the list of protective measures.

Further details of specific control measures for these hazards are presented in Section 3.0, Personnel Protection.

2.1 Chemical Exposure

The primary routes of entry for chemicals of primary concern (COPCs) and hazardous materials at the Project Areas include inhalation of dusts, skin contact with

contaminated materials, and ingestion of airborne dusts or materials from hand-to-mouth contact due to inadequate personal hygiene or decontamination.

The following COPCs may be present within the Project Areas:

- Polycyclic Aromatic Hydrocarbons (PAHs)
- Heavy metals (Lead and Zinc)
- Diesel

See Appendix 2 for more detailed chemical information.

The following common hazardous substances are anticipated to be brought onto the Project Areas:

- Gasoline
- Diesel
- Hydraulic Fluid
- Motor Oil
- Equipment Lubricants (Grease)

The above list must be updated by the SHSC, and MSDSs must be obtained and filed for any additional hazardous substances brought onto the Project Areas.

2.2 Hazard Communication

Hazardous materials are subject to the Hazard Communication Standard (OAR 437 Division 2 1910.1200); required MSDSs are located in the offices of the dredges. The hazardous materials also must be properly labeled with the identity of the hazardous chemical(s) contained therein and the appropriate hazardous warning information.

The above list must be updated by the SHSC, and MSDSs must be obtained and filed for any additional hazardous substances brought onto the Project Areas.

The SHSC must give all Project Area employees a hazard communication orientation about hazardous chemicals brought onto the Project Areas. This briefing will include health and physical hazards, precautionary measures to be taken during normal operations and foreseeable emergencies, labeling practices, and location of MSDSs.

The Project Superintendent shall ask the Client and/or subcontractors for copies of MSDSs for any hazardous materials in use at the Project Areas. The SHSC shall orient Hickey Marine's employees/subcontractors as described above for all new hazardous materials.

2.3 Physical or Operating Hazards and Control Measures

Physical or operating hazards identified or reasonably anticipated to be associated with Project Area work tasks are provided in Appendix 3, along with a summary of specific control measures. The following physical or operation hazards potentially exist for this project:

- Back injuries
- Heat stress
- Dredges and heavy equipment operation
- Electrocution
- Entanglement
- Ergonomic stress
- Falls from elevated surface
- Falls into waterways
- Fire and explosion
- Heavy trucks and vehicles
- Inclement weather and shut-down condition
- Noise
- Slips, trips, and falls
- UV exposure

2.4 Hazard Analysis of Each Site Work Task

Hazard analyses for each 2008 Project Area work task is provided as an appendix (Appendix 4) to this CHASP and include the following:

Task
Transport to and from the Dredges
Dredging Contaminated Sediments
Water Pumping Activities
Transport of Sediment Barges to The Dalles
Offloading Sediment into Metal Box Container
Clean Up of Sediment Barge with 966 Loader
Lining Trucks and Maintaining Loading Area
Loading Trucks and Transport to Landfill
Decontamination
Handling IDW Materials
Capping Activities

3.0 PERSONNEL PROTECTION

The prescribed methods and procedures used to protect personnel from overexposure to hazardous materials and hazardous conditions posed by Project Area operations are grouped into three primary categories: Administrative Controls, Engineering Controls, and PPE.

3.1 Administrative Controls

3.1.1 Medical Surveillance

Periodic Comprehensive Exam:

If personnel need access to controlled work area(s) requiring respirator usage a pre-assignment medical examination (and a periodic update examination for extended assignments) is required prior to assignment, in accordance with the OAR 437 Division 2 1910.120(f). The exam must be performed by an Occupational Health Physician, who will provide written clearance for hazardous waste Project Area work and for respirator usage. Medical clearance documents will be on file at the Hickey Marine office located in Vancouver, Washington. To ensure confidentiality, results of the

medical exams or treatment records are maintained at the Medical Care Provider's clinical offices.

Emergency Medical Treatment:

Personnel who exhibit signs and symptoms of heat overexposure, or who have been injured on the job, also might seek medical services. Specific information regarding Hickey Marine's emergency medical plan, reports, and record keeping policies is in the Hickey Marine's Health and Safety Manual available from the SHSC.

3.1.2 Training

Comprehensive:

All routine on-site general Project Area workers performing contaminated sediment handling activities or having the potential to receive exposures exceeding permissible limits will have completed the OSHA 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) Training. Three days of on-site supervised training must be completed upon initial assignment. Appropriate annual refresher (within 12 months) updates must be completed by all HAZWOPER personnel. Supervisors will have completed the above and an additional 8 hours of OSHA Management and Supervisory Training.

Hickey Marine workers are not expected to receive exposures exceeding permissible exposure limits of Project Area COPCs; however, in case action levels are exceeded the ability to respirator protection (Level C) will be needed.

Project Area workers who are not expected to come in direct contact with the contaminated sediments, but need to perform job functions in the EZ are required to have only 24 hours of OSHA HAZWOPER Training and 1 day of on-site training and supervision.

Subcontractor (Tidewater & Waste Connection) workers performing only transportation-related activities or working in enclosed equipment (excavation operators) with no expected contact with the contaminated sediments are not required to have HAZWOPER training. As a minimum these workers need to receive a site-specific orientation including this site-specific CHASP, pertinent Hickey Marine and subcontractor safety policies, Project Area COPCs, chemicals handled at the site, physical hazards within the Project Area and task(s) being performed, task(s) appropriate PPE, and emergency procedures.

Specialized:

Prior to initiation of Project Area activities, the SHSC and Project General Superintendent will conduct a health and safety “kickoff” meeting. Subcontractor representatives including Subcontractor’s Safety Coordinator/Competent person are required to participate. At this meeting, pertinent Hickey Marine and subcontractor safety policies and the site-specific CHASP will be discussed, with special attention given to Project Area chemical and physical hazards, PPE, and emergency procedures. Upon completion of this briefing, all routine Hickey Marine field personnel will be required to read and sign the acceptance sheet of this CHASP (Section 10). Subcontractor’s Safety Coordinator will be required to sign the project site health and safety orientation form and provide the health and safety orientation to his/her project staff.

Project safety meetings with the subcontractor’s management and H&S coordinators will be conducted weekly throughout the project.

Project Area visitors who do not attend this meeting will be required to undergo a specialized health and safety orientation, as documented in the field notebook.

Confined-Space Entry:

Completed training in confined-space entry procedures is required if confined space entry is required during the project. It is not anticipated that confined spaces will need to be entered during the project, except for possible emergency repairs. Any confined space work will be conducted in accordance with Hickey Marine’s Confined Space Entry Procedures outlined in the Health and Safety Manual.

Lockout/Tagout:

Completed training in site-specific lockout/tagout training is required for some work for this project. Work task requiring lockout/tagout will be conducted in accordance with the Equipment Tag-Out Program detailed in Hickey Marine’s Health and Safety Manual.

Tailgate Safety Meetings

As required by OR-OSHA, “tailgate” safety meetings will be conducted by the Project General Superintendent, Site Supervisor, SHSC, or a rotation of Hickey Marine and subcontractor team members for **all** phases of work. The tailgate meetings will be conducted in accordance with Hickey Marine’s Health and Safety Manual. Topics of discussion will include work tasks and designated PPE, emergency procedures, evacuation routes, instruction in use of safety equipment (as required), prior safety

problems, recognition of signs and symptoms of overexposure, importance of proper decontamination, and personal hygiene. These meetings must be documented in a field notebook or a Tailgate Safety Meeting Checklist.

Safety Inspections

All project sites and equipment including but not limited by any type of field and construction work will be inspected DAILY by the responsible subcontractor. All deficiencies discovered will be reported to Hickey Marine immediately.

Fire Extinguisher Usage:

In accordance with OAR 437 Division 2 1910.157, all field personnel who are provided portable fire extinguishers for use should be familiar with general principles of use and the hazards of incipient (early stage) firefighting. Hickey Marine personnel who have completed fire extinguisher training are permitted to use fire extinguisher at the Site.

Equipment Operators:

In accordance with state and federal OSHA regulations, operators of all heavy equipment (e.g., dredges, backhoes, excavators) must be trained for safe equipment operation. Proof of documentation will be obtained by Hickey Marine from subcontractors operating heavy equipment.

Training for Subcontractors:

All personnel including subcontractors requiring access to controlled work areas must have completed the appropriate training requirements. The Project General Superintendent, Site Health and Safety Coordinator or Project Superintendent shall review and approve any special training programs.

3.1.3 Accident Prevention and Safe Work Practices

The SHSC as well as all Site employees will inspect the work Site and/or Project Area daily to identify and correct any unsafe conditions. Hickey Marine field personnel and subcontractors should inspect work area thoroughly before leaving the Site.

Adherence to the Safe Work Practices and procedures described in Hickey Marine's Health and Safety Manual will assist with accident prevention.

3.1.4 Logs, Reports, and Record Keeping

Submittal of Certifications:

All Hickey Marine employees' certificates are on file with the SHSC in the Hickey Marine, Vancouver, Washington office. Work will not be allowed to take place in the absence of adequate documentation.

Site Monitoring, Reports, and Records:

The health and safety field files maintained by the SHSC, or his/her designee, will be the primary form of record keeping and documentation of site health and safety activities. These documents will be completed in sufficient detail to document the work performed; any unusual or significant circumstances under which the work was performed; any unanticipated/unplanned action taken to mitigate or to otherwise cope with unexpected field conditions; and pertinent comments about site-specific conditions that could have a bearing on the work performed. Documentation is required for all phases of work. See also the SHSC duties listed under Section 1.6, Personnel Responsibilities. Record keeping practices will follow OAR 437 Division 2 1910.20.

The health and safety records will contain the following documents:

- Signed acceptance sheet of this CHASP (signed by all routine Project Area personnel) (Section 10)
- Supervisor's Accident Investigation Report

Blank forms are provided in Hickey Marine's Health and Safety Manual and Section 10 of this CHASP. Weekly tailgate meetings and additional health and safety meeting conducted at the Site for this project should be recorded in a field notebook or a Tailgate Safety Meeting Checklist.

3.2 Project Area Engineering Controls

3.2.1 Barriers

Barriers and Signs:

Barricades, traffic cones, and/or marking or caution tape will be erected at a safe distance from dredging and offloading activities, hazardous areas, and moving equipment to prevent unauthorized access to work areas from vehicular and pedestrian traffic. Barriers will be appropriate for the level of work activities and anticipated traffic. Signs will be conspicuously posted as the following, or equivalent:

CONSTRUCTION AREA - Authorized Personnel Only

3.2.2 Rinsate Collection/Containment

A system for collection of rinsate from decontamination operations (e.g., dredges, and personal decontamination, etc.) may be necessary for the Project Areas. The system will be as complex or simple as necessary to collect and contain spent decontamination fluids, including overspray from cleaning operations. Construction of the “permanent” or “temporary” stations for heavy equipment decontamination and areas where cleaning of equipment or personal decontamination occurs will be the responsibility of the SHSC and Project Superintendent.

3.2.3 Noise Reduction

Site activities in proximity to welding, construction, and heavy equipment often expose workers to excessive noise. It is anticipated that situations may arise when noise levels may exceed the OR-OSHA Action Level of 85 decibels (A-weighted scale) (dBA) in an 8-hour time-weighted average (TWA). If excessive noise levels occur, the Hearing Conservation Program will be employed in accordance with Hickey Marine’s Health and Safety Manual.

3.3 Personal Protective Equipment

3.3.1 Levels of Protection

Initial levels of protection for the Project Areas for workers whose jobs require potential contact with the contaminated sediments are Level D. These workers will be required to wear the U.S. Environmental Protection Agency (EPA)/OSHA Level of Protection as specified in Appendix 4.

Protection may be upgraded to Level C or downgraded depending upon Project Area conditions (compared with action levels), as determined by the SHSC. The following outlines the **minimum** guidelines for each level of protection that is assigned or potentially assigned.

If site conditions warrant higher levels of personal protection (e.g. Level C,), the personnel should stop all work activities and notify the SHSC or Project Superintendent.

Level D PPE:

- Work shirt and full-length pants or coveralls
- American National Standards Institute (ANSI) safety work boots (as appropriate with task activity safety level)
- ANSI standard hard hat
- ANSI standard safety glasses
- EPA-approved hearing protectors (when working in high noise areas, e.g., steam cleaners and heavy equipment)

Modified Level D PPE: (Includes some or all of the following)

- Level D equipment
- TyChem SL Tyvek® coverall or equivalent
- Outer chemical-resistant (nitrile) gloves and inner nitrile gloves
- Boot covers or chemical-resistant boots

Level C PPE: (Includes some or all of the following)

- Level D or Modified Level D equipment
- NIOSH-approved air purifying respirator with HEPA filters or organic vapor cartridges

3.3.2 PPE Donning/Doffing Procedure

The following procedures are given as a guide. Failure to adhere to these procedures may result in the PPE being ineffective against contaminants. These procedures may be altered by the SHSC if improvements can be made and these changes are warranted in the field. Also, some articles of PPE may not be necessary for all Project Area tasks.

PPE Donning Procedure (for Mod. Level D and greater):

- Inspect all protective gear before donning.
- Don Tyvek® coverall or equivalent, inner gloves and outer gloves, secure with tape, as required, leave pull tab. If coverall is loose, secure with tape to avoid capture in moving or rotating equipment.

PPE Doffing Procedure:

- Wash/rinse (if necessary) excess mud or other debris from outer boots, gloves, and clothing.

- Remove tape using pull tab and remove outer clothing in the order of boots, outer gloves, and coverall suits. Place disposable and reusable PPE in designated (separate) containers.
- Remove inner gloves.
- Wash face, neck, and hands, as needed.

3.3.3 PPE Failure/Chemical Exposure

In the event of PPE failure, worker and/or buddy will cease work, and perform personal decontamination procedures. Refer to the MSDS and Section 9.0 (Emergency Actions) if emergency medical response is needed. If chemicals contact the eyes, irrigate for 15 minutes and consult a physician.

3.3.4 PPE Inspection, Storage, and Maintenance

Reusable PPE will be decontaminated, inspected, and maintained, as necessary, after each use. Personal equipment (e.g., safety glasses, leather safety-toe boots) shall be properly stored by the employee/subcontractor.

The SHSC will periodically inventory the disposable and reusable PPE at the Project Area and will replenish stocks in a timely manner.

4.0 PROJECT AREA CONTROL

4.1 Project Area Security

Access will be limited to all controlled areas via the prescribed administrative (certifications) and engineering (barricades) controls. All Project Area staff and visitors will note arrival and departure times on a field log by SHSC. All equipment, tools, and property shall be secured at the end of each day.

4.2 Visitor Access

All Project Area visitors must receive prior approval from the Project Superintendent, Project General Superintendent, and Client, and may do so only for the purposes of **observing** Project Area conditions or operations. All visitors, regardless of their rank or professional level, will not be allowed into controlled work areas unless training requirements have been met and documented.

4.3 Work Areas and Zones

Work zones typically are categorized into the following three zones. Support Zone (SZ), Contamination Reduction Zone (CRZ) and Exclusion Zone (EZ).

Support Zones (SZ):

The SZ will consist of the break area on each dredge, dockside areas at T4 and the non restricted area at The Dalles offloading site. Supplies and any nonessential personnel will be located in these areas.

Contamination Reduction Zones (CRZ):

A CRZ with a decontamination staging area will be established for personnel and small equipment on the deck of each dredge.

Exclusion Zones (EZ):

The EZ will consist of all the areas on the water barge, sediment barge and part of the dredge at T4. At the offload site the EZ will consist of the sediment barge, Barge #34, BK #5, parts of the dredge and the immediate areas around the excavator and metal box container. Access shall be restricted to appropriately trained crews and necessary equipment operators.

4.4 Communications

A universal system of hand and horn signals will be used:

Thumbs up	=	OK; understand
Thumbs down	=	No; negative
Grasping buddy's wrist	=	Leave Project Area now
Hands on top of head	=	Need assistance
Horn - one long blast	=	Evacuate Project Area
Horn - two short blasts	=	All clear, return to Project Area

5.0 AIR SURVEILLANCE

5.1 Type and Frequency of Monitoring

Type	Minimum Recommended Monitoring Frequency
Personnel:	In the breathing zone (BZ) of those with the highest anticipated exposure if strong solvent-related odors or visible airborne dust is present.
Area:	In each work zone if strong solvent-related odors or visible airborne dust is present.

5.2 Monitoring Instruments

The SHSC will maintain instrument manuals that specify calibration, general use, and troubleshooting procedures. All monitoring equipment will be field calibrated prior to use according to the manufacturer's instructions and will be recorded on the field notebook.

Equipment	Contaminant	Work Activity
Dust Monitor	Airborne Dusts and Particulates Potentially Contaminated with Chemical Hazards	When visible dust is observed during dredging or offloading activities.
PID	VOCs	When strong solvent-type odor is encountered during dredging activities

5.3 Action Levels

Action levels and visual criteria have been established for upgrading to Level C protection, work stoppages and evacuation (see Appendix 7 for Justification of Action Levels calculations). The decision to stop work must be based upon instrument readings measured in the BZ of Project Area personnel and comparison of the results to the information contained in Appendix 5. Record readings in the field notebook.

5.4 NIOSH/OSHA Air Sampling Methods

If needed, worker exposure monitoring may be performed to determine the exposure to specific COPC. The exposure monitoring will be performed using NIOSH or OSHA methods and compared to specific OR-OSHA permissible exposure limits (PEL) or American Conference of Governmental Industrial Hygienist (ACGIH) Threshold Limit Values (TLVs®).

6.0 DECONTAMINATION

The procedures outlined below shall be employed where applicable during decontamination of field equipment. Note that separate areas should be established for personnel and heavy equipment decontamination; see also Section 3.2 (Engineering Controls) of this CHASP.

6.1 Decontamination Staging Areas

Two decontamination staging areas for small equipment and personnel are currently planned for the Project Areas, one on each of the dredges.

If it is necessary to relocate or add any decontamination staging area(s), the staging area(s) shall be selected based on the ability to control access to the area, control residual material removed from equipment, store clean equipment, and access to the activity area.

6.2 Frequency of Decontamination

All equipment shall be free of dirt, mud, and debris prior to coming inside the Project Areas. Additionally, all equipment including, heavy equipment, and power tools will be decontaminated prior to leaving the Project Areas to prevent contaminated sediment from leaving the Project Areas. Personnel will decontaminate prior to breaks, upon completion of their work shift or after the task at hand in the case heavily soiled conditions or failure of PPE.

6.3 Personnel Decontamination

Equipment	Decontamination Solution	Procedures	
		Intermediate	Final
Long-handled, soft-bristled brushes Galvanized wash tubs or equivalent Pump-activated sprayer Garbage cans with plastic liners and drums with liners Plastic Sheeting Paper towels Duct tape	Tap water for scrubbing and rinsing	Dispose of or scrub outer boot and glove with soft bristled brush and water. Rinse outer boot and glove. Remove outer glove and store for later use. Enter SZ. Return to RWZ wearing new or cleaned outer gloves.	Segregate equipment drop (for instruments and equipment requiring special decontamination). Dispose of or scrub outer boot and glove with soft bristled brush and water. Rinse outer boot and glove. Remove and store outer boots for reuse. Remove and store outer gloves for reuse (dispose of if not cleaned to "like new" condition). Remove and dispose of coverall. Remove and dispose of inner gloves in designated receptacle. Field wash for personal hygiene. Exit to SZ.
Note: Intermediate decontamination is for periodic exits from the EZ for short breaks. Final decontamination is performed before lunch, when taking cool down breaks, and when exiting the Project Area.			

6.4 Equipment Decontamination

Heavy equipment in direct contact with soil and/or groundwater, such as the dredge buckets, etc. shall be washed and inspected by the Site Supervisor or Project Superintendent prior to leaving the site. The decontamination procedure shall consist of the following: 1) wash with potable water and if necessary scrub with a soft bristled brush, 2) rinse in a bath with potable water. If possible, equipment shall be disassembled prior to cleaning. A second wash should be added if very soiled equipment is present.

It is not expected that trucks hauling contaminated sediment from the offload area will need to be decontaminated. The trailers will be lined prior to filling and an excavator will be used to place the contaminated sediment into the trailers, minimizing the spillage of contaminated sediment onto the surrounding pavement.

All wash water shall be contained in the water barge or Baker Tank.

6.5 Emergency Decontamination

In the event of an accident or incident where work must cease and staff must exit the EZ, emergency decontamination should be performed to the greatest extent feasible. In an emergency, the primary concern is to prevent the loss of life or severe injury. If immediate medical attention is required to save a life, decontamination should be delayed until the victim is stabilized. If the decontamination can be performed without interfering with essential life-saving techniques or first aid, or if a worker has been contaminated with an extremely toxic or corrosive material that could cause severe illness or loss of life, decontamination must be performed immediately. If an emergency due to a heat-related illness develops, protective equipment should be removed carefully from the victim as soon as possible.

Any time emergency decontamination methods must be used, a Supervisor's Accident Investigation Report (see Hickey Marine's Health and Safety Manual) must be completed by the SHSC and submitted to the CHSD.

6.6 Waste Disposal Procedures

All discarded materials that accumulate from Project Area activities (e.g., PPE, wash water, supplies, etc.) will be segregated by matrix and by source location and placed in labeled, DOT-approved, 55-gallon drums, and stored in a secure, designated location. All IDW will be handled, labeled, stored, inventoried, and disposed of properly.

7.0 SANITATION AND ILLUMINATION

7.1 Sanitation and Personal Hygiene

Potable drinking water shall be supplied in tightly-closed containers and shall be clearly marked for its intended use. Restrooms will be available on each of the dredges.

All workers are required to wash their hands and face (as necessary) immediately prior to any work or lunch break or prior to eating, drinking, smoking or when exiting the Site.

7.2 Illumination

It is anticipated that all Project Area work will be conducted during daylight hours. If circumstances arise in which fieldwork is to be conducted before or after daylight, or sunlight is obstructed, illumination within all general Project Area locations will be maintained at or above 5 foot-candles for general Project Area locations.

8.0 SPILL PREVENTION

8.1 Contaminated Sediment

Spills of contaminated sediment back into waterways or on work surfaces will be controlled via the use of a drying agent, drip pans and disposable fabrics on work surfaces. Work methods, such as placing the contaminated sediment into a metal box container during offloading and then transferring the contaminated sediment to trucks using an excavator will also minimize spillage.

8.2 Fuels for Equipment

Fuels and other hazardous brought into the Project Areas will be limited in quantity. Stored flammable liquids will be confined to flammable storage cans. During the fueling of floating equipment (skiffs), booms will be placed around the area of the fueling to capture any potential spill. It is not anticipated that the dredges will need to be refueled during the project. For dockside equipment, absorbent pads will be placed adjacent to the fueling location. A Hickey Marine representative will be present during all refueling to observe the operation and immediately summon assistance, if needed. In case of spills, respond as outlined in Section 9.2.3.

9.0 EMERGENCY ACTIONS

9.1 Preplanning and General Procedures

General Emergency Information:

Project Area personnel should be constantly alert to recognize potentially unsafe work practices, hazardous work environments, and conditions that are immediately dangerous to life or health (IDLH), and they should be routinely reminded of signs and symptoms of chemical and heat overexposure. Emergency action procedures are detailed in the Emergency Medical Plan of Hickey Marine's Health and Safety Manual and should be reviewed weekly and updated, as necessary, following incidents. Prearrange access for emergency crews when necessary.

In the event of a large-scale spill, fire/explosion, or major emergency, the Project Superintendent is expected to notify the Project General Superintendent; the Project General Superintendent notifies the Client, evacuates the area, and lets appropriately-trained emergency staff respond to the situation. The safety and well-being of Project Area personnel, visitors, and the adjacent community will be of utmost importance in determining the appropriate response to a given emergency.

Emergency Coordinator (EC):

The Project General Superintendent or Project Superintendent will serve as the Emergency Coordinator (EC) during an actual emergency response situation. The Project General Superintendent or Project Superintendent will serve as the primary EC at all times; and follow the Emergency Medical Plan outlined in Hickey Marine's Health and Safety Manual. The EC will contact off-site emergency response agencies and will serve as the main spokesperson when the responders arrive at the Project Area.

Project Area Maps:

Updated Project Area maps (Figure 2 & 3, see Sections 1.2 and 4.0, Project Area Description and Features, and Project Area Control, respectively) that are used during daily tailgate meetings will be used to inform the staff of hazardous areas, zone boundaries, Project Area terrain, evacuation routes, work crew locations, and any Project Area changes. In the unlikely event that an emergency occurs, the problem areas will be pinpointed on the Project Area Maps, and pertinent information, such as weather and wind direction, temperature, and forecast, will be added as obtained. This map will be provided to the responding agencies.

Emergency Decontamination:

For first aid of non-life-threatening injuries, evacuate to decontamination line and decontaminate as much as possible or practical; contaminated clothing should be removed. For life-threatening injuries/exposures, field decontaminate as much as possible for the person's own safety, wrap in a blanket or polyethylene sheeting, and immediately transport to the designated medical facility. Also, phone ahead and bring this CHASP for informational purposes and MSDS access by medical staff.

Safe Refuge Area:

To be determined; this will be discussed in the tailgate meetings by the EC, once at the Project Area. It will be set up in the SZ or at an off-site location in the event of a Project Area-wide evacuation. This area will be upwind, and the location and escape routes will be designated on Project Area control maps. In an emergency, the EC will take a "head count" against the field notebook, initiate search/account for missing persons, notify the emergency crews (as applicable), and limit access into the

hazardous emergency area to necessary rescue and response personnel in order to prevent additional injuries and possible exposures.

Emergency Equipment:

Emergency equipment will be maintained in the dryshack or office on each of the dredges, in the SZ. All items must be checked and maintained by the SHSC at least weekly and after each use.

<input checked="" type="checkbox"/> First Aid Kit	<input checked="" type="checkbox"/> Fire Extinguisher
<input checked="" type="checkbox"/> Spill Equipment	<input checked="" type="checkbox"/> Mobile Phone
<input checked="" type="checkbox"/> Eyewash station	<input checked="" type="checkbox"/> Hospital Route Map

Evacuation Procedures:

Expeditious evacuation routes to the Safe Refuge Area(s) will be established daily for all work area locations, with respect to the wind direction. Evacuation notification will be a **continuous blast on a canned siren, vehicle horn, or direct verbal communication**. Emergency drills should be performed periodically. Any additions to evacuation procedures require an update to this CHASP.

In the unlikely event that an evacuation is necessary, all personnel will immediately proceed to the predetermined Safe Refuge Area, decontaminating to the extent possible for personal safety, based on the emergency. The EC should then begin the Project Area security and control measures.

9.2 Site-Specific Response Scenarios

9.2.1 Natural Disasters

Earthquake

Alarm: Car Horn

Action: Cease operations and turn off equipment. Seek protection under a sturdy table or stay in the open. Inspect area and equipment prior to starting work again.

9.2.2 Weather-Related Emergencies

All work will cease should any of the following weather conditions arise:

- Poor visibility
- Precipitation severe enough to impair safe movement/travel

- Lightning in the immediate area
- Excessive winds
- Flooding
- Other conditions as determined by the SHSC, Site Supervisor, or Project Superintendent

9.2.3 Spill and/or Discharge of Hazardous Materials

Training:

Responses to incidental releases or spills of hazardous substances that can be absorbed, neutralized, or otherwise controlled at the time of release by employees in the immediate release area are not considered to be emergency responses under 29 CFR 1910.120(l) and do not require additional specialized training.

Spill Control and Response:

There is a potential for incidental spillage/leakage of hazardous materials (fuels etc.) that are brought onto the Project Area to implement project activities. Store these materials properly and maintain the appropriate spill response equipment in or easily accessible to the area where the materials are used/stored. In case of incidental spills or leaks, follow these steps:

- 1) Notify the SHSC and Project Superintendent
- 2) Select appropriate PPE and response equipment
- 3) Contain the spill to the extent possible
- 4) Neutralize or solidify the liquid per the MSDS
- 5) Transfer to an IDW container
- 6) Document
- 7) Notify the Client

9.2.4 Fire or Explosion

Call the EC or Project Superintendent, who then will decide whether to call the Fire Department for outside assistance. Small-scale fires, less than one-half of the responder's height, should be extinguished with an accessible ABC fire extinguisher by any team member who has received training. Trained emergency crews will be

summoned to control any large-scale or potentially unmanageable incident. Any off-site responding agencies will be given the Project Area Map (Figure 2 or 3) and briefed about site-specific hazards so they can be optimally helpful in an emergency situation. The EC will evacuate all non-response personnel and visitors to the Safe Refuge Area; will notify the Project General Superintendent /Project Superintendent, as applicable, the Client, and the CHSD; and will complete the appropriate reports.

9.3 Medical Emergency Response

9.3.1 Hospital

In the event of a serious injury or an accident that occurs after hours, call 911 or transport the victim to the hospital emergency room listed below.

NOTE: In case of any hazard exposure during and/or prior to medical attention, the hospital and any emergency response personnel shall be notified that patient and/or the patient's clothing may be contaminated.

Nearest Medical Facility (Portland):	Legacy Emmanuel Hospital 2801 N. Gantenbein Portland, Oregon 97227
Emergency Phone Number:	911
Information Phone Number:	(503) 413-2200

Medical Route:

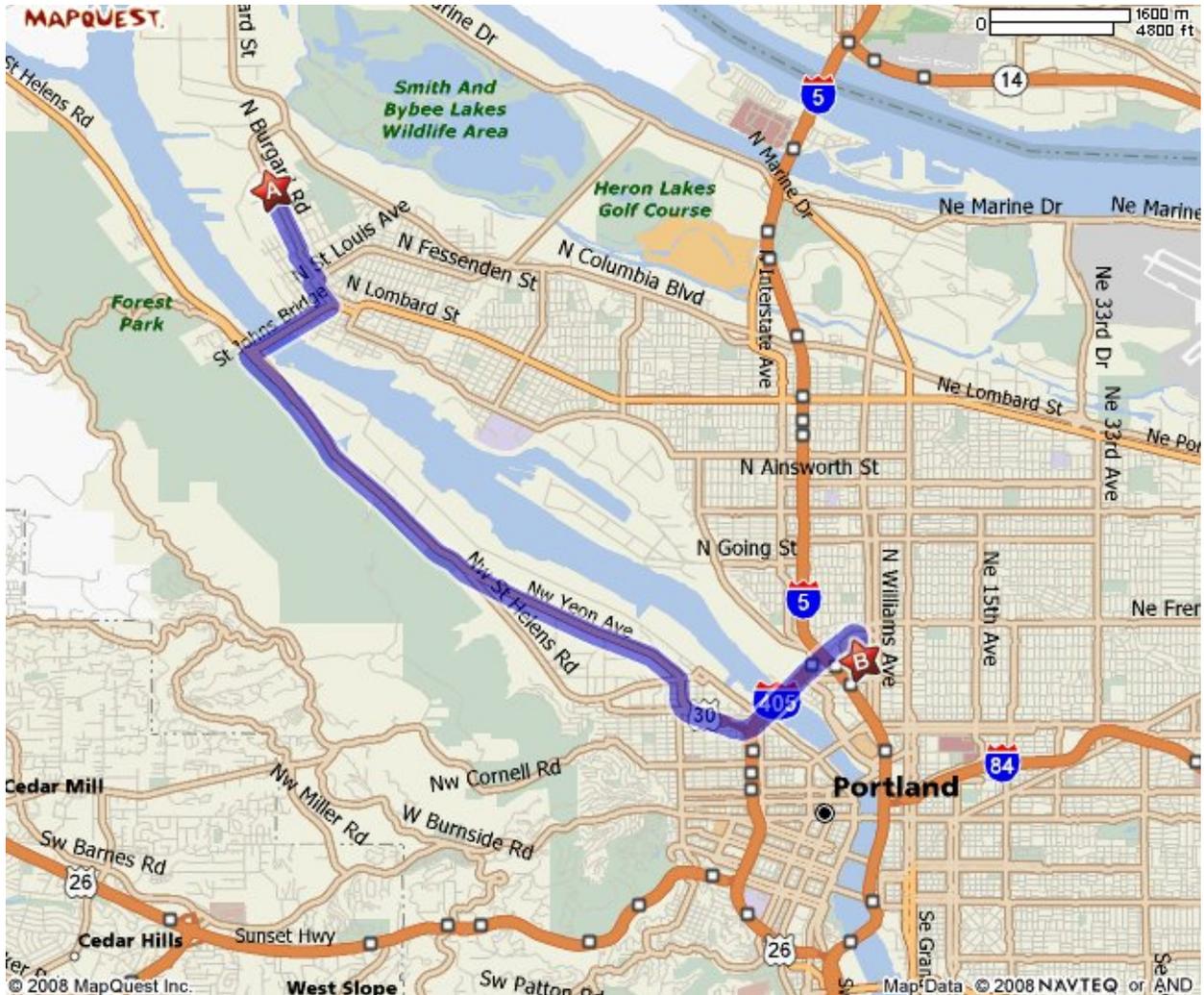
-  Start out going SOUTHEAST on N LOMBARD ST toward N ROBERTS AVE. (0.9 mi)
-  Turn RIGHT onto N ST LOUIS AVE. (0.1 mi)
-  Turn LEFT onto N IVANHOE ST. (0.3 mi)
-  Turn RIGHT onto N PHILADELPHIA AVE/ US-30 BYP. Continue to follow US-30 BYP. (0.8 mi)
-  Turn SLIGHT LEFT onto NW BRIDGE AVE/ US-30 BYP E/ ST JOHN BRIDGE APPR. (0.6 mi)
-  Take US-30 E. (4.6 mi)
-  Merge onto I-405 N via the exit on the LEFT toward THE DALLES/ SEATTLE. (0.9 mi)
-  Take the exit toward KERBY AVE. (0.6 mi)

↑ ramp becomes N GANTENBEIN AVE. (0.2 mi)

END End at 2801 N Gantenbein Ave Portland, OR 97227-1623

Estimated Time: 18 minutes Estimated Distance: 8.82 miles

Hospital Route Map:



**IN CASE OF LIFE THREATENING INJURIES, CALL 911
USE AMBULANCE TO CLOSEST TRAUMA CENTER**

NOTE: In case of any hazard exposure during and/or prior to medical attention, the hospital and any emergency response personnel shall be notified that patient and/or the patient's clothing may be contaminated.

Nearest Medical Facility (The Dalles): Mid-Columbia Medical Center
1700 E 19th Street
The Dalles, Oregon 97058

Emergency Phone Number: 911

Information Phone Number: (541) 296-1111

Medical Route:

 Start out going SOUTH on RIVER RD toward BARGEWAY RD. (0.5 mi)

 RIVER RD becomes WEBBER ST. (0.3 mi)

 Turn LEFT onto W 2ND ST/US-30. Continue to follow US-30 E. (0.9 mi)

 Turn RIGHT onto LINCOLN ST/US-30 E. (0.0 mi)

 Turn LEFT onto W 3RD ST/US-30 E. Continue to follow US-30 E. (0.8 mi)

 Turn SLIGHT RIGHT onto BREWERY GRADE. (0.3 mi)

 Turn RIGHT onto DRY HOLLOW RD. (0.3 mi)

 Turn LEFT onto E 14TH ST. (0.0 mi)

 Turn RIGHT onto MONTANA ST. (0.1 mi)

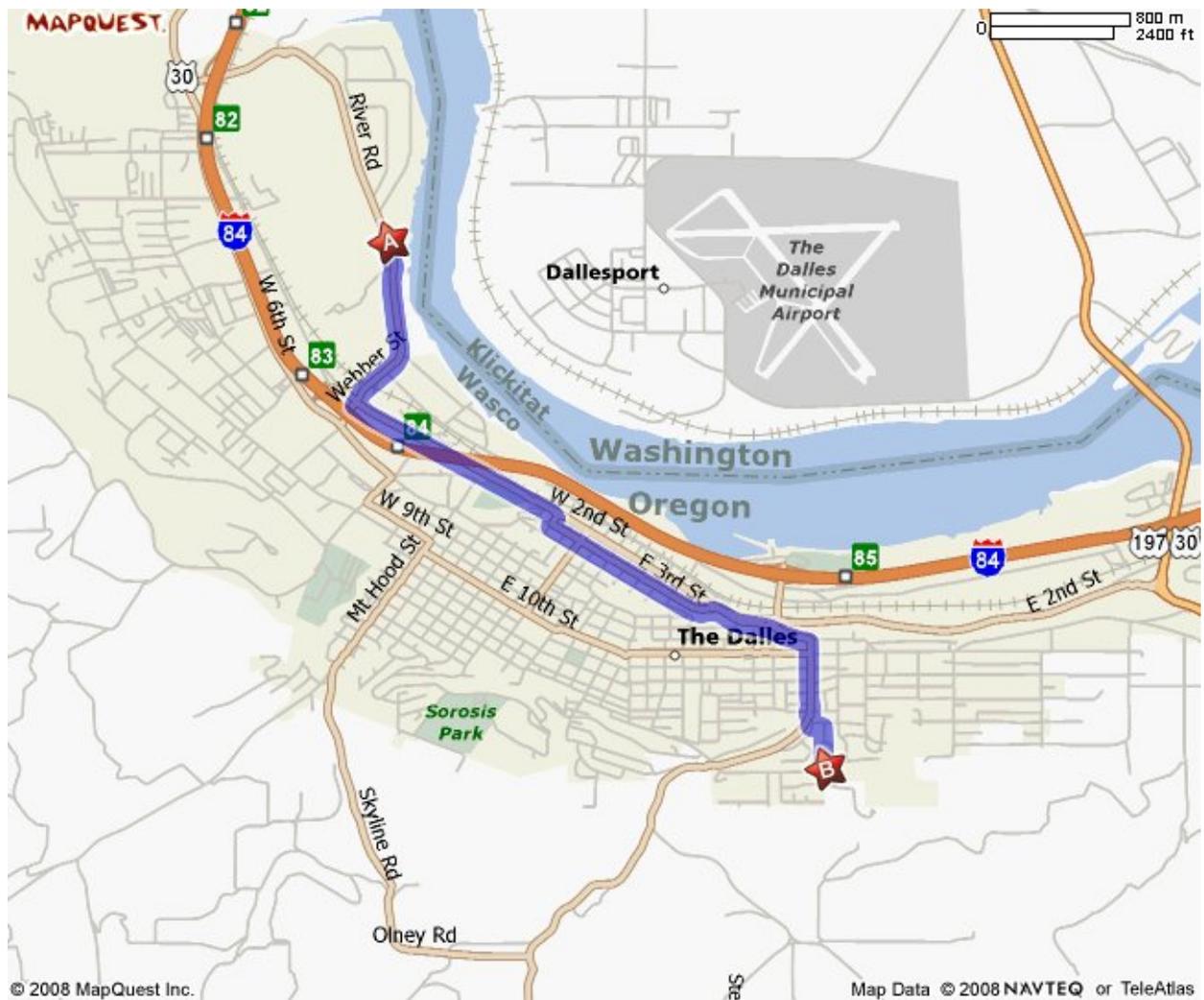
 Turn LEFT onto E 15TH ST. (0.0 mi)

 Turn RIGHT onto NEVADA ST. (0.2 mi)

 End at 1700 E 19th St the Dalles, OR 97058-3317

Estimated Time: 9 minutes Estimated Distance: 3.44 miles

Hospital Route Map:



Site Personnel Response Actions:

Call the EC or Project Superintendent who will assess the situation, first taking necessary precautions for personal safety. The EC will follow The Emergency Medical Plan outlined in Hickey Marine's Health and Safety Manual and determine whether to summon an ambulance by calling 911. The Project Area control measures will be implemented by the EC. Any off-site responding agencies will be given the Project Area Map and informed about the site-specific hazards so they can be optimally helpful in an emergency situation.

In emergencies, the injuries and illnesses that may arise will vary from incident to incident; check Appendices 2 and 3 and the MSDSs or contact the Poison Control Center for emergency first aid procedures. Note, in accordance with the Emergency Medical Plan, Hickey Marine does not designate a person as a first aid/CPR responder. Any first aid treatment is considered a Good Samaritan Act and be conducted within the scope of the Bloodborne Pathogen Plan. It is essential that all Project Area personnel in need of emergency care receive treatment.

9.3.2 Bloodborne Pathogen Exposure Control Plan

The Bloodborne Pathogen Exposure Control Plan for Field Operations is located in Hickey Marine's Health and Safety Manual.

9.4 Accident Reporting and Record Keeping

At the onset of an employee work-related injury or illness the Hickey Marine employees should notify the Project Superintendent or Site Project Supervisor/SHSC. The employee is required to report all work-related injuries; plus all non-work related injuries that may affect his/her ability to safely perform their job.

The SHSC will conduct an investigation in accordance with the Investigation of Injuries Policy outlined in Hickey Marine's Health and Safety Manual. Completed report(s) must be transmitted to the CHSD within 24 hours of an occurrence; a fax is acceptable. The CHSD will submit the appropriate reports to the Hickey Marine's Human Resources department in Vancouver, Washington (for Workers' Compensation), and OR-OSHA (as applicable). Hickey Marine will complete Worker's Compensation Insurance notifications, and conduct further incident investigation and develop internal communications if necessary.

Any release of information in these reports to unauthorized persons or agencies is prohibited unless it is first approved by the Client. Certain agencies or persons, such as OR-OSHA or OR-OSHA inspectors, can request this information and its release will

be permitted. Review the Emergency Call List for additional contact names and phone numbers.

9.5 Emergency Reference List

RESPONDING EMERGENCY AGENCIES

Service	Telephone Number
Ambulance	911
Fire Department	911
Police Department	911

PROJECT EMERGENCY CALL LIST

Title	Name	Telephone Number
Project General Superintendent	Greg Speyer	(360) 695-4553 (360) 772-4068 cell
Project Superintendent	Darrell Jamieson	(360) 695-4553 (360) 772-4072 cell
Site Supervisor (The Dalles)	Al Hallstrom	(360) 695-4553 (360) 772-4071 cell
Site Health and Safety Coordinator (SHSC)	Dave Godel	(360) 695-4553 (360) 90102622 cell
Corporate Health and Safety Director (CHSD)	Dave Godel	(360) 695-4553 (360) 901-3622 cell
Health and Safety Representative	Garry D. Rossing, CIH AMEC Earth & Environmental	(503) 639-3400 (503) 816-9254 cell
Port of Portland	John Durst	(503) 460-4847
<p>* In the event of an occupational accident or incident, for Hickey Marine employees please indicate to the medical facility that this is a Workers' Compensation case; that your employer is Hickey Marine; and insurance administrator information is available from SeaBright Insurance Company in the Vancouver, Washington office. . All other insurance is covered by Durham and Bates Insurance Company in Portland, Oregon.</p>		

EMERGENCY TELEPHONE NUMBER LIST

Organization	Telephone Number
State OSHA	(503) 229-5910 (Oregon)
Poison Control Center	1-800-222-1222
National Response Center	1-800-424-8802

SUBCONTRACTOR'S EMERGENCY TELEPHONE NUMBER LIST

Organization	Contact	Telephone Number
Tidewater	Craig Nelson	(360) 693-1491
Waste Connections	Dean Large	(360) 695-4858

LIMITATIONS

This site-specific Contractor Health and Safety Plan (CHASP) was prepared exclusively for Hickey Marine Enterprises, Inc. (HICKEY MARINE) by AMEC Earth & Environmental, Inc. (AMEC). The quality of information contained herein is consistent with the level of effort involved in AMEC services and based on: i) information available at the time of preparation, ii) data supplied by outside sources, and iii) the assumptions, conditions, and qualifications set forth in this CHASP. This CHASP is intended to be used by HICKEY MARINE and its subcontractors for the Terminal 4, Removal Action - Phase 1 Dredging and Capping Project only, subject to the terms and conditions of its contract with AMEC. Any other use of, or reliance on, this CHASP by any third party is at that party's sole risk. The information contained herein are relevant to the site documents and reports produced by others prior the development of this CHASP and should not be relied upon to represent conditions at later dates. In the event that changes in the nature, usage, or layout of the property or nearby properties are made, the information contained in this CHASP may not be valid. If additional information becomes available, it should be provided to AMEC so the CHASP can be modified as necessary.

APPENDIX 1

Site Characterization

Site Characterization Table

ANTICIPATED PHYSICAL STATE OF CONTAMINANTS		
<input type="checkbox"/> Liquid	<input checked="" type="checkbox"/> Sludge	<input type="checkbox"/> Unknown
<input type="checkbox"/> Solid	<input type="checkbox"/> Gas/Vapors	<input type="checkbox"/> Other
Note:		

MATRIX		
<input type="checkbox"/> Surface soils	<input type="checkbox"/> Surface water	<input type="checkbox"/> Free product
<input checked="" type="checkbox"/> Soils at depth	<input type="checkbox"/> Groundwater	<input checked="" type="checkbox"/> Other
Note: Sediment located in the Willamette River		

POTENTIAL HAZARDOUS PROPERTIES		
<input type="checkbox"/> Corrosive	<input type="checkbox"/> Flammable/Combust	<input type="checkbox"/> Radioactive
<input checked="" type="checkbox"/> Toxic	<input type="checkbox"/> Volatile	<input type="checkbox"/> Reactive
<input type="checkbox"/> Inert	<input checked="" type="checkbox"/> Carcinogenic	<input type="checkbox"/> Unknown
<input type="checkbox"/> Asphyxiant	<input type="checkbox"/> Compressed gas	<input type="checkbox"/> Other
Note:		

CONTAINER/STORAGE SYSTEM INFORMATION		
<input type="checkbox"/> Tanks (Carbon Vessel)	<input type="checkbox"/> Landfills/Drums	<input type="checkbox"/> Subsurface
<input type="checkbox"/> Drums	<input type="checkbox"/> Impoundments	<input checked="" type="checkbox"/> Uncontainerized
<input type="checkbox"/> Pipes	<input type="checkbox"/> Size/Capacity	<input type="checkbox"/> In-service
<input type="checkbox"/> Quantity	<input type="checkbox"/> Surface	<input type="checkbox"/> Other
Note:		

CONDITION OF CONTAINER/STORAGE SYSTEM (S)		
<input type="checkbox"/> Sound/Undamaged	<input type="checkbox"/> Confirmed leaks	<input type="checkbox"/> Other
<input type="checkbox"/> Deteriorated/Unsound	<input type="checkbox"/> Suspected leak	<input type="checkbox"/> Unknown
Note: Not Applicable		

(Continued)
Site Characterization Table

ORIGIN OR INDUSTRIAL APPLICATION OF CHEMICALS OF CONCERN		
Industrial Process		
<input type="checkbox"/> Manufacturing	<input type="checkbox"/> Previously in use	<input type="checkbox"/> Painting/Coating
<input type="checkbox"/> Power Generation	<input type="checkbox"/> Maintenance/Repair	<input type="checkbox"/> Storage
<input type="checkbox"/> Quantity	<input type="checkbox"/> Surface	<input checked="" type="checkbox"/> Other
Note: Shipping Terminal		

Chemicals Used or Identified		
<input type="checkbox"/> Acids	<input checked="" type="checkbox"/> Metals	<input type="checkbox"/> Phenols
<input type="checkbox"/> Caustics	<input type="checkbox"/> Pesticides	<input type="checkbox"/> Paints
<input type="checkbox"/> Halogen	<input type="checkbox"/> PCBs	<input type="checkbox"/> Solvents
<input checked="" type="checkbox"/> Other		
Note: Testing of sediments indicates the presence of lead and zinc and semi-volatile organic compounds (SVOCs) consisting of polycyclical aromatic hydrocarbons (PAHs)		

Oils/Fuels		
<input checked="" type="checkbox"/> Fuel oil	<input type="checkbox"/> AVGAS	<input checked="" type="checkbox"/> Gasoline
<input type="checkbox"/> Waste oil	<input checked="" type="checkbox"/> Diesel	<input type="checkbox"/> Leaded
<input checked="" type="checkbox"/> Hydraulic oil	<input type="checkbox"/> MOGAS	<input type="checkbox"/> Jet fuel
<input type="checkbox"/> Other		
Note: Oils and fuels are brought to the Project Area for routine operation of equipment.		

Sludge		
<input type="checkbox"/> Metal sludge	<input type="checkbox"/> Oil sludge	<input type="checkbox"/> Septic sludge
<input checked="" type="checkbox"/> Other		
Note: Sediment from river		

Solids		
<input type="checkbox"/> Asbestos	<input type="checkbox"/> Sandblast grit	<input type="checkbox"/> Landfill refuse
<input type="checkbox"/> Other		
Note:		

APPENDIX 2

Chemical Hazard Properties and Exposure Information

TABLE 2
Chemical Hazard Properties and Exposure Information

Chemical Name/Synonym	ACGIH TLV TWA	Notations	TLV Basis	OSHA PEL	STEL (ST) or Ceiling	IDLH	IP (eV)	LEL/UEL	Route	Route/Systems** Symptoms
Fuels										
Diesel Fuel	100 mg/m ³ (15 ppm)	Animal carcinogen Skin	Derm	None	None	None listed	None	1.1%5.9%	Inh Ing Con	Irrit eyes, nose, throat, dizz, drow, head, nav; dry cracked skin; chem pneu (aspir liq)
TPH (as gasoline)	300ppm	Animal carcinogen	Irritation; kidney; CNS; reproductive	None	500 ppm	None listed	None listed	1.4%/ 7.6%	Inh Abs Ing Con	Irrit eyes, skin, muc memb; derm; head, ftg, blurred vision, dizz, slurred speech, conf, convuls; chem pneu (aspir); possible liver, kidney damage [carc]
Metals										
Lead, elemental and inorganic compounds	0.05 mg/m ³	Animal carcinogen	CNS; GI; blood; kidney; reproductive	0.05 mg/m ³	None	100 mg/m ³	NA	NA/NA	Inh Ing Con	Weak, lass, insom; facial pallor; pal eye, anor, low-wgt. malnut; constip, abdom pain, colic; anemia; gingival lead line; tremor; para wrist, ankles; encephalopathy; nephropathy; irrit eyes; hypertension
Zinc	2.0 mg/m ³ (Zinc Oxide)	--	Metal Fume Fever	10.0 mg/m ³ 5.0 mg/m ³ respirable	10.0 mg/m ³ (TLV)	None Listed	NA	NA/NA	Inh Abs Ing Con	Metal fume fever: chills, musc ache, nau, fever, dry throat, cough, weak, lass; metallic taste; head; blurred vision; low back pain; vomit; ftg; mal; tight chest, dysp, rales, decr pulm func
Semivolatile Organics										
Benzo(b)fluoranthene	None	Suspected human carcinogen	Cancer	None	None	None	NA	NA/NA		See coal tar pitch volatiles.
Benzo(a)anthracene	None	Suspected human carcinogen	Cancer	None	None	None	NA	NA/NA		See coal tar pitch volatiles.
Benzo(a)pyrene	None	Suspected human carcinogen	Cancer	None	None	None	NA	NA/NA		See coal tar pitch volatiles.
Chrysene	None	Confirmed animal carcinogen	Skin	None	None	None	NA	NA/NA		See coal tar pitch volatiles.
Coal tar pitch volatiles (as benzene solubles)	0.2 mg/m ³	Human carcinogen	Cancer	0.2 mg/m ³	None	80 mg/m ³	NA	NA/NA	Inh Con	Derm, bron, [carc]

ACGIH = American Conference of Governmental Industrial Hygienists

ppm = Parts per million

NE = None established

IP = Ionization potential

TLV = ACGIH Threshold Limit Values

OSHA = Occupational Safety and Health Administration

mg/m³ = Milligrams per cubic meter

TWA = Time weighted average

PEL = OSHA Permissible Exposure Limit

ND = None determined

IDLH = Immediately dangerous to life and health

STEL = Short-term exposure limit

NIOSH = National Institute of Occupational Safety and Health

LEL = Lower explosive limit

TPH = Total petroleum hydrocarbons

PAH = Polyaromatic hydrocarbon

NA = Not applicable

UEL = Upper explosive limit

Sources: The above information was derived from NIOSH Pocket Guide to Chemical Hazards, (September 2005). ACGIH Threshold Limit Values (2006).

****ROUTE/SYSTEMS ABBREVIATIONS:**

abdom=abdominal	dysfunc=dysfunction	lac=lacrimation	pulm=pulmonary
abdom=abdominal	dysp=dyspnea	lar=laryngeal	RBC=red blood cell
abnor=abnormal/abnormalities	emphy=emphysema	Lass=lassitude (weakness, exhaustion)	Repro=reproductive
album=albuminuria	equi=equilibrium	Leth=lethargy (drowsiness or indifference)	resp=respiratory
Abs=skin absorption	eosin=eosinophilia	leucyt=leukocytosis (increased blood leukocytes)	restless=restlessness
anes=anesthesia	epilep=epileptiform	leupen=leukopenia	retster=retrosternal (occurring behind the sternum)
anor=anorexia	epis=epistaxis (nosebleed)	li-head=lightheadedness	rhin=rhinorrhea (discharge of thin nasal mucus)
anos=anosmia (loss of the sense of smell)	eryt=erythema	liq=liquid	salv=salivation
appre=apprehension	euph=euphoria	local=localized	sens=sensitization
arrhy=arrhythmias	fail=failure	low-wgt=weight loss	sez=seizure
asphy=asphyxia	fasc=fasciculation	mal=malaise (vague feeling of discomfort)	short=shortness
aspir=aspiration	FEV=forced expiratory volume	malnut=malnutrition	sneez=sneezing
asphy=asphyxia	fibr=fibrillation	ment=mental	sol=solid
BP=blood pressure	ftg=fatigue	methemo=methemoglobinemia	soln=solution
breath=breathing	func=function	monocy=monocytosis (increased blood monocytes)	som=somnolence (sleepiness unnatural)
bron=bronchitis	GI=gastrointestinal	Molt=molten	subs=substernal (occurring beneath the sternum)
broncopneu=bronchopneumonia	gidd=giddiness	muc memb=mucous membrane	sweat=sweating
bronspas=bronchospasm	halu=hallucinations	musc=muscle	swell=swelling
BUN=blood urea nitrogen	head=headache	narci=narcosis	sys=system
[carc]=carcinogen	hema=hematuria (blood in the urine)	nau=nausea	pulm=pulmonary
card=cardiac	hemato=hematopoietic	nec=necrosis	RBC=red blood cell
chol=cholinesterase	hemog=hemoglobinuria	neph=nephritis	Repro=reproductive
cirr=cirrhosis	hemorr=hemorrhage	nerv=nervousness	resp=respiratory
CNS=central nervous system	hyperpig=hyperpigmentation	numb=numbness	restless=restlessness
Con=contact	hypox=hypoxemia (reduced oxygen in the blood)	opac=opacity	retster=retrosternal (occurring behind the sternum)
conc=concentration	ict=icterus	palp=palpitations	rhin=rhinorrhea (discharge of thin nasal mucus)
conf=confusion	inco=incoordination	para=paralysis	salv=salivation
conj=conjunctivitis	incr=increase	pares=paresthesia	sens=sensitization
constip=constipation	inebri=inebriation	perf=perforation	sez=seizure
convuls=convulsions	inflam=inflammation	peri neur = peripheral neuropathy	short=shortness
corn=corneal	lng=ingestion	periorb=periorbital (situated around the eye)	sneez=sneezing
CVS=cardiovascular system	Inh=inhalation	phar=pharyngeal	sol=solid
cyan=cyanosis	inj=injury	photo=photophobia (abnormal visual intolerance to light)	soln=solution
decr=decrease	insom=insomnia	pig=pigmentation	som=somnolence (sleepiness unnatural)
depres=depressant	irreg=irregular	pneu=pneumonia	tacar=tachycardia
derm=dermatitis	irrit=irritant	pneuitis=pneumonitis	tend=tenderness
diarr=diarrhea	irrity=irritability	PNS=peripheral nervous system	terato=teratogenic
dist=disturbance	jaun=jaundice	polneur=polyneuropathy	throb=throbbing
dizz=dizziness	kera=keratitis (inflammation of the cornea)	prot=proteinuria	tight=tightness

TABLE 2 (Continued)
Chemical Hazard Properties and Exposure Information

trachbrnc=tracheobronchitis	vap=vapor	vesic=vesiculation	weak=weakness
twitch=twitching	venfib=ventricular fibrillation	vis dist=visual disturbance	wheez=wheezing
uncon=unconsciousness	verti=vertigo (an illusion of movement)	vomit=vomiting	

- ACGIH TLVs and OSHA PELs are TWA concentrations that must not be exceeded during any 8-hour shift or a 40-hour workweek.
 - Ceiling concentrations must not be exceeded during any part of the workday; if instantaneous monitoring is not feasible, the ceiling must be assessed as a 15-minute TWA exposure.
 - IDLH represents the maximum concentration from which, in the event of respiratory failure, one could escape within 30 minutes without a respirator and without experiencing any escape-impairing (e.g., severe irritation) or irreversible health effects.
 - Skin designates the potential for dermal absorption; skin exposure should be prevented. The value only represents inhalation hazards.
 - "ppm" is parts per million by volume and is not equivalent to a ppm by weight in soil value, e.g., mg/kg.
 - IPs (given in electron volt [eV] units) are presented for photoionization (PID) usefulness evaluation. The PID lamp should have an eV value greater than the analyte it is detecting.
- † Exceeds PID detection capabilities.

APPENDIX 3

Physical and Operating Hazards

Back Injuries Due to Improper Lifting

Preventive Measures

- ◆ Use proper lifting techniques.
- ◆ Lift with the legs, not the back.
- ◆ Keep loads close to the body and avoid twisting.
- ◆ Loads heavier than 50 pounds (lbs) require a second person or mechanical device for lifting.
- ◆ Use mechanical devices such as drum dollies, hand trucks, and tool hoists (for lifting augers) to lift or move heavy loads whenever possible.

Biological Agents

Preventive Measures

- ◆ Project work will not expose workers to infectious agents or wastes; however, responders to first aid incidents could contact bloodborne pathogens. Follow the Bloodborne Pathogen Control Plan in this Health and Safety Plan (HSP).
- ◆ Identify personnel who are highly sensitive or allergic to insect bites or stings during the “kickoff” meeting so that the appropriate emergency treatment can be made available on-site.
- ◆ Never try to capture wild or semi-wild animals—they may bite you or infect you with parasites.

Poison Oak

- ◆ Review the Poison Oak Field Guide during daily tailgate safety meetings. Worker must be familiar with the appearance of these poisonous plants.
- ◆ If there is accidental contact, carefully remove affected clothing and wash skin with soap and warm water as soon as possible.

Ticks

- ◆ Tick parasites are commonly encountered in thick vegetation.
 - Check yourself and coworkers regularly for feeding ticks.
 - If a tick is located, remove it with tweezers and place in a vial.
 - If irritation is felt or observed at the bite site, seek medical attention. Bring in removed tick, if possible.
- ◆ Tick bites can lead to local infections at the bite site or result in potentially severe illnesses, such as Lyme Disease or Rocky Mountain Spotted Fever.

Hanta Virus

- ◆ In areas with rodent infestation, the existence of Hanta virus must be discussed during the tailgate safety meetings.

- ◆ Hanta virus is carried by rodents, particularly deer mice. Exposure to the virus through contact with the rodents and their droppings can lead to a severe, often deadly illness in humans.
- ◆ Do not sweep up or disturb rodent droppings without an appropriate respirator.
- ◆ Do not eat food or drink beverages that have been exposed to rodents and/or their droppings.

Valley Fever

- ◆ In parts of the California Central Valley and in other regions of the southwestern United States, there are fungal spores in the soil, which, if inhaled, can cause an illness known as Valley Fever (Coccidioidomycosis).
- ◆ During projects in areas of the country where Valley Fever fungal spores are known or suspected to be in the soil, the hazards and symptoms must be discussed during the tailgate safety meetings.
- ◆ Inhalation of dust containing the spores can cause the Valley Fever illness, which has a wide range of symptoms. Symptoms can be mild, similar to the flu lasting a few days, to more serious involving damage to the lungs, heart, and central nervous system.
- ◆ In areas where the Valley Fever spores are known, dust suppression techniques are critical to minimize exposure. Tarping and wetting down disturbed areas of soil will help to control exposure. In the event these techniques are not feasible or effective, air purifying respirators with P-100 filters shall be worn.

Electrocution

Preventive Measures

- ◆ Locate all underground power lines by geophysical methods.
- ◆ Review engineering drawings with appropriate client contact and/or site personnel.
- ◆ Confirm exact location of lines with hand tools, not heavy equipment.
- ◆ Wear rubber, insulated protective gloves when hand digging or work on a rubber insulating mat.
- ◆ Do not work within 10 feet (ft) of high voltage electrical equipment having live exposed parts unless qualified, trained, and following safe work practices per 29 CFR 1910.331-335.
- ◆ Leave at least 20 ft between equipment overhead structures and overhead power lines under 50 kilovolts, unless the lines have been de-energized and visibly grounded at the point of work, or are equipped with insulated barriers to prevent physical contact.
- ◆ Lower equipment overhead structures before moving any distance.
- ◆ Lock-out and tag controls that will be deactivated for maintenance or work on energized or de-energized equipment or circuits.
- ◆ Extension cords, power/electric tools, pumps, floodlights, and generators that lack double insulation must have grounding conductors that work.
- ◆ Use ground fault circuit interrupters (GFCIs) on all 120-volt, 120-amp circuits.
- ◆ Never work on-site when there is a threat of lightning storms.

Entanglement in Rotating or Moving Equipment

Preventive Measures

- ◆ Never operate equipment without safety guards.
- ◆ Loose-fitting or dangling clothes, hair, and jewelry are prohibited.
- ◆ Stay clear of rotating and pinch points, such as cables and pulleys.
- ◆ Passage under, or stopping over moving equipment is prohibited.
- ◆ Use long-handled shovels only to remove debris/sludge from the bucket.
- ◆ The operators and the Project General Superintendent/Project Superintendent will know the location and proper operation of any emergency shut-down equipment (kill-switches, etc.), and procedures.

Ergonomic Stress

Preventive Measures

- ◆ Lift carefully with load close to body with the legs taking most of the weight.
- ◆ Get help with lifts greater than 40 lbs.
- ◆ When working with a heavy tool or object, keep legs under the load and do not overreach or twist to the side.
- ◆ Reposition body to be more square to the load and work.
- ◆ Push loads, rather than pull, whenever feasible.
- ◆ Do not persist with lifting when the load is too heavy.
- ◆ Use a mechanical lifting aid or have a coworker assist with the lift.
- ◆ Rotate repetitive tasks to avoid soft-tissue fatigue.

Falls from Elevated Surfaces

Preventive Measures

- ◆ Protect employees from falling off surfaces that have a side or an edge that is 6 ft or more above a lower level.
- ◆ Provide a safety harness and shock-absorbing lifeline or adequate fall protection. Employees must wear them when working 6 ft or higher above the platform or main work deck.
- ◆ Install either a guardrail system or fall arrest system that conforms to 29 CFR 1926.502 (d) and is approved by the American National Standards Institute.

Fire and Explosion

Preventive Measures

- ◆ Make ABC fire extinguishers accessible in the work area.
- ◆ Store flammables in Underwriter's Laboratory and Occupational Safety and Health Administration (OSHA) approved metal safety cans equipped with spark arrestors.
- ◆ Store flammable containers more than 50 ft from the rig. Store portable (flammable) tanks more than 100 ft from the rig.
- ◆ Keep exhaust of equipment powered by internal combustion engines well away from flammables and combustibles.
- ◆ Secure hot work permits/approvals before welding or cutting.
- ◆ Store and use compressed gases in a safe manner.
- ◆ Never refuel equipment while it is in operation or hot enough to ignite fuel vapors.
- ◆ Conspicuously mark operations that pose fire hazards "No Smoking" or "Open Flames."
- ◆ Remove trash and unnecessary combustibles from the Exclusion Zone (EZ).

Heat Stress

Preventive Measures

First Aid

- ◆ Perform emergency decontamination.
- ◆ Remove victim to cool area.
- ◆ Give cool fluids (only if conscious).
- ◆ Immediately reduce body temperature.
- ◆ Seek medical attention.

Prevention

- ◆ Provide shelter or shaded area for work tasks (as feasible) and break areas.
- ◆ Adjust work schedules by rotation of personnel or alternate job functions to minimize heat stress or overexertion at one task.
- ◆ Work during cooler hours of the day (or night), as feasible.
- ◆ To maintain normal body fluid levels, drink 16 ounces (oz) (2 cups) of water before each shift and about 8 oz (1 cup) every 15 to 20 minutes. Drink 2 gallons of water during an 8-hour period.
- ◆ Wear nonbinding cotton clothing (e.g., medical scrubs and cotton undergarments) under personal protective equipment (PPE) to absorb moisture and to help prevent heat rash.
- ◆ Where feasible, set up field “showers” or hose-down areas to cool down body.

Heavy Equipment and Vehicles

Preventive Measures

- ◆ Heavy equipment operators are to be continuously aware of workers on foot. Workers on foot must wear hard hats and high visibility safety vests.
- ◆ Always lower the bucket/blade to the ground when the operator leaves the equipment.
- ◆ Backup lights and alarms must be functional.
- ◆ Obey all site traffic signs and speed limits.
- ◆ Seat belts must be functional and in use during operation of the equipment and any site vehicles (including rentals).
- ◆ Operator shall regularly inspect the equipment for defective parts, such as brakes, controls, motor, chassis, drives, hydraulic mechanisms. If stopped on an incline (>50%) with the engine running, the parking brake must be set.

Inclement Weather, Shut-down Conditions

Preventive Measures

- ◆ Poor visibility.
- ◆ Precipitation severe enough to impair safe movement or travel.
- ◆ Lightning in the immediate area.
- ◆ Steady winds in excess of 40 mph.
- ◆ Other conditions as determined by the SHSC, Project General Superintendent or Project Superintendent.
- ◆ Imminent threat of severe storm conditions
- ◆ Work will resume when the conditions are deemed safe by the SHSC.
- ◆ Complete an Incident Report within 24 hrs for all work shutdowns.

Noise

Preventive Measures

- ◆ Wear hearing protection when speech becomes difficult to understand at a distance of 10 ft and while standing within 20 to 25 ft from heavy equipment, pneumatic power tools, steam cleaners, and other equipment in operation that can generate more than 85 decibels (A-weighted scale) (dBA).
- ◆ Label equipment as a noise hazard if it generates, or is capable of generating, more than 85 dBA.

Slips, Trips, and Falls

Preventive Measures

- ◆ Clear work area of obstructions and debris before setting up. Alter work areas as necessary to provide a safe, reasonably level area.
- ◆ All walking and working surfaces shall continually be inspected and maintained to be free of slip, trip, and fall hazards.
- ◆ Keep platforms, stairs, and immediate work areas clear. Do not allow oil, grease, or excessive mud to accumulate in these areas.
- ◆ Eliminate slip, trip, and fall hazards or identify them clearly with caution tape, barricades, or equivalent means.
- ◆ Store loose or light material and debris in designated areas or containers.
- ◆ Secure tools, materials, and equipment subject to displacement or falling.

Ultraviolet Exposure

Preventive Measures

- ◆ Wear appropriate clothing (long pants, shirt or tee shirt) and a hat to protect skin from prolonged sun exposure.
- ◆ Apply sunscreen (Sun Protection Factor [SPF]>15) prior to working outdoors in the sun and periodically thereafter.
- ◆ Wear polycarbonate safety glasses to protect eyes from ultraviolet exposure.
- ◆ Use lip balm with SPF 15 or greater.
- ◆ Reduce sun exposure from 10 AM to 4 PM. Utilize shade protection especially during these hours.

APPENDIX 4

Hazard Analysis

Job Safety Analysis

TASK : Transport of personnel to and from the Dredge

Required # of Personnel for this task: Up to seven field personnel

Task Description: Hickey Marine personnel will access and egress the dredge by boat.

Potential Physical Hazards:		
<input type="checkbox"/> Ground intrusion	<input type="checkbox"/> Electrical/electrocution	<input type="checkbox"/> Fire/ Explosive
<input type="checkbox"/> Heavy equipment operation	<input type="checkbox"/> Traffic	<input checked="" type="checkbox"/> Boat operation
<input type="checkbox"/> Physical exertion/strain	<input type="checkbox"/> Noise	<input checked="" type="checkbox"/> Work over water
<input checked="" type="checkbox"/> Slick/wet surface	<input type="checkbox"/> Lifting/Back injuries	<input type="checkbox"/> Heat stress
<input type="checkbox"/> Uneven terrain	<input type="checkbox"/> Repetitive motion	<input type="checkbox"/> Cold stress
<input type="checkbox"/> Falls from elevation > 6 ft.	<input type="checkbox"/> High pressure	<input type="checkbox"/> Inclement weather/shutdown
<input type="checkbox"/> Entanglement in rotating or moving equipment	<input type="checkbox"/> Ergonomic stress	<input type="checkbox"/> Underground/overhead utility lines
Potential Chemical/Biological Exposure Hazards:		
Additional Potential Hazards:		
Levels of Training and Certification:		
<input checked="" type="checkbox"/> HAZWOPER 40-hour training	<input type="checkbox"/> HAZWOPER Supervisor's training	<input checked="" type="checkbox"/> HAZWOPER 24-hour training
<input type="checkbox"/> Medical surveillance	<input type="checkbox"/> Annual respirator fit-test	<input type="checkbox"/> First Aid
<input type="checkbox"/> CPR	<input type="checkbox"/> Confined space entry	<input type="checkbox"/> Lock-out/Tag-out
Equipment:		
<input type="checkbox"/> Air monitoring		
Other field equipment:		

Personal Protective Equipment (PPE)

Initial levels of protection were assigned to this work task based on the potential risk of exposure. These levels may be changed if warranted by site conditions (as determined by the SHSC).

Initial Level of Protection	<input type="checkbox"/> A <input type="checkbox"/> B	<input type="checkbox"/> C <input checked="" type="checkbox"/> D	<input type="checkbox"/> Modified D
Respirator (Level C and up)	<input type="checkbox"/> SCBA, airline <input type="checkbox"/> P-100 Filter	<input type="checkbox"/> Purified respirator <input type="checkbox"/> Dust pre-filters	<input type="checkbox"/> OV/AG cart <input type="checkbox"/> Other _____
Protective clothing	<input type="checkbox"/> Encapsulated Suit <input type="checkbox"/> Saranex [®] or equiv.	<input type="checkbox"/> Tyvek [®] or equiv. <input type="checkbox"/> Splash suit	<input type="checkbox"/> PE Tyvek [®] or equiv. <input checked="" type="checkbox"/> Other: <u>PFD and Orange Vest</u>
Head, face, eyes, ears	<input checked="" type="checkbox"/> Hard hat <input type="checkbox"/> Splash shield	<input checked="" type="checkbox"/> Safety glasses <input type="checkbox"/> Ear plugs/muffs	<input type="checkbox"/> Goggles <input type="checkbox"/> Other _____
Gloves (outer) (inner)	<input type="checkbox"/> Nitrile _____ <input type="checkbox"/> Nitrile _____	<input type="checkbox"/> Neoprene <input type="checkbox"/> Vinyl	<input type="checkbox"/> Other <u>Leather work gloves</u> <input type="checkbox"/> Other _____
Footwear	<input checked="" type="checkbox"/> Safety-toe leather <input type="checkbox"/> Hip waders	<input type="checkbox"/> Over boots/covers <input type="checkbox"/> Shin/knee guards	<input type="checkbox"/> Safety-toe rubber <input type="checkbox"/> Other _____

Additional Mitigation(s):

Special Instruction:

Follow Hickey Marine's normal procedures for operating boats and accessing and egressing the dredges.

Job Safety Analysis

TASK : Dredging Contaminated Sediment

Required # of Personnel for this task: Six Field Personnel

Task Description: Hickey Marine will be dredging the bottom of the river in designated areas and place the contaminated sediment onto an adjacent barge.

Potential Physical Hazards:		
<input type="checkbox"/> Ground intrusion	<input type="checkbox"/> Electrical/electrocution	<input type="checkbox"/> Fire/ Explosive
<input checked="" type="checkbox"/> Dredges and other heavy equipment operation	<input type="checkbox"/> Traffic (traffic control may be required)	<input checked="" type="checkbox"/> Boat operation
<input checked="" type="checkbox"/> Physical exertion/strain	<input checked="" type="checkbox"/> Noise	<input checked="" type="checkbox"/> Work over water
<input checked="" type="checkbox"/> Slick/wet surface	<input checked="" type="checkbox"/> Lifting/Back injuries	<input checked="" type="checkbox"/> Heat stress
<input type="checkbox"/> Uneven terrain	<input type="checkbox"/> Repetitive motion	<input type="checkbox"/> Cold stress
<input checked="" type="checkbox"/> Falls from elevation > 6 ft.	<input type="checkbox"/> High pressure	<input checked="" type="checkbox"/> Inclement weather/shutdown
<input checked="" type="checkbox"/> Entanglement in rotating or moving equipment	<input checked="" type="checkbox"/> Ergonomic stress	<input type="checkbox"/> Underground/overhead utility lines
Potential Chemical/Biological Exposure Hazards:		
SVOCs/PAHs	Zinc	Lead
Diesel		
Additional Potential Hazards:		
Levels of Training and Certification:		
<input checked="" type="checkbox"/> HAZWOPER 40-hour training	<input type="checkbox"/> HAZWOPER Supervisor's training	<input type="checkbox"/> HAZWOPER 24-hour training
<input type="checkbox"/> Medical surveillance	<input type="checkbox"/> Annual respirator fit-test	<input type="checkbox"/> First Aid
<input type="checkbox"/> CPR	<input type="checkbox"/> Confined space entry	<input type="checkbox"/> Lock-out/Tag-out
Equipment:		
<input type="checkbox"/> Air monitoring		

Other field equipment:			
Personal Protective Equipment (PPE)			
Initial levels of protection were assigned to this work task based on the potential risk of exposure. These levels may be changed if warranted by site conditions (as determined by the SHSC).			
Initial Level of Protection	<input type="checkbox"/> A <input type="checkbox"/> B	<input type="checkbox"/> C <input type="checkbox"/> D	<input checked="" type="checkbox"/> Modified D
Respirator (Level C and up)	<input type="checkbox"/> SCBA, airline <input type="checkbox"/> P-100 Filter	<input type="checkbox"/> Purified respirator <input type="checkbox"/> Dust pre-filters	<input type="checkbox"/> OV/AG cart <input type="checkbox"/> Other _____
Protective clothing	<input type="checkbox"/> Encapsulated Suit <input type="checkbox"/> Saranex [®] or equiv.	<input checked="" type="checkbox"/> Tyvek [®] or equiv. <input type="checkbox"/> Splash suit	<input type="checkbox"/> PE Tyvek [®] or equiv. <input checked="" type="checkbox"/> Other: <u>PFD and Orange Vest</u>
Head, face, eyes, ears	<input checked="" type="checkbox"/> Hard hat <input type="checkbox"/> Splash shield	<input checked="" type="checkbox"/> Safety glasses <input checked="" type="checkbox"/> Ear plugs/muffs	<input type="checkbox"/> Goggles <input type="checkbox"/> Other _____
Gloves (outer) (inner)	<input checked="" type="checkbox"/> Nitrile _____ <input checked="" type="checkbox"/> Nitrile _____	<input type="checkbox"/> Neoprene <input type="checkbox"/> Vinyl	<input type="checkbox"/> Other _____ <input type="checkbox"/> Other _____
Footwear	<input checked="" type="checkbox"/> Safety-toe leather <input type="checkbox"/> Hip waders	<input checked="" type="checkbox"/> Over boots/covers <input type="checkbox"/> Shin/knee guards	<input checked="" type="checkbox"/> Safety-toe rubber <input type="checkbox"/> Other _____
Additional Mitigation(s):			
<ul style="list-style-type: none"> • Tyvek shall be Tychem SL or equivalent 			
Special Instruction:			
The dredge operator is not expected to come into direct contact with the contaminated sediments and will not need to wear coveralls or chemical resistant gloves.			

Job Safety Analysis

TASK : Water Pumping Activities

Required # of Personnel for this task: Two to Three Field Personnel

Task Description: Personnel will manage the pumping of water accumulation in sediment barge to the water barge during dredging activities

Potential Physical Hazards:		
<input type="checkbox"/> Ground intrusion	<input type="checkbox"/> Electrical/electrocution	<input type="checkbox"/> Fire/ Explosive ordnance
<input type="checkbox"/> Drilling rigs and other heavy equipment operation	Traffic	<input checked="" type="checkbox"/> Boat operation
<input checked="" type="checkbox"/> Physical exertion/strain	<input checked="" type="checkbox"/> Noise	<input checked="" type="checkbox"/> Work over water
<input checked="" type="checkbox"/> Slick/wet surface	<input checked="" type="checkbox"/> Lifting/Back injuries	<input checked="" type="checkbox"/> Heat stress
<input type="checkbox"/> Uneven terrain	<input type="checkbox"/> Repetitive motion	<input type="checkbox"/> Cold stress
<input checked="" type="checkbox"/> Falls from elevation > 6 ft.	<input type="checkbox"/> High pressure	<input checked="" type="checkbox"/> Inclement weather/shutdown condition
<input type="checkbox"/> Entanglement in rotating or moving equipment	<input type="checkbox"/> Ergonomic stress	<input type="checkbox"/> Underground/overhead utility lines
Potential Chemical/Biological Exposure Hazards:		
SVOCs/PAHs	Zinc	Lead
Diesel		
Additional Potential Hazards:		
.		
Levels of Training and Certification:		
<input checked="" type="checkbox"/> HAZWOPER 40-hour training	<input type="checkbox"/> HAZWOPER Supervisor's training	<input type="checkbox"/> HAZWOPER 24-hour training
<input type="checkbox"/> Medical surveillance	<input type="checkbox"/> Annual respirator fit-test	<input type="checkbox"/> First Aid
<input type="checkbox"/> CPR	<input type="checkbox"/> Confined space entry	<input type="checkbox"/> Lock-out/Tag-out
Equipment:		
<input type="checkbox"/> Air monitoring	Type: N/A	Action Level: N/A
Other field equipment:		

Personal Protective Equipment (PPE)

Initial levels of protection were assigned to this work task based on the potential risk of exposure. These levels may be changed if warranted by and site conditions (as determined by the SHSC).

Initial Level of Protection	<input type="checkbox"/> A <input type="checkbox"/> B	<input type="checkbox"/> C <input type="checkbox"/> D	<input checked="" type="checkbox"/> Modified D
Respirator (Level C and up)	<input type="checkbox"/> SCBA, airline <input type="checkbox"/> P-100 Filter	<input type="checkbox"/> Purified respirator <input type="checkbox"/> Dust pre-filters	<input type="checkbox"/> OV/AG cart <input type="checkbox"/> Other _____
Protective clothing	<input type="checkbox"/> Encapsulated Suit <input type="checkbox"/> Saranex [®] or equiv.	<input checked="" type="checkbox"/> Tyvek [®] or equiv. <input type="checkbox"/> Splash suit	<input type="checkbox"/> PE Tyvek [®] or equiv. <input checked="" type="checkbox"/> Other: <u>PDF & Orange Vest</u>
Head, face, eyes, ears	<input checked="" type="checkbox"/> Hard hat <input type="checkbox"/> Splash shield	<input checked="" type="checkbox"/> Safety glasses <input type="checkbox"/> Ear plugs/muffs	<input type="checkbox"/> Goggles <input type="checkbox"/> Other _____
Gloves (outer) (inner)	<input checked="" type="checkbox"/> Nitrile _____ <input checked="" type="checkbox"/> Nitrile _____	<input type="checkbox"/> Neoprene <input type="checkbox"/> Vinyl	<input type="checkbox"/> Other _____ <input type="checkbox"/> Other _____
Footwear	<input checked="" type="checkbox"/> Work boots <input type="checkbox"/> Hip waders	<input checked="" type="checkbox"/> Over boots/covers <input type="checkbox"/> Shin/knee guards	<input checked="" type="checkbox"/> Safety-toe rubber <input type="checkbox"/> Other _____

Additional Mitigation(s):

- Tyvek shall be Tychem SL or equivalent

Special Instruction:

Job Safety Analysis

TASK :

Maintenance of Dredge Bucket

Required # of Personnel for this task: One or Two Personnel

Task Description: Perform periodic maintenance of the dredge bucket including greasing and lubrication.

Potential Physical Hazards:		
<input type="checkbox"/> Ground intrusion	<input type="checkbox"/> Electrical/electrocution	<input type="checkbox"/> Fire/ Explosive
<input checked="" type="checkbox"/> Heavy equipment operation	<input type="checkbox"/> Traffic (traffic control may be required)	<input checked="" type="checkbox"/> Boat operation
<input checked="" type="checkbox"/> Physical exertion/strain	<input checked="" type="checkbox"/> Noise	<input type="checkbox"/> Work over water
<input checked="" type="checkbox"/> Slick/wet surface	<input checked="" type="checkbox"/> Lifting/Back injuries	<input checked="" type="checkbox"/> Heat stress
<input type="checkbox"/> Uneven terrain	<input type="checkbox"/> Repetitive motion	<input type="checkbox"/> Cold stress
<input type="checkbox"/> Falls from elevation > 6 ft.	<input type="checkbox"/> High pressure	<input checked="" type="checkbox"/> Inclement weather/shutdown condition
<input checked="" type="checkbox"/> Entanglement in rotating or moving equipment	<input checked="" type="checkbox"/> Ergonomic stress	<input type="checkbox"/> Underground/overhead utility lines
Potential Chemical/Biological Exposure Hazards:		
SVOCs/PAHs	Zinc	Lead
Diesel		
Additional Potential Hazards:		
Levels of Training and Certification:		
<input checked="" type="checkbox"/> HAZWOPER 40-hour training	<input type="checkbox"/> HAZWOPER Supervisor's training	<input type="checkbox"/> HAZWOPER 24-hour training
<input type="checkbox"/> Medical surveillance	<input type="checkbox"/> Annual respirator fit-test	<input type="checkbox"/> First Aid
<input type="checkbox"/> CPR	<input checked="" type="checkbox"/> Confined space entry	<input type="checkbox"/> Lock-out/Tag-out
Equipment:		
<input type="checkbox"/> Air monitoring		

Other field equipment:			
Personal Protective Equipment (PPE)			
Initial levels of protection were assigned to this work task based on the potential risk of exposure. These levels may be changed if warranted by site conditions (as determined by the SHSC).			
Initial Level of Protection	<input type="checkbox"/> A <input type="checkbox"/> B	<input type="checkbox"/> C <input type="checkbox"/> D	<input checked="" type="checkbox"/> Modified D
Respirator (Level C and up)	<input type="checkbox"/> SCBA, airline <input type="checkbox"/> P-100 Filter	<input type="checkbox"/> Purified respirator <input type="checkbox"/> Dust pre-filters	<input type="checkbox"/> OV/AG cart <input type="checkbox"/> Other _____
Protective clothing	<input type="checkbox"/> Encapsulated Suit <input type="checkbox"/> Saranex [®] or equiv.	<input checked="" type="checkbox"/> Tyvek [®] or equiv. <input type="checkbox"/> Splash suit	<input type="checkbox"/> PE Tyvek [®] or equiv. <input checked="" type="checkbox"/> Other: <u>PDF & Orange Vest</u>
Head, face, eyes, ears	<input checked="" type="checkbox"/> Hard hat <input type="checkbox"/> Splash shield	<input checked="" type="checkbox"/> Safety glasses <input checked="" type="checkbox"/> Ear plugs/muffs	<input type="checkbox"/> Goggles <input type="checkbox"/> Other _____
Gloves (outer) (inner)	<input checked="" type="checkbox"/> Nitrile _____ <input checked="" type="checkbox"/> Nitrile _____	<input type="checkbox"/> Neoprene <input type="checkbox"/> Vinyl	<input type="checkbox"/> Other _____ <input type="checkbox"/> Other _____
Footwear	<input checked="" type="checkbox"/> Safety-toe leather <input type="checkbox"/> Hip waders	<input checked="" type="checkbox"/> Over boots/covers <input type="checkbox"/> Shin/knee guards	<input checked="" type="checkbox"/> Safety-toe rubber <input type="checkbox"/> Other _____
Additional Mitigation(s):			
<ul style="list-style-type: none"> • Tyvek shall be Tychem SL or equivalent 			
Special Instruction:			

Job Safety Analysis

TASK : Transport of Sediment Barges to The Dalles

Required # of Personnel for this task: TBD

Task Description: Tidewater personnel will use tug to transport the sediment barges up The Columbia River to The Dalles offload site.

Potential Physical Hazards:		
<input type="checkbox"/> Ground intrusion	<input type="checkbox"/> Electrical/electrocution	<input type="checkbox"/> Fire/ Explosive
<input type="checkbox"/> Heavy equipment operation	<input type="checkbox"/> Traffic	<input checked="" type="checkbox"/> Boat operation
<input type="checkbox"/> Physical exertion/strain	<input checked="" type="checkbox"/> Noise	<input checked="" type="checkbox"/> Work over water
<input checked="" type="checkbox"/> Slick/wet surface	<input checked="" type="checkbox"/> Lifting/Back injuries	<input checked="" type="checkbox"/> Heat stress
<input type="checkbox"/> Uneven terrain	<input type="checkbox"/> Repetitive motion	<input type="checkbox"/> Cold stress
<input checked="" type="checkbox"/> Falls from elevation > 6 ft.	<input type="checkbox"/> High pressure	<input checked="" type="checkbox"/> Inclement weather/shutdown
<input type="checkbox"/> Entanglement in rotating or moving equipment	<input type="checkbox"/> Ergonomic stress	<input type="checkbox"/> Underground/overhead utility lines
Potential Chemical/Biological Exposure Hazards:		
Additional Potential Hazards:		
Tidewater personnel will not come into direct contact with the contaminated sediment during transport.		
Levels of Training and Certification:		
<input type="checkbox"/> HAZWOPER 40-hour training	<input type="checkbox"/> HAZWOPER Supervisor's training	<input type="checkbox"/> HAZWOPER 24-hour training
<input type="checkbox"/> Medical surveillance	<input type="checkbox"/> Annual respirator fit-test	<input type="checkbox"/> First Aid
<input type="checkbox"/> CPR	<input checked="" type="checkbox"/> Confined space entry	<input type="checkbox"/> Lock-out/Tag-out
Equipment:		
<input type="checkbox"/> Air monitoring	Type: Dust Trac	

Other field equipment:			
Personal Protective Equipment (PPE)			
Initial levels of protection were assigned to this work task based on the potential risk of exposure. These levels may be changed if warranted by site conditions (as determined by the SHSC).			
Initial Level of Protection	<input type="checkbox"/> A <input type="checkbox"/> B	<input type="checkbox"/> C <input checked="" type="checkbox"/> D	<input type="checkbox"/> Modified D
Respirator (Level C and up)	<input type="checkbox"/> SCBA, airline <input type="checkbox"/> P-100 Filter	<input type="checkbox"/> Purified respirator <input type="checkbox"/> Dust pre-filters	<input type="checkbox"/> OV/AG cart <input type="checkbox"/> Other _____
Protective clothing	<input type="checkbox"/> Encapsulated Suit <input type="checkbox"/> Saranex [®] or equiv.	<input type="checkbox"/> Tyvek [®] or equiv. <input type="checkbox"/> Splash suit	<input type="checkbox"/> PE Tyvek [®] or equiv. <input checked="" type="checkbox"/> Other: <u>PDF</u>
Head, face, eyes, ears	<input type="checkbox"/> Hard hat <input type="checkbox"/> Splash shield	<input checked="" type="checkbox"/> Safety glasses <input checked="" type="checkbox"/> Ear plugs/muffs	<input type="checkbox"/> Goggles <input type="checkbox"/> Other _____
Gloves (outer) (inner)	<input type="checkbox"/> Nitrile _____ <input type="checkbox"/> Nitrile _____	<input type="checkbox"/> Neoprene <input type="checkbox"/> Vinyl	<input type="checkbox"/> Other _____ <input type="checkbox"/> Other _____
Footwear	<input checked="" type="checkbox"/> Safety-toe leather <input type="checkbox"/> Hip waders	<input type="checkbox"/> Over boots/covers <input type="checkbox"/> Shin/knee guards	<input checked="" type="checkbox"/> Safety-toe rubber <input type="checkbox"/> Other _____
Additional Mitigation(s):			
Spills or releases shall be reported to Hickey Marine for proper handling.			
Special Instruction:			
<ul style="list-style-type: none"> Tidewater personnel shall follow normal tug operation safety and health procedures and normally specified PPE. 			

Job Safety Analysis

TASK : Offload of Contaminated Sediment at The Dalles

Required # of Personnel for this task: Up to seven personnel

Task Description: Hickey Marine will offload contaminated sediment from the barge to a container on the dock using a dredge.

Potential Physical Hazards:		
<input type="checkbox"/> Ground intrusion	<input type="checkbox"/> Electrical/electrocution	<input type="checkbox"/> Fire/ Explosive
<input checked="" type="checkbox"/> Heavy equipment operation	<input type="checkbox"/> Traffic (traffic control may be required)	<input checked="" type="checkbox"/> Boat operation
<input checked="" type="checkbox"/> Physical exertion/strain	<input checked="" type="checkbox"/> Noise	<input checked="" type="checkbox"/> Work over water
<input checked="" type="checkbox"/> Slick/wet surface	<input checked="" type="checkbox"/> Lifting/Back injuries	<input checked="" type="checkbox"/> Heat stress
<input type="checkbox"/> Uneven terrain	<input type="checkbox"/> Repetitive motion	<input type="checkbox"/> Cold stress
<input type="checkbox"/> Falls from elevation > 6 ft.	<input type="checkbox"/> High pressure	<input checked="" type="checkbox"/> Inclement weather/shutdown condition
<input checked="" type="checkbox"/> Entanglement in rotating or moving equipment	<input type="checkbox"/> Ergonomic stress	<input type="checkbox"/> Underground/overhead utility lines
Potential Chemical/Biological Exposure Hazards:		
SVOCs/PAHs	Zinc	Lead
Diesel		
Additional Potential Hazards:		
Levels of Training and Certification:		
<input checked="" type="checkbox"/> HAZWOPER 40-hour training	<input type="checkbox"/> HAZWOPER Supervisor's training	<input checked="" type="checkbox"/> HAZWOPER 24-hour training
<input type="checkbox"/> Medical surveillance	<input type="checkbox"/> Annual respirator fit-test	<input type="checkbox"/> First Aid
<input type="checkbox"/> CPR	<input type="checkbox"/> Confined space entry	<input type="checkbox"/> Lock-out/Tag-out
Equipment:		
<input type="checkbox"/> Air monitoring		

Other field equipment:			
Personal Protective Equipment (PPE)			
Initial levels of protection were assigned to this work task based on the potential risk of exposure. These levels may be changed if warranted by site conditions (as determined by the SHSC).			
Initial Level of Protection	<input type="checkbox"/> A <input type="checkbox"/> B	<input type="checkbox"/> C <input type="checkbox"/> D	<input checked="" type="checkbox"/> Modified D
Respirator (Level C and up)	<input type="checkbox"/> SCBA, airline <input type="checkbox"/> P-100 Filter	<input type="checkbox"/> Purified respirator <input type="checkbox"/> Dust pre-filters	<input type="checkbox"/> OV/AG cart <input type="checkbox"/> Other _____
Protective clothing	<input type="checkbox"/> Encapsulated Suit <input type="checkbox"/> Saranex [®] or equiv.	<input checked="" type="checkbox"/> Tyvek [®] or equiv. <input type="checkbox"/> Splash suit	<input type="checkbox"/> PE Tyvek [®] or equiv. <input checked="" type="checkbox"/> Other: <u>PDF and orange vest</u>
Head, face, eyes, ears	<input checked="" type="checkbox"/> Hard hat <input type="checkbox"/> Splash shield	<input checked="" type="checkbox"/> Safety glasses <input checked="" type="checkbox"/> Ear plugs/muffs	<input type="checkbox"/> Goggles <input type="checkbox"/> Other _____
Gloves (outer) (inner)	<input checked="" type="checkbox"/> Nitrile _____ <input checked="" type="checkbox"/> Nitrile _____	<input type="checkbox"/> Neoprene <input type="checkbox"/> Vinyl	<input type="checkbox"/> Other _____ <input type="checkbox"/> Other _____
Footwear	<input checked="" type="checkbox"/> Safety-toe leather <input type="checkbox"/> Hip waders	<input checked="" type="checkbox"/> Over boots/covers <input type="checkbox"/> Shin/knee guards	<input checked="" type="checkbox"/> Safety-toe rubber <input type="checkbox"/> Other _____
Additional Mitigation(s):			
<ul style="list-style-type: none"> • Tyvek shall be Tychem SL or equivalent 			
Special Instruction:			

Job Safety Analysis

TASK : Clean up of Sediment Barge

Required # of Personnel for this task: One to two field personnel

Task Description: Hickey Marine will clean up of remnant sediment in barges using a 966 Loader, which will be lowered into and removed from the barge using the dredge.

Potential Physical Hazards:		
<input type="checkbox"/> Ground intrusion	<input type="checkbox"/> Electrical/electrocution	<input type="checkbox"/> Fire/ Explosive
<input checked="" type="checkbox"/> Heavy equipment operation	<input type="checkbox"/> Traffic	<input checked="" type="checkbox"/> Boat operation
<input type="checkbox"/> Physical exertion/strain	<input checked="" type="checkbox"/> Noise	<input checked="" type="checkbox"/> Work over water
<input checked="" type="checkbox"/> Slick/wet surface	<input type="checkbox"/> Lifting/Back injuries	<input checked="" type="checkbox"/> Heat stress
<input type="checkbox"/> Uneven terrain	<input type="checkbox"/> Repetitive motion	<input type="checkbox"/> Cold stress
<input type="checkbox"/> Falls from elevation > 6 ft.	<input type="checkbox"/> High pressure	<input checked="" type="checkbox"/> Inclement weather/shutdown
<input type="checkbox"/> Entanglement in rotating or moving equipment	<input type="checkbox"/> Ergonomic stress	<input type="checkbox"/> Underground/overhead utility lines
Potential Chemical/Biological Exposure Hazards:		
SVOCs/PAHs	Zinc	Lead
Diesel		
Additional Potential Hazards:		
Levels of Training and Certification:		
<input checked="" type="checkbox"/> HAZWOPER 40-hour training	<input type="checkbox"/> HAZWOPER Supervisor's training	<input checked="" type="checkbox"/> HAZWOPER 24-hour training
<input type="checkbox"/> Medical surveillance	<input type="checkbox"/> Annual respirator fit-test	<input type="checkbox"/> First Aid
<input type="checkbox"/> CPR	<input type="checkbox"/> Confined space entry	<input type="checkbox"/> Lock-out/Tag-out
Equipment:		
<input checked="" type="checkbox"/> Air monitoring		
Air monitoring for carbon monoxide will be done on a continuous basis in the barge hopper area while the front end loader is operating. If visible airborne dust is created perform air monitoring using a dust monitor		
Other field equipment:		

Personal Protective Equipment (PPE)

Initial levels of protection were assigned to this work task based on the potential risk of exposure. These levels may be changed if warranted by site conditions (as determined by the SHSC).

Initial Level of Protection	<input type="checkbox"/> A <input type="checkbox"/> B	<input type="checkbox"/> C <input type="checkbox"/> D	<input checked="" type="checkbox"/> Modified D
Respirator (Level C and up)	<input type="checkbox"/> SCBA, airline <input type="checkbox"/> P-100 Filter	<input type="checkbox"/> Purified respirator <input type="checkbox"/> Dust pre-filters	<input type="checkbox"/> OV/AG cart <input type="checkbox"/> Other _____
Protective clothing	<input type="checkbox"/> Encapsulated Suit <input type="checkbox"/> Saranex ® or equiv.	<input checked="" type="checkbox"/> Tyvek ® or equiv. <input type="checkbox"/> Splash suit	<input type="checkbox"/> PE Tyvek ® or equiv. <input checked="" type="checkbox"/> Other: <u>PDF and orange vest</u>
Head, face, eyes, ears	Hard hat <input type="checkbox"/> Splash shield	<input checked="" type="checkbox"/> Safety glasses <input checked="" type="checkbox"/> Ear plugs/muffs	<input type="checkbox"/> Goggles <input type="checkbox"/> Other _____
Gloves (outer) (inner)	<input checked="" type="checkbox"/> Nitrile _____ <input checked="" type="checkbox"/> Nitrile _____	<input type="checkbox"/> Neoprene <input type="checkbox"/> Vinyl	<input checked="" type="checkbox"/> Other <u>Leather work gloves</u> <input type="checkbox"/> Other _____
Footwear	<input checked="" type="checkbox"/> Safety-toe leather <input type="checkbox"/> Hip waders	<input checked="" type="checkbox"/> Over boots/covers <input type="checkbox"/> Shin/knee guards	<input checked="" type="checkbox"/> Safety-toe rubber <input type="checkbox"/> Other _____

Additional Mitigation(s):

- Tyvek shall be Tychem SL or equivalent

Special Instruction:

Job Safety Analysis

TASK : Lining Trucks and Maintaining Loading Area

Required # of Personnel for this task: One Field Personnel

Task Description: Hickey Marine will line the trucks boxes with plastic sheeting prior to being loaded and clean up any minor spills of sediment in the loading area.

Potential Physical Hazards:		
<input type="checkbox"/> Ground intrusion	<input type="checkbox"/> Electrical/electrocution	<input type="checkbox"/> Fire/ Explosive
<input checked="" type="checkbox"/> Heavy equipment operation	<input checked="" type="checkbox"/> Traffic	<input type="checkbox"/> Boat operation
<input checked="" type="checkbox"/> Physical exertion/strain	<input checked="" type="checkbox"/> Noise	<input type="checkbox"/> Work over water
<input checked="" type="checkbox"/> Slick/wet surface	<input checked="" type="checkbox"/> Lifting/Back injuries	<input checked="" type="checkbox"/> Heat stress
<input checked="" type="checkbox"/> Uneven terrain	<input type="checkbox"/> Repetitive motion	<input type="checkbox"/> Cold stress
<input checked="" type="checkbox"/> Falls from elevation > 6 ft.	<input type="checkbox"/> High pressure	<input checked="" type="checkbox"/> Inclement weather/shutdown condition
<input checked="" type="checkbox"/> Entanglement in rotating or moving equipment	<input type="checkbox"/> Ergonomic stress	<input type="checkbox"/> Underground/overhead utility lines
Potential Chemical/Biological Exposure Hazards:		
SVOCs/PAHs	Zinc	Lead
Diesel		
Additional Potential Hazards:		
Levels of Training and Certification:		
<input checked="" type="checkbox"/> HAZWOPER 40-hour training	<input type="checkbox"/> HAZWOPER Supervisor's training	<input type="checkbox"/> HAZWOPER 24-hour training
<input type="checkbox"/> Medical surveillance	<input type="checkbox"/> Annual respirator fit-test	<input type="checkbox"/> First Aid
<input type="checkbox"/> CPR	<input type="checkbox"/> Confined space entry	<input type="checkbox"/> Lock-out/Tag-out
Equipment:		
<input type="checkbox"/> Air monitoring		
Other field equipment:		

Personal Protective Equipment (PPE)

Initial levels of protection were assigned to this work task based on the potential risk of exposure. These levels may be changed if warranted by site conditions (as determined by the SHSC).

Initial Level of Protection	<input type="checkbox"/> A <input type="checkbox"/> B	<input type="checkbox"/> C <input type="checkbox"/> D	<input checked="" type="checkbox"/> Modified D
Respirator (Level C and up)	<input type="checkbox"/> SCBA, airline <input type="checkbox"/> P-100 Filter	<input type="checkbox"/> Purified respirator <input type="checkbox"/> Dust pre-filters	<input type="checkbox"/> OV/AG cart <input type="checkbox"/> Other _____
Protective clothing	<input type="checkbox"/> Encapsulated Suit <input type="checkbox"/> Saranex [®] or equiv.	<input checked="" type="checkbox"/> Tyvek [®] or equiv. <input type="checkbox"/> Splash suit	<input type="checkbox"/> PE Tyvek [®] or equiv. <input checked="" type="checkbox"/> Other: <u>orange vest</u>
Head, face, eyes, ears	<input checked="" type="checkbox"/> Hard hat <input type="checkbox"/> Splash shield	<input checked="" type="checkbox"/> Safety glasses <input checked="" type="checkbox"/> Ear plugs/muffs	<input type="checkbox"/> Goggles <input type="checkbox"/> Other _____
Gloves (outer) (inner)	<input checked="" type="checkbox"/> Nitrile _____ <input checked="" type="checkbox"/> Nitrile _____	<input type="checkbox"/> Neoprene <input type="checkbox"/> Vinyl	<input type="checkbox"/> Other <u>Leather work gloves</u> <input type="checkbox"/> Other _____
Footwear	<input checked="" type="checkbox"/> Leather work boots <input type="checkbox"/> Hip waders	<input checked="" type="checkbox"/> Over boots/covers <input type="checkbox"/> Shin/knee guards	<input checked="" type="checkbox"/> Safety-toe rubber <input type="checkbox"/> Other _____

Additional Mitigation(s):

- Tyvek shall be Tychem SL or equivalent

Special Instruction:

Job Safety Analysis

TASK : Loading Trucks & Transport of Contaminated Sediment to the Landfill

Required # of Personnel for this task: Number of Field Personnel - TBD

Task Description: Waste Connections personnel will load trucks using an enclosed cab excavator and drive the trucks to the landfill where they will be unloaded.

Potential Physical Hazards:		
<input type="checkbox"/> Ground intrusion	<input type="checkbox"/> Electrical/electrocution	<input type="checkbox"/> Fire/ Explosive
<input checked="" type="checkbox"/> Heavy equipment operation	<input type="checkbox"/> Traffic	<input type="checkbox"/> Boat operation
<input checked="" type="checkbox"/> Physical exertion/strain	<input checked="" type="checkbox"/> Noise	<input type="checkbox"/> Work over water
<input checked="" type="checkbox"/> Slick/wet/hot surface	<input type="checkbox"/> Lifting/Back injuries	<input checked="" type="checkbox"/> Heat stress
<input checked="" type="checkbox"/> Uneven terrain	<input type="checkbox"/> Repetitive motion	<input type="checkbox"/> Cold stress
<input type="checkbox"/> Falls from elevation > 6 ft.	<input type="checkbox"/> High pressure	<input checked="" type="checkbox"/> Inclement weather/shutdown condition
<input checked="" type="checkbox"/> Entanglement in rotating or moving equipment	<input checked="" type="checkbox"/> Ergonomic stress	<input type="checkbox"/> Underground/overhead utility lines
Potential Chemical/Biological Exposure Hazards:		
No exposure to COCs		
Additional Potential Hazards:		
The Waste Connections personnel will have no direct contact with the contaminated sediments. The excavator operator will be in an enclosed cab and the truck drivers will be required to stay in the cab of their trucks during loading and unloading activities.		
Levels of Training and Certification:		
<input type="checkbox"/> HAZWOPER 40-hour training	<input type="checkbox"/> HAZWOPER Supervisor's training	<input type="checkbox"/> HAZWOPER 24-hour training
<input type="checkbox"/> Medical surveillance	<input type="checkbox"/> Annual respirator fit-test	<input type="checkbox"/> First Aid
<input type="checkbox"/> CPR	<input type="checkbox"/> Confined space entry	<input type="checkbox"/> Lock-out/Tag-out
Equipment:		
<input type="checkbox"/> Air monitoring		
Other field equipment:		

Personal Protective Equipment (PPE)

Initial levels of protection were assigned to this work task based on the potential risk of exposure. These levels may be changed if warranted by site conditions (as determined by the SHSC).

Initial Level of Protection	<input type="checkbox"/> A <input type="checkbox"/> B	<input type="checkbox"/> C <input checked="" type="checkbox"/> D	<input type="checkbox"/> Modified D
Respirator (Level C and up)	<input type="checkbox"/> SCBA, airline <input type="checkbox"/> P-100 Filter	<input type="checkbox"/> Purified respirator <input type="checkbox"/> Dust pre-filters	<input type="checkbox"/> OV/AG cart <input type="checkbox"/> Other _____
Protective clothing	<input type="checkbox"/> Encapsulated Suit <input type="checkbox"/> Saranex [®] or equiv.	<input type="checkbox"/> Tyvek [®] or equiv. <input type="checkbox"/> Splash suit	<input type="checkbox"/> PE Tyvek [®] or equiv. <input checked="" type="checkbox"/> Other: <u>Orange vest</u>
Head, face, eyes, ears	<input checked="" type="checkbox"/> Hard hat <input type="checkbox"/> Splash shield	<input checked="" type="checkbox"/> Safety glasses <input checked="" type="checkbox"/> Ear plugs/muffs	<input type="checkbox"/> Goggles <input type="checkbox"/> Other _____
Gloves (outer) (inner)	<input type="checkbox"/> Nitrile _____ <input type="checkbox"/> Nitrile _____	<input type="checkbox"/> Neoprene <input type="checkbox"/> Vinyl	<input checked="" type="checkbox"/> Other <u>Leather work gloves</u> <input type="checkbox"/> Other _____
Footwear	<input checked="" type="checkbox"/> Leather work boots <input type="checkbox"/> Hip waders	<input type="checkbox"/> Over boots/covers <input type="checkbox"/> Shin/knee guards	<input type="checkbox"/> Safety-toe rubber <input type="checkbox"/> Other _____

Additional Mitigation(s):

Spills or releases shall be reported to Hickey Marine for proper handling.

Special Instruction:

Waste Connections personnel will follow normal safety and health procedures during transport of the sediment by truck to the landfill.

Job Safety Analysis

TASK : Decontamination Activities

Required # of Personnel for this task: Number of Field Personnel - TBD

Task Description: Hickey Marine will perform decontamination of equipment as needed.

Potential Physical Hazards:		
<input type="checkbox"/> Ground intrusion	<input type="checkbox"/> Electrical/electrocution	<input type="checkbox"/> Fire/ Explosive
<input checked="" type="checkbox"/> Heavy equipment operation	<input type="checkbox"/> Traffic	<input checked="" type="checkbox"/> Boat operation
<input checked="" type="checkbox"/> Physical exertion/strain	<input type="checkbox"/> Noise	<input checked="" type="checkbox"/> Work over water
<input checked="" type="checkbox"/> Slick/wet/hot surface	<input type="checkbox"/> Lifting/Back injuries	<input checked="" type="checkbox"/> Heat stress
<input type="checkbox"/> Uneven terrain	<input checked="" type="checkbox"/> Repetitive motion	<input type="checkbox"/> Cold stress
<input type="checkbox"/> Falls from elevation > 6 ft.	<input type="checkbox"/> High pressure	<input checked="" type="checkbox"/> Inclement weather/shutdown
<input checked="" type="checkbox"/> Entanglement in rotating or moving equipment	<input checked="" type="checkbox"/> Ergonomic stress	<input type="checkbox"/> Underground/overhead utility lines
Potential Chemical/Biological Exposure Hazards:		
SVOCs/PAHs	Zinc	Lead
Diesel		
Additional Potential Hazards:		
Levels of Training and Certification:		
<input checked="" type="checkbox"/> HAZWOPER 40-hour training	<input type="checkbox"/> HAZWOPER Supervisor's training	<input checked="" type="checkbox"/> HAZWOPER 24-hour training
<input type="checkbox"/> Medical surveillance	<input type="checkbox"/> Annual respirator fit-test	<input type="checkbox"/> First Aid
<input type="checkbox"/> CPR	<input type="checkbox"/> Confined space entry	<input type="checkbox"/> Lock-out/Tag-out
Equipment:		
<input type="checkbox"/> Air monitoring		
Other field equipment:		

Personal Protective Equipment (PPE)

Initial levels of protection were assigned to this work task based on the potential risk of exposure. These levels may be changed if warranted by site conditions (as determined by the SHSC).

Initial Level of Protection	<input type="checkbox"/> A <input type="checkbox"/> B	<input type="checkbox"/> C <input type="checkbox"/> D	<input checked="" type="checkbox"/> Modified D
Respirator (Level C and up)	<input type="checkbox"/> SCBA, airline <input type="checkbox"/> P-100 Filter	<input type="checkbox"/> Purified respirator <input type="checkbox"/> Dust pre-filters	<input type="checkbox"/> OV/AG cart <input type="checkbox"/> Other _____
Protective clothing	<input type="checkbox"/> Encapsulated Suit <input type="checkbox"/> Saranex [®] or equiv.	<input checked="" type="checkbox"/> Tyvek [®] or equiv. <input type="checkbox"/> Splash suit	<input type="checkbox"/> PE Tyvek [®] or equiv. <input checked="" type="checkbox"/> Other: <u>PDF & orange vest</u>
Head, face, eyes, ears	Hard hat <input type="checkbox"/> Splash shield	<input checked="" type="checkbox"/> Safety glasses <input checked="" type="checkbox"/> Ear plugs/muffs	<input type="checkbox"/> Goggles <input type="checkbox"/> Other _____
Gloves (outer) (inner)	<input checked="" type="checkbox"/> Nitrile _____ <input checked="" type="checkbox"/> Nitrile _____	<input type="checkbox"/> Neoprene <input type="checkbox"/> Vinyl	<input type="checkbox"/> Other <u>Work gloves</u> <input type="checkbox"/> Other _____
Footwear	<input checked="" type="checkbox"/> Safety-toe leather <input type="checkbox"/> Hip waders	<input checked="" type="checkbox"/> Over boots/covers <input type="checkbox"/> Shin/knee guards	<input checked="" type="checkbox"/> Safety-toe rubber <input type="checkbox"/> Other _____

Additional Mitigation(s):

- Tyvek shall be Tychem SL or equivalent

Special Instruction:

Job Safety Analysis

TASK : Handling of Project Wastes

Required # of Personnel for this task: One Field Personnel

Task Description: Waste Management (of Project-Derived Waste (PPE) Including, Collection, Segregating, Handling, and Labeling of Waste and Waste Containers).

Potential Physical Hazards:		
<input type="checkbox"/> Ground intrusion	<input type="checkbox"/> Electrical/electrocution	<input type="checkbox"/> Fire/ Explosive
<input type="checkbox"/> Heavy equipment operation	<input type="checkbox"/> Traffic (traffic control may be required)	<input checked="" type="checkbox"/> Boat operation
<input checked="" type="checkbox"/> Physical exertion/strain	<input type="checkbox"/> Noise	<input checked="" type="checkbox"/> Work over water
<input checked="" type="checkbox"/> Slick/wet surface	<input checked="" type="checkbox"/> Lifting/Back injuries	<input checked="" type="checkbox"/> Heat stress
<input type="checkbox"/> Uneven terrain	<input type="checkbox"/> Repetitive motion	<input type="checkbox"/> Cold stress
<input type="checkbox"/> Falls from elevation > 6 ft.	<input type="checkbox"/> High pressure	<input checked="" type="checkbox"/> Inclement weather/shutdown condition
<input type="checkbox"/> Entanglement in rotating or moving equipment	<input type="checkbox"/> Ergonomic stress	<input type="checkbox"/> Underground/overhead utility lines
Potential Chemical/Biological Exposure Hazards:		
SVOCs/PAHs	Zinc	Lead
Diesel		
Additional Potential Hazards:		
Levels of Training and Certification:		
<input checked="" type="checkbox"/> HAZWOPER 40-hour training	<input type="checkbox"/> HAZWOPER Supervisor's training	<input type="checkbox"/> HAZWOPER 24-hour training
<input type="checkbox"/> Medical surveillance	<input type="checkbox"/> Annual respirator fit-test	<input type="checkbox"/> First Aid
<input type="checkbox"/> CPR	<input type="checkbox"/> Confined space entry	<input type="checkbox"/> Lock-out/Tag-out
Equipment:		
<input type="checkbox"/> Air monitoring		

Other field equipment:			
Personal Protective Equipment (PPE)			
Initial levels of protection were assigned to this work task based on the potential risk of exposure. These levels may be changed if warranted by site conditions (as determined by the SHSC).			
Initial Level of Protection	<input type="checkbox"/> A <input type="checkbox"/> B	<input type="checkbox"/> C <input checked="" type="checkbox"/> D	<input type="checkbox"/> Modified D
Respirator (Level C and up)	<input type="checkbox"/> SCBA, airline <input type="checkbox"/> P-100 Filter	<input type="checkbox"/> Purified respirator <input type="checkbox"/> Dust pre-filters	<input type="checkbox"/> OV/AG cart <input type="checkbox"/> Other _____
Protective clothing	<input type="checkbox"/> Encapsulated Suit <input type="checkbox"/> Saranex [®] or equiv.	<input type="checkbox"/> Tyvek [®] or equiv. <input type="checkbox"/> Splash suit	<input type="checkbox"/> PE Tyvek [®] or equiv. <input checked="" type="checkbox"/> Other: PDF & orange vest
Head, face, eyes, ears	<input checked="" type="checkbox"/> Hard hat <input type="checkbox"/> Splash shield	<input checked="" type="checkbox"/> Safety glasses <input checked="" type="checkbox"/> Ear plugs/muffs	<input type="checkbox"/> Goggles <input type="checkbox"/> Other _____
Gloves (outer) (inner)	<input checked="" type="checkbox"/> Nitrile _____ <input checked="" type="checkbox"/> Nitrile _____	<input type="checkbox"/> Neoprene <input type="checkbox"/> Vinyl	<input type="checkbox"/> Other _____ <input type="checkbox"/> Other _____
Footwear	<input checked="" type="checkbox"/> Safety-toe leather <input type="checkbox"/> Hip waders	<input checked="" type="checkbox"/> Over boots/covers <input type="checkbox"/> Shin/knee guards	<input checked="" type="checkbox"/> Safety-toe rubber <input type="checkbox"/> Other _____
Additional Mitigation(s):			
<ul style="list-style-type: none"> • Tyvek shall be Tychem SL or equivalent 			
Special Instruction:			

Job Safety Analysis

TASK : Capping Activities

Required # of Personnel for this task: Number of Field Personnel - TBD

Task Description: Hickey Marine will intall a sand and rip rap layer over the area where contaminated sediment has been removed. These activities will not be started until all the dredging activities have been completed.

Potential Physical Hazards:		
<input type="checkbox"/> Ground intrusion	<input type="checkbox"/> Electrical/electrocution	<input type="checkbox"/> Fire/ Explosive
<input checked="" type="checkbox"/> Heavy equipment operation	<input type="checkbox"/> Traffic	<input checked="" type="checkbox"/> Boat operation
<input checked="" type="checkbox"/> Physical exertion/strain	<input checked="" type="checkbox"/> Noise	<input checked="" type="checkbox"/> Work over water
<input checked="" type="checkbox"/> Slick/wet/ surface	<input type="checkbox"/> Lifting/Back injuries	<input checked="" type="checkbox"/> Heat stress
<input type="checkbox"/> Uneven terrain	<input type="checkbox"/> Repetitive motion	<input type="checkbox"/> Cold stress
<input checked="" type="checkbox"/> Falls from elevation > 6 ft.	<input type="checkbox"/> High pressure	<input checked="" type="checkbox"/> Inclement weather/shutdown
<input checked="" type="checkbox"/> Entanglement in rotating or moving equipment	<input type="checkbox"/> Ergonomic stress	<input type="checkbox"/> Underground/overhead utility lines
Potential Chemical/Biological Exposure Hazards:		
Additional Potential Hazards:		
Levels of Training and Certification:		
<input type="checkbox"/> HAZWOPER 40-hour training	<input type="checkbox"/> HAZWOPER Supervisor's training	<input checked="" type="checkbox"/> HAZWOPER 24-hour training
<input type="checkbox"/> Medical surveillance	<input type="checkbox"/> Annual respirator fit-test	<input type="checkbox"/> First Aid
<input type="checkbox"/> CPR	<input type="checkbox"/> Confined space entry	<input type="checkbox"/> Lock-out/Tag-out
Equipment:		
<input type="checkbox"/> Air monitoring		
Other field equipment:		

Personal Protective Equipment (PPE)

Initial levels of protection were assigned to this work task based on the potential risk of exposure. These levels may be changed if warranted by site conditions (as determined by the SHSC).

Initial Level of Protection	<input type="checkbox"/> A <input type="checkbox"/> B	<input type="checkbox"/> C <input checked="" type="checkbox"/> D	<input type="checkbox"/> Modified D
Respirator (Level C and up)	<input type="checkbox"/> SCBA, airline <input type="checkbox"/> P-100 Filter	<input type="checkbox"/> Purified respirator <input type="checkbox"/> Dust pre-filters	<input type="checkbox"/> OV/AG cart <input type="checkbox"/> Other _____
Protective clothing	<input type="checkbox"/> Encapsulated Suit <input type="checkbox"/> Saranex [®] or equiv.	<input type="checkbox"/> Tyvek [®] or equiv. <input type="checkbox"/> Splash suit	<input type="checkbox"/> PE Tyvek [®] or equiv. <input checked="" type="checkbox"/> Other: <u>PDF and Orange Vest</u>
Head, face, eyes, ears	<input checked="" type="checkbox"/> Hard hat <input type="checkbox"/> Splash shield	<input checked="" type="checkbox"/> Safety glasses <input checked="" type="checkbox"/> Ear plugs/muffs	<input type="checkbox"/> Goggles <input type="checkbox"/> Other _____
Gloves (outer) (inner)	<input type="checkbox"/> Nitrile _____ <input type="checkbox"/> Nitrile _____	<input type="checkbox"/> Neoprene <input type="checkbox"/> Vinyl	<input checked="" type="checkbox"/> Other <u>Leather work gloves</u> <input type="checkbox"/> Other _____
Footwear	<input checked="" type="checkbox"/> Safety-toe leather <input type="checkbox"/> Hip waders	<input type="checkbox"/> Over boots/covers <input type="checkbox"/> Shin/knee guards	<input type="checkbox"/> Safety-toe rubber <input type="checkbox"/> Other _____

Additional Mitigation(s):

Special Instruction:

APPENDIX 5

Action Levels and Action

Action Levels

Equipment	Action Level	Action To Be Taken
Dust Monitor	<1.5 mg/m ³ in BZ	Maintain Level D PPE
	> 1.5 mg/m ³ in BZ	Institute methods to reduce overall dust levels and upgrade to Level C.
	> 15 mg/m ³ in BZ	Cease operations and determine additional engineering controls or changes in work to reduce levels below 15 mg/m ³
Equipment	Action Level	Action to be Taken
PID	<13 ppm-equivalent above background in the breathing zone (BZ).	Maintain Level D or Modified Level D (Mod D).
	>13 ppm-equivalent above background in the BZ.	Upgrade to Level C personal protective equipment (PPE).
	>130 ppm-equivalent above background in the BZ	Cease operations until levels fall to within background readings, and/or perform additional investigation.

APPENDIX 6

MSDSs and Selected Chemical Data Sheets

APPENDIX 7

Justification of Action Levels

Justification of Action Levels

Establishment of action level for applying dust suppression methods or changes in work procedures.

Airborne Dust

Instrument Data

Type	Model	Particle range	Calibration Gas	Concentration (ppm/v)
Dust Monitor	TSI DustTrak Model 8520	PM10	Factory Calibrated	NA

Airborne dust can contain various constituents of concern (COC) such as PAHs, lead and zinc. Based on the the sediment sample data* maximum concentrations for the PAHs was reported as approximately 700 mg/kg (ppm) and lead and zinc at approximately 900 ppm.

Based on these results, it is assumed that the PAHs would make up a maximum of 700 ppm of the airborne dust. An airborne concentration of approximately 286 mg/m³ would be needed to exceed the coal tar pitch volatiles TLV of 0.2 mg/m³. This TLV is often used when determining airborne exposures to PAHs.

It is assumed that lead would make up a maximum of 900 ppm of the airborne dust. An airborne concentration of approximately 55 mg/m³ would be needed to exceed the TLV for lead of 0.05 mg/m³. A concentration of over 2,000 mg/m³ would be needed to exceed the TLV for zinc of 2.0 mg/m³.

Because these values exceed the respirable dust TLV of 3.0 mg/m³, an action level based on the respirable dust TLV will provide adequate protection against the individual COCs that could be present in the airborne dust as well as general dust. When a safety factor of two is applied to the TLV, this produces an action level of 1.5 mg/m³.

*Anchor Environmental Project 0503332-01 Sediment Sample Results

Volatile Organic Compounds

Instrument Data

Type (pid/fid)	Model	Lamp (ev) PID only	Calibration Gas	Concentration (ppm/v)
PID	RAE	10.6	Isobutylene	100

Notes:

An Action Level (AL) of 13 ppm will be utilized for this project, which is based on petroleum-based contaminants, the most likely type of VOCs that could be encountered.

See calculations below, which are based on correction factors from RAE Systems Technical Note TN-106. If future laboratory analytical results indicate a significant difference in type types and relative fractions of specific contaminants, these results should be reviewed by the Health and Safety Representative and new site-specific AL should be established.

Derivation of AL for Petroleum-based Contaminants

Contaminants	Estimated Fraction	TLV (ppm)	Correction Factor (CF) for 10.6 ev Lamp
Benzene	0.03	0.5	0.53
Ethylbenzene	0.17	100	0.52
Toluene	0.2	50	0.50
o-Xylene	0.3	100	0.59
p-Xylene	0.3	100	0.45

	TLV Constituent		CF Constituent
Fraction/TLV(benzene)	0.0600	Fraction/CF(benzene)	0.06
Fraction/TLV(ethylbenzene)	0.017	Fraction/CF(ethylbenzene)	0.33
Fraction/TLV(toluene)	0.004	Fraction/CF(toluene)	0.40
Fraction/TLV(o-xylene)	0.003	Fraction/CF(o-xylene)	0.51
Fraction/TLV(p-xylene)	0.003	Fraction/CF(p-xylene)	0.67
TLV mix total	14	CF mix total	0.51

Action Level = TLVmix/CFmix = 27.32 ppm

50% protection factor: 27.32 ppm/2 = **13.66ppm**

APPENDIX A2

WHEELER BAY (ASH CREEK)
HEALTH AND SAFETY PLAN (HASP)

**SITE SPECIFIC
HEALTH & SAFETY PLAN**

**Terminal 4 Removal Action - Phase 1
Wheeler Bay Stabilization**



PREPARED BY:

Envirocon, Inc.
101 International Way
Missoula, MT 59808

PREPARED FOR

Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants
9615 SW Allen Boulevard, Suite 106
Portland, OR 97005-4814

June 4, 2008

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ATTACHMENTS

Distribution and Approval

This H&S Plan will be made available to all Envirocon personnel involved in field work on this project. It will also be made available to subcontractors and other non-employees who may need to work on the site. For non-employees, it must be made clear that the plan represents minimum safety procedures and that they are responsible for their own safety while present on site.

By signing the documentation form provided with this plan, project workers also certify their approval and agreement to comply with the plan.

Approvals:

This Site-Specific Health and Safety Plan has been approved by the following:

Kathie A Lavaty, CIH, CSP
Envirocon Health and Safety Manager/Site Health and Safety Officer

_____ Date: _____

Skip Simpson
Project Manager

_____ Date: _____

George Lotze
Site Superintendent

_____ Date: _____

SITE HEALTH AND SAFETY PLAN SUMMARY

SITE NAME: Terminal 4 Removal Action - Phase 1
Wheeler Bay Stabilization

LOCATION: Port of Portland – Terminal 4
9504 N Bradford Street
Portland, OR 97203

CLIENT: Ash Creek Associates, Inc.

PROPOSED DATES OF ACTIVITIES: June – November 2008

SITE ACTIVITIES: Clear and grub, subgrade cut and fill,
install toe and slope materials

POTENTIAL SITE CONTAMINANTS: TPH, PAHs, VOCs, Pesticides, Metals

ROUTES OF ENTRY: Inhalation; skin contact with
contaminated soil

PROTECTIVE MEASURES: Dust control, safety glasses,
safety boots, hardhat, protective
clothing

PERSONNEL/CONTACT INFORMATION PHONE NUMBERS:

Project Manager	Skip Simpson	503-930-1985
Site Supervisor/Site Safety Officer	George Lotze	503-784-1203
Health & Safety Program Manager	Kathie Lavaty	971-570-1392

EMERGENCY CONTINGENCY INFORMATION:

Route to hospital (Kaiser Permanente) and map:

A: [9261-9498] N Bradford St, Portland, OR 97203

- START**
- 1: Start out going SOUTHEAST on N BRADFORD ST toward N BALTIMORE AVE. 0.3 mi
 - 
 - 2: Turn LEFT onto N BALTIMORE AVE. 0.2 mi
 - 
 - 3: Turn RIGHT onto N SYRACUSE ST. 0.1 mi
 - 
 - 4: Turn RIGHT onto ST JOHNS BRIDGE/US-30 BYP. 0.7 mi
 - 
 - 5: Turn SLIGHT LEFT onto NW BRIDGE AVE/US-30 BYP E/ST JOHN BRIDGE APPR. 0.6 mi
 - 
 - 6: Turn SLIGHT RIGHT onto NW ST HELENS RD/US-30/LOWER COLUMBIA RIVER HWY. Continue to follow NW ST HELENS RD/US-30. 2.0 mi
 - 
 - 7: Turn RIGHT onto NW ST HELENS RD. 1.5 mi
 - 
 - 8: NW ST HELENS RD becomes NW NICOLAI ST. 0.2 mi
 - END**
 - 9: End at 2850 NW Nicolai St Portland, OR 97210

Estimated Time: 12 minutes Estimated Distance: 5.70 miles



Hospital Name and Address:

Kaiser Permanente
2850 NW Nicolai St
Portland, OR 97210

Hospital Phone Number

503-778-2400

Medical Clinic (non-emergencies)

CASCADE OCCUPATIONAL MED – AIRPORT
3108 NE 181st Avenue
Portland, OR 97230
Phone 503-735-9588

EMERGENCY CONTACTS:

Kathie Lavaty, Regional H&S Mgr	971-570-1392
Envirocon Portland Office	503-285-6164
WorkCare	800-455-6155
Joe Ocken, Corp H&S	406-370-7059
Mel Lockridge, Corp Loss Control	406-523-1179

IN EVENT OF EMERGENCY, CALL FOR HELP AS SOON AS POSSIBLE

Give the following information:

Where You Are:

**Port of Portland – Terminal 4
9504 N Bradford Street
Portland, OR 97203**

Phone Number:

Number you are calling from

What Happened:

Type of injury, accident.

How many persons need help:

What is being done for the victim(s):

You hang up last.

Let whomever you called hang up first

1.0 INTRODUCTION

The purpose of this site-specific health and safety plan (HASP) is to provide health and safety requirements specific to the field activities for grading approximately 850 feet of the Wheeler Bay shoreline, placing imported topsoil and armor stone, landscaping consisting of willow and cottonwood plants and hydroseeding native grasses, and placing anchored habitat logs and large woody debris. These activities will be performed from June through November, 2008.

This HASP addresses the potential hazards that may be encountered for this project. If unanticipated changes in site or working conditions occur, which are not addressed by this plan, this plan will be amended as necessary and/or addenda will be provided.

This HASP was prepared in compliance with the requirements of the Oregon Occupational Safety and Health Administration (OR-OSHA) standard for Hazardous Waste Operations and Emergency Response (Div 2, General Industry, Sub H, 1910.120). All Envirocon personnel working at the project site will have completed the 40 hour training as required by 1910.120.

The information presented in this plan will be reviewed with the employees during site-specific training before working onsite. A plan of the day (POD) meeting will be held prior to commencement of work each day.

This plan was prepared for: Ash Creek Associates, Inc.

This plan was prepared by: Kathie A. Lavaty, CIH, CSP
Envirocon, Inc.
3330 NW Yeon Ave., Ste 240
Portland, OR 97210

2.0 JOB LOCATION AND DESCRIPTION

As part of the Port of Portland's implementation of Phase 1 of the Terminal 4 Removal Action project, Envirocon will complete bank stabilization at Wheeler Bay. Background

information regarding the Terminal 4 Removal Action project is found in Appendix A, Site Summary Report - Details for Site ID 272, Port of Portland - Terminal 4.

2.1 Site Work Activities

This project includes the following task items:

- Mobilize to site
- Inspect equipment
- Install erosion control measures (silt fence, etc.)
- Clear and grub
- Cut and fill subgrade to required elevation
- Install toe materials (fill, armor stone, lws, habitat logs and cover)
- Install slope materials (topsoil, Coir fabric, hydroseeding, jute matting, and mulch)
- Decontaminate equipment
- Demobilize from site

3.0 ENVIROCON PRINCIPAL PERSONNEL

29 CFR 1910.120 requires an effective site organization to be responsible for supervision of all work at hazardous waste sites. This section describes the site project organization.

3.1 Regional Health and Safety (HSM) Manager: Kathie A Lavaty, CIH, CSP

The Regional HSM has overall responsibility for health and safety on this project. This individual ensures that everyone working on this project understands this HASP. This individual will maintain liaison with the PM so that all relevant health and safety issues are communicated effectively to project workers. The HSM will conduct or directly supervise air monitoring activities described in the Air Monitoring Plan.

3.2 Project Manager (PM): Skip Simpson

The project manager (PM) is responsible for oversight and management of all aspects of the project including health and safety, work plan development, equipment, and personnel. This includes:

- Project health and safety performance in accordance with Zero Incident Performance goals, including incentive and behavioral safety processes.

- Participating in incident investigations
- Providing safety leadership by holding all personnel accountable for their safety responsibilities

3.3 Site Superintendent/Site H&S Officer (HSO): George Lotze

The site superintendent serves as the site's general supervisor for coordinating activities with the PM and Regional H&S Manager. The HSO has overall responsibility for health and safety on this project. This individual ensures that everyone working on this project understands this HASP. This individual will maintain liaison with the PM so that all relevant health and safety issues are communicated effectively to project workers. This includes:

- Providing daily work overview and necessary orientations at the POD
- Enforcing the provisions of this HASP
- Preparing for new tasks in advance of field operations (ensuring that a JHA has been completed)
- Monitoring the conduct of operations in the field
- Limiting access to the exclusion zone to authorized personnel
- Providing a written log of onsite activities and events
- Managing onsite emergency response activities, including ensuring that injured personnel (with or without life threatening injuries) are escorted to medical treatment

4.0 SUPPORTING PROGRAMS AND PROCEDURES

This HASP addresses procedures to minimize the risk of chemical, physical, and environmental hazards to onsite workers, including subcontractors, and environmental contamination. The HASP covers each of the required plan elements as specified in 29 CFR 1910.120 or equivalent state regulations. Table 4.0 below lists the sections of this plan which apply to each of these required elements as well as applicable site specific procedures. This plan is to be used in conjunction with all applicable elements of the Envirocon Corporate Health and Safety Program, Section 1403 of the Field Operations Manual.

Table 4.0

Required H&S Plan Element	Section in this Health and Safety Plan
Confined space entry	Physical Hazards
Decontamination	Dust Management Plan
Emergency response plan	Emergency Response Plan
Medical surveillance	Medical Surveillance
Monitoring program	Air Monitoring Plan
Personal protective equipment	Protective Equipment
Safety and hazard analysis	Hazard Evaluation and Control Measures
Site control	Site Control
Training	Site Control

4.1 Envirocon Health and Safety Program

The following Envirocon Health and Safety program procedures are incorporated in support of this HASP. Upon request, the HSO shall make available these program procedures to employees, to OSHA personnel, and to personnel of other federal, state, or local agencies with regulatory authority over the site.

<u>Procedure Number</u>	<u>Procedure Name</u>
1402.005/005M	Medical Monitoring Program
1402.006	Substance Abuse
1402.009/009M	Corporate Health and Safety Training Program
1402.010	Hazard Communication Program
1402.011	General Work Rules - Code of Safe Work Practices
1402.012	Fire Prevention and Protection
1402.013	Hazard Analysis Procedures (AHA, JSA, JTA, etc.)
1402.014	Correcting Unsafe Conditions and Work Practices
1403.015	Personal Protective Equipment (PPE)
1403.024	Incident Reporting, Investigation, and Follow-up Procedures
1403.027	Standard Procedures for Behavior Based Safety Practices

5.0 HAZARD EVALUATION AND CONTROL MEASURES

5.1 Toxicity of Chemicals of Concern – *Petroleum Hydrocarbons, Polycyclic Aromatic Hydrocarbons, Volatile Organic Compounds, Pesticides, and Metals*

TPH, PAHs, VOCs, pesticides, and metals are the potential chemicals of concern during site activities for this project. The health hazards of the contaminants of concern are discussed below, including the potential toxic effects associated with relatively significant acute and/or chronic exposure. **Envirocon does not anticipate that such effects will occur from planned site activities.** The types of planned work activities and use of monitoring procedures and protective measures will limit potential exposures at this site.

Potential Contaminants of Concern	Routes of Exposure	General Exposure Effects
Metals:	<p>The primary route of exposure to metals is inhalation of airborne particulate. Generation of particulates may result from mechanical disturbance and/or wind agitation. A chemical reaction can generate metal particulate/fume. For example, zirconium cuttings/fines could spontaneously ignite and aerosolize associated beryllium cladding. Prior burial ground fires may contain ash with significant metals content.</p> <p>Metals can be ingested by eating, drinking, or use of tobacco products. Soil contamination of hands (or transmitted to the hands from other surfaces) and subsequent mouth contact can then result in ingestion. Some metals may be retained in the bones while others may damage target organs.</p>	<p>Metals can affect many organs of the body. Exposures to metals can affect the respiratory system causing lung diseases. Exposure to some metals can damage the central nervous system. Irritation and damage to eyes, and skin can result from exposure. Some metals may cause damage to the kidneys, liver, gastrointestinal system, lymphatic system or heart.</p>
Volatile Organic Compounds:	<p>Inhalation of vapors would be the primary route of exposure if VOC's are encountered in the burial ground. Skin contamination and skin absorption is also a concern if saturated soils or containers with liquids are handled. A chemical reaction or fire could generate VOC s resulting in potentially severe eye and respiratory irritation.</p>	<p>Inhalation of VOC's or skin contact with liquids can affect the liver, heart, kidneys, central nervous system and skin as well as mucous membranes and eyes.</p>
Polycyclic aromatic hydrocarbons (PAHs)	<p>PAHs could be an inhalation concern if a fire during excavation or if debris from previous fires were disturbed and became airborne.</p>	<p>Can cause eye and skin irritation and may be harmful if absorbed through the skin; may cause irritation of the digestive tract and may be harmful if swallowed.</p>
Pesticides	<p>Possible routes of exposure include Ingestion of contaminated drinking water, inhalation of contaminated air and dermal contact with contaminated soil surfaces.</p>	<p>Exposure can cause central nervous system (brain and spinal cord) injury. Symptoms are headaches, dizziness, nervousness, confusion, nausea, vomiting, and convulsion</p>

5.2 Physical Hazards

Table 5.2 lists the anticipated physical hazards which may be encountered for this project. Measures to control these hazards are discussed in Section 7.5. A key aspect of the hazard control process mentioned in Section 7.5 for physical hazards is the development of the JHA (Job Hazard Analysis) for the task, as well as POD job briefing and appropriate training for the task.

Table 5.2

Hazard	Mobilization	Clear/Grub	Grading	Material Installation	Demobilization
Fire	X	X	X	X	X
Slips/trips	X	X	X	X	X
Falls from height		X	X	X	
Muscle strain	X	X	X	X	X
Struck-by	X	X	X	X	X
Pinch points	X	X	X	X	X
Confined spaces					
Cuts & punctures	X	X	X	X	X
Noise		X	X	X	
Electrical hazards	X				X

5.3 Biological Hazards

Table 5.3 lists the anticipated biological hazards which may be encountered for this project. Measures to control these hazards are discussed in Section 7.6. The hazard risk anticipated for biological factors is anticipated to be low.

Table 5.3

Hazard	Mobilization	Clear/Grub	Grading	Material Installation	Demobilization
	X	X	X	X	X
	X	X	X	X	X
	X	X	X	X	X
	X	X			

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5.4 Environmental Hazards

Table 5.4 lists the anticipated environmental hazards which may be encountered for this project. Measures to control these hazards are discussed in Section 7.5. The hazard risk anticipated for environmental factors is anticipated to be moderate, with heat stress being the issue of particular concern in this work environment. A key aspect of the hazard control process for hazards is the development of the JHA (Job Hazard Analysis) for the task with training appropriate for the task.

Table 5.4

Hazard	Mobilization	Clear/Grub	Grading	Material Installation	Demobilization	Hazard
	X	X	X	X	X	X
	X	X	X	X	X	X
	X	X	X	X	X	X

6.0 HAZARD EVALUATION AND ASSESSMENTS

6.1 Task Hazard Analysis using Job Hazard Analysis (JHA)

Prior to beginning a new task onsite, a hazard analysis of each site task will be prepared in the form of a written JHA. The JHA process breaks down the task into its individual steps and lists the hazards for each of these steps and the required protective measures for the hazard(s). This will include input by craft personnel with particular expertise or familiarity with the process and a walk-down of the area. JHAs are included in Appendix C of this HASP.

6.2 Monitoring Chemical Hazards

. The potential chemical constituents have the potential to be dispersed as dusts/aerosols. Airborne particulate monitoring will be conducted using a direct reading particulate monitor.

6.3 Monitoring Physical, Biological, and Environmental Hazards

General Approach

Physical hazards listed below will be monitoring through continuous observations (documented through the site Safety Observation (SO) plan). Employee involvement includes participation completion of TSA cards and development of the various work packages. Unrecognized hazards will be monitored by the following processes:

- Site inspections by supervisory and site safety personnel
- Observations and suggestions by all personnel
- Job Safety Analysis (JSA) for each new task or phase of operations
- Communication of plans and controls to all affected employees
- Accident investigations and lessons learned from this and other projects
- Feedback and continuous improvement

7.0 HAZARD CONTROL

7.1 Chemical Exposure Control

The potential chemical constituents have the potential to be dispersed as dusts/aerosols. The primary means of chemical control for this project is prevention of airborne dust and particulate. Dust control by water spray will be thorough and on-going.

7.2 Personal Protective Equipment

Table 7.2 Summary of Standard PPE

Activity	Head / Face	Foot	Hands	Clothing
Mobilization Demobilization	Hard hat Safety glasses	Steel toe footwear	Leather gloves	Shirt w/sleeves Long pants High visibility vest
Site Preparation	Hard hat Safety glasses	Steel toe footwear	Leather gloves	Shirt w/sleeves Long pants High visibility vest
Grading (excavator)	Safety glasses (hard hat not req'd. inside cab)	Steel toe footwear	Leather gloves	Shirt w/sleeves Long pants High visibility vest
Water Truck Driving/Hose Operation	Safety glasses (hard hat not req'd. inside cab)	Steel toe footwear	Leather gloves	Shirt w/sleeves Long pants Tyvek®, spun poly coveralls* High visibility vest
Material Installation	Hard hat Safety glasses	Steel toe footwear	Leather gloves	Shirt w/sleeves Long pants Tyvek®, spun poly coveralls* High visibility vest

Truck Driving	Safety glasses (hard hat not req'd. inside cab)	Steel toe footwear	Leather gloves	Shirt w/sleeves Long pants High visibility vest
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7.3 Vehicle Maintenance and Safety

All Envirocon vehicles used onsite during the course of work shall be equipped with a first aid kit and a dry chemical fire extinguisher (10 BC minimum rating). All cabs are to be kept free of all non-essential items and all loose items secured.

The HSO shall review the equipment inspection checklist for company vehicles with all personnel and subcontractors.

Field vehicles shall park in an area that is a safe distance from operating equipment and vehicle traffic with the location approved by the HSO. Care must be given when approaching heavy equipment.

Personnel on foot should approach from a direction facing the operator and not a blind side. Eye-to-eye contact should be made before proceeding within the working limits of the operator and their heavy equipment.

7.4 Overhead Hazards

Overhead hazards include utility lines and trees. Prior to performing work requiring the operation of equipment above eye level, the evaluation of overhead hazards shall be made. Equipment shall be located to maximize the clearance from overhead hazards (minimum 10 feet clearance).

7.5 Physical, Biological, and Environmental Hazards

7.5.1 Confined Spaces/Excavations

Envirocon employees are not authorized to enter confined spaces without prior written approval from Envirocon's Regional Health and Safety Manager. Confined spaces are not anticipated during site specific activities.

Employees (including subcontractors and owner's representatives) are not authorized to enter excavations deeper than 4 feet without authorization from the Project Manager. Personnel may not enter excavations less than 4 feet in depth until it has been examined by the competent person to ensure that there is no indication of a potential cave-in.

All excavations greater than 4 feet shall be protected from cave-ins by an adequate protective system (i.e., sloping, benching, shoring, trench boxes, etc.).

A designated competent person from Envirocon will ensure that protective systems are in place before personnel enter (sloping, benching, shoring, trench boxes, etc.). When using benching or sloping to protect personnel in excavations the sides will be sloped utilizing OSHA requirements or alternate methods such as approved trench boxes or shoring will be used.

Proper barricades shall be placed around open excavations when work is not in progress. Excavations can be considered confined spaces. Employees (including subcontractors and owner's representatives) are not authorized to enter excavations deeper than 4 feet without authorization from the Project Manager. Personnel may not enter excavations less than 4 feet in depth until it has been examined by the competent person to ensure that there is no indication of a potential cave-in.

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A designated competent person from Envirocon will ensure that protective systems are in place before personnel enter (sloping, benching, shoring, trench boxes, etc.). When using benching or sloping to protect personnel in excavations the sides will be sloped utilizing OSHA requirements or alternate methods such as approved trench boxes or shoring will be used.

Proper barricades shall be placed around open excavations when work is not in progress. Excavations will be secured at the end of the work day with barricades, 'candle sticks' or blocking equipment and caution tape, fencing or combination thereof if slopes exceed 2:1 (H:V). At the end of the work day with barricades, 'candle sticks' or blocking equipment and caution tape, fencing or combination thereof if slopes exceed 2:1 (H:V).

7.5.2 Fall Protection

The HSO will verify that all site personnel (Envirocon employees, subcontractors and owner's representatives) have appropriate fall protection when working at heights above six feet. The three major components of personal fall arrest protection are harness, lanyard, and secure anchorage.

7.5.3 Slip and Trip Protection

Certain tasks, such as installation of erosion controls and manual clearing and grubbing, present fall, slip and trip hazards. Task specific JHA's will be completed and reviewed daily, as applicable.

7.5.4 Heat Stress

Heat stress will be a hazard during hot weather and will be intensified when personnel are in protective clothing and/or performing hot work. To prevent heat stress, personnel will be required to take breaks as needed and to consume adequate quantities of liquid. If temperatures exceed 89° F for employees wearing level D or 77°F for employee performing torch cutting, the following work/rest schedule will be used.

Ambient Temperature (degrees F)	Work Period (minutes)	Rest Period (minutes)
72-80	120	15
80-85	90	15
85-90	60	15
90-95	30	15
95-100	15	15

7.5.5 Sun Burn

Ultra violet (UV) radiation is a hazard for outdoor workers. Unprotected exposure can damage the skin, eyes, and immune system. Outdoor workers have more accumulated lifetime exposure to the sun, receive up to 8 times more UV exposure, and have a 60 percent greater risk of developing skin cancer than indoor workers. Workers should use sunscreen or sun block to reduce their exposure to UV radiation. Several applications may be required during the course of the day to provide optimum protection.

7.6 Biological Hazards

Stinging Insects

Care should be exercised to avoid bees, yellow jackets, or other stinging or biting insects.

Snakes

High-topped boots should be worn when working in tall grass to protect against snakebite.

Plants

Poison oak and poison ivy may be present on the site. If contact is made with poison oak or poison ivy, wash the contact area thoroughly with soap and water as soon as possible after contact occurs.

7.7 Traffic Hazards

Field activities taking place in public streets or on road shoulders shall use approved flagging and traffic control during the duration of activities. While working in public streets with heavy traffic, assume that the operator of a motor vehicle is unable to see you and keep a safe distance from moving traffic. Keep off roadways, when practical, and away from moving traffic. Approved safety vests will be worn by all personnel when working in areas of traffic hazard.

7.8 Communication Procedures

The following standard hand signals will be used if and when required:

- | | |
|--|-----------------------------------|
| ◆ Hand gripping throat | Out of air, can't breathe |
| ◆ Grip partner's wrist or both hands around waist. | Leave area immediately |
| ◆ Hands on top of head | Need assistance |
| ◆ Thumbs up | O. K, I'm all right, I understand |
| ◆ Thumbs down | No, negative |

7.9 Emergency Response Plan

Onsite personnel will use the following standard emergency procedures. The HSO shall be notified of any onsite emergencies and be responsible for ensuring that the appropriate procedures are followed. Emergency procedures should be modified as required for the incident.

Personal injury:

Get help - phone 911. As soon as feasible, notify HSO. Reduce risk to injured person, turn off equipment, move from injury location (if possible), and keep warm. Transport injured person to medical treatment facility (if necessary) by ambulance (if necessary) or Envirocon vehicle. Stay with person at medical facility. Upon notification of an injury, the HSO will assess the nature of the injury. If the injury is in the area of the excavating equipment, the equipment shall be shut down to eliminate running equipment hazards. Equipment will remain shut down until the HSO authorizes work to proceed.

Fire/Explosion:

In the event of a fire or explosion onsite, the HSO or alternate shall call 911 (the fire department) and all personnel shall be moved to a safe distance from the involved area.

Personal Protective Equipment Failure:

If any site worker experiences a failure or alteration of protective equipment that affects worker's protection, that person shall immediately proceed to the nearest staging area to repair or replace the damaged equipment. The person shall not return to the work area until the protective equipment is repaired or replaced.

Other Equipment Failure:

If any other equipment onsite fails to operate properly, the HSO shall be notified and then determine the effect of this failure on continuing operations onsite. If the failure affects the safety of personnel or prevents completion of the work plan tasks, all personnel shall leave the work area until the situation is evaluated and appropriate actions taken.

7.10 Emergency Medical Information for Specific Hazards Present

Hazard - Heat stress

Symptoms of Exposure

Acute: Dizziness, headache, nausea, dryness of the mouth, reduced mental ability, elevated body temperature, chills, and clamminess.

First Aid

Move person to a shaded, cool area. Wet person down with cool water. Wetting the head with quantities of cool water will help reduce body temperature. Have person drink cool water. Seek medical attention for severe cases.

Hazard - Sun burn

Symptoms of Exposure

Acute: Pain and discomfort of exposed area, eye irritation, leads to heat stress.

First Aid

Remove person from sunlight, flush affected area with cool, clean water. If a minor skin burn, apply first aid cream. If severe, seek medical attention. In all onsite emergency situations, work shall not resume until the conditions resulting in the emergency have been corrected and the following steps completed:

- Site hazards have been reassessed.

- The Site Safety Plan has been reviewed and amended, as necessary
- Site personnel have been briefed on any changes to the Health & Safety Plan.
- The Site Health & Safety Officer shall critique the emergency response and follow-up.

8.0 SITE CONTROL

The excavation work area perimeter shall be marked with caution tape or equivalent warning signs. Employees working within the work area will be included in a medical monitoring program, possess current 40-hour health and safety training in accordance with Oregon Occupational Safety and Health Administration (OR-OSHA) standard for Hazardous Waste Operations and Emergency Response (Div 2, General Industry, Sub H, 1910.120).

Excavations can be considered confined spaces. Employees (including subcontractors and owner's representatives) are not authorized to enter excavations deeper than 4 feet without authorization from the project manager. Personnel may not enter excavations less than 4 feet in depth until it has been examined by the competent person to ensure that there is no indication of a potential cave-in.

All excavations greater than 4 feet shall be protected from cave-ins by an adequate protective system (i.e., sloping, benching, shoring, trench boxes, etc.).

A designated competent person from Envirocon will ensure that protective systems are in place before personnel enter (sloping, benching, shoring, trench boxes, etc.). When using benching or sloping to protect personnel in excavations the sides will be sloped utilizing OSHA requirements or alternate methods such as approved trench boxes or shoring will be used.

Proper barricades shall be placed around open excavations when work is not in progress. Excavations will be secured at the end of the work day with barricades, 'candle sticks' or blocking equipment and caution tape, fencing or combination thereof if slopes exceed 2:1 (H:V).

APPENDIX A - SITE SUMMARY REPORT

Details for Site ID 272, Port of Portland - Terminal 4

APPENDIX B - WORK PLAN

APPENDIX C - JOB SAFETY ANALYSIS (JSA)S

Appendix A

Site Management and Documentation Plan

1.0 PRE-MOBILIZATION ACTIVITIES

Prior to site mobilization, Envirocon will obtain the permits and prepare the plans required to commence on site operations. Based on the RFP, Envirocon anticipates submitting a preliminary work progress schedule, a preliminary submittal schedule, a preliminary cash flow schedule, and a completed site safety form. In addition, Envirocon prepares detailed Site Specific Health and Safety Plans for all of its projects. Envirocon shall also submit lump sum item and payroll rate breakdowns per RFP requirements. Envirocon does not envision that it will be required to obtain any local permits for the specified scope of work.

The period of pre-mobilization will also be used to interact with the Port's representative and Port tenants (when deemed appropriate) to ensure that the Terminal 4 earthen stockpile removal, IRM upgrades, Kinder Morgan maintenance work, steel storage tank demolition project, and Toyota's offloading activities, are not impacted by Envirocon's planned scope of work.

2.0 MOBILIZATION ACTIVITIES

Site mobilization and setup will commence in July 2008 and take approximately two days to complete. Setup shall include the mobilization of personnel, equipment, and temporary facilities, as well as the establishment of traffic routes, security procedures, dust and erosion controls, and utility location and protection.

2.1 Temporary Facilities

Temporary facilities mobilized onsite will consist of portable toilets and storage containers. They will be positioned inside the site support zone, away from anticipated trailer and vehicle traffic areas and routes.

2.2 Personnel Decontamination

Envirocon will install a personnel decontamination station onsite. The mobile station will consist of a sink, boot wash system, eyewash, and a used PPE receptacle. A PPE trailer shall be set up in the support zone for employee change-out and PPE supply storage.

2.3 Erosion and Sediment Controls

Prior to beginning bank stabilization activities, Envirocon will install appropriate erosion control measures at the site. This includes installation of silt fence at elevation 10 and other erosion control measures at slope bottoms, down gradient receptors, and adjacent to property boundaries if necessary.

2.4 Dust Control

Dust control will be provided during onsite activities by a water truck and fire hose. Dust monitoring shall be conducted when deemed appropriate to ensure regulatory action levels for the protection of workers

and the surrounding communities are not exceeded. Operational procedures will be adjusted during periods of high wind to maintain optimal dust control.

2.5 Project Staffing

Envirocon anticipates its management staff and crew for the Wheeler Bay project to consist of pre-existing employees who have previously worked on similar projects. Refer to Table 1 for a summary of expected labor resources for the project.

TABLE 1 Personnel Resources

Title	Quantity	Task	Anticipated Hours
Project Director	1	Contract negotiation, invoicing, and corporate liaison.	Onsite for project setup & approx. 25-40% project duration.
Certified Industrial Hygienist	1	Prepare Health and Safety Plan prior to site mobilization and random site visits as necessary.	40
Site Health and Safety Officer	1	Set up site safety program, perform onsite monitoring.	Onsite periodically during project. *
Project Manager	1	Set up of project, management of project.	Onsite periodically during project.
Project Superintendent	1	Onsite supervision of remediation activities.	Onsite duration of project.
Project Engineer	1	Onsite supervision of remediation activities.	Onsite duration of project.
Equipment Operator	3	Operate equipment performing bank stabilization and other activities.	Onsite duration of project.
Laborer	2	Install erosion control activities, grade checker	Onsite duration of project.
Truck Driver	2	Drive water truck and articulated dump truck.	Onsite duration of project.

* Duties may be assumed by other qualified management personnel during periods of minimal activities onsite.

2.6 Equipment Resources

Envirocon will mobilize the equipment listed in Table 2 below to the project site. Equipment will be late model and well maintained. All safety guards, power cutoffs, and alarms, shall be verified to be in working order when the equipment first arrives at the site.

TABLE 2 Equipment

Equipment	Quantity	Task
75,000 lb. Excavator	1	Excavate subgrade,
75,000 lb. Longreach excavator	1	Excavate subgrade,
30 Ton Articulated dump trucks	1	Transport excavated and imported materials onsite
35,000 lb. Dozer	1	Preparation of subgrade, install of slope materials
Backhoe	1	Various activities onsite, including offload and hauling of erosion control materials, lwd's and ecology blocks.
Compactor	1	Backfill.
3,500 gal. Water truck	1	Dust control and equipment decontamination.
Mechanic's truck	1	Service equipment.

3.0 SHORELINE STABILIZATION METHODOLOGY

3.1 Clear and Grub

Clearing and grubbing will take place the first week onsite in conjunction with the erosion control measures and will be performed with an excavator and articulated truck. Vegetation that can be recycled will be sized and transported to a nearby wood waste recycler. Root balls and other grubbing materials that are deemed unacceptable for recycling will be transported as waste to Waste Connections Wasco County Landfill. Material suitable for recycling such as concrete will be sized appropriately and transported to an approved recycling facility. Payment for the recycled material will be paid for by the ton under bid item #4.

3.2 Subgrade Cut and Fill

Subgrade cut and fill will begin the end of the first week onsite and will be performed with two excavators, an articulated truck, water truck and the necessary compaction equipment. Prior to the start of excavation the area will be surveyed and staked by a third party surveyor (PLS). Surveying and grade control performed during the excavation and fill process will be performed by Envirocon's in-house surveyor with oversight from the third party PLS. Take offs performed during the estimating process using the bid supplement drawings indicate approximately 3,100 bank cubic yards (bcy) of cut will be required with approximately 2,500 bcy of fill needed. Excess cut will be stockpiled on top of a lined stockpile pad and later disposed of at an approved disposal facility as part of the lump sum price.

3.3 Installation of Toe Materials (EL 10' to 15')

The installation of the fill materials will commence, following verification that the subgrade is at the appropriate elevation. Select fill, armor stone, lwd's, habitat logs and cover will be placed as depicted on the drawings and specifications.

3.4 Installation of Slope Materials (EL 15' to 30')

Installation of the slope materials will take place once the toe has been constructed to elevation 15'. Installation of the topsoil, Coir Fabric, hydroseeding and Jute Matting will be placed per the plans and specifications. Planting will occur following the topsoil placement and will be performed under the supervision of a qualified landscaping professional. Mulch will be installed utilizing a pneumatic blower to the depth specified in the plans and specifications.

4.0 DEMOBILIZATION

Envirocon will begin demobilization in September 2008, upon completion of the slope stabilization. Demobilization will include removal of all staging areas, temporary erosion control structures, and removal of all equipment from site.

Job	Safety	Assessment	(JSA)
			
Maintain equipment	<ul style="list-style-type: none"> • Equipment damage or failure • Personal injury 	<ul style="list-style-type: none"> • Complete Daily Equipment inspection. • Familiarize yourself with Operators Manual. • Complete Excavation Checklist if needed. • Set controls and shut down engine before leaving equipment. • Clean/Defrost windows and mirrors. • Earplugs are required within 10 feet of equipment when engine is running. 	
<ul style="list-style-type: none"> • Establish Communication with other Operators 	<ul style="list-style-type: none"> • Equipment damage • Personal injury 	<ul style="list-style-type: none"> • Establish signals/communication with other Operators. • If you don't understand signals, stop and communicate verbally with the Operator. 	
<ul style="list-style-type: none"> • Entering the Excavator 	<ul style="list-style-type: none"> • Slips, trips and falls • Personal injury • Equipment damage 	<ul style="list-style-type: none"> • Always use 3-point mount and dismount. • Stay clear of pinch points. • Wear gloves to protect hands. Eye protection required operating without windshield. • Adjust mirrors and seat to see clearly; operate controls comfortably. • Keep windows, mirrors and cab area clean. Dispose of cab trash daily. 	
<ul style="list-style-type: none"> • Operating the Excavator 	<ul style="list-style-type: none"> • Equipment damage • Personal injury 	<ul style="list-style-type: none"> • Be aware of all blind spots. • Review blind spot and swing radius hazards with SSEs in your work area. • Check all mirrors before moving away from staging area. • Review utility locates; contact supervisor if overhead/underground utilities may pose a contact hazard or encroach on safe operating limits. • Stop work if ground personnel are observed entering the swing radius of your equipment. Do not resume operation until ground personnel are clear • Set up tracks perpendicular to excavation. • Stop work immediately if anomalies are discovered within the excavation. • Contact water truck if dust conditions observed. • Report changes in road conditions to truck drivers. 	
<ul style="list-style-type: none"> • Backing 	<ul style="list-style-type: none"> • Personal injury • Equipment damage • Blind spots • Mirror obstructions 	<ul style="list-style-type: none"> • Use properly trained/qualified Operators. • Back up warning alarm must be operable. • Never track too close to an edge that could give way, maintain adequate clearance. • Maintain clear view in mirrors. If obstructed in any way, stop, and regroup before going on. 	

<ul style="list-style-type: none"> • Receiving the Load 	<ul style="list-style-type: none"> • Injury • Equipment damage • Falling debris • Dust or vapors • Noise 	<ul style="list-style-type: none"> • Operator must remain in protected cab. • Keep work area clear of Personnel. • Keep windows slightly cracked to minimize excessive noise and or dust from entering the cab. • If hauling impacted material, air readings will be obtained in the cab.
<ul style="list-style-type: none"> • Transporting the Load 	<ul style="list-style-type: none"> • Personal injury • Equipment damage • Spillage of material 	<ul style="list-style-type: none"> • Know the haul route. If uncertain, stop and call your Supervisor. • Maintain speed in conjunction with site conditions. (Dust control, weather) • Yield right of way to loaded truck. Smaller vehicles should yield to all trucks. Drive defensively; approaching vehicles may have no place to pull over. • Avoid passing a vehicle traveling in your same direction. • Always allow four (4) seconds between trucks to allow emergency braking. • Do not use cell phone while driving (including hands-free operation)
<ul style="list-style-type: none"> • Discharging the Load 	<ul style="list-style-type: none"> • Personal injury • Equipment damage • Dust or vapors • Overhead hazards • Tipping hazards 	<ul style="list-style-type: none"> • Know location of discharge area. • Keep eye contact with the Spotter or positioning Operator. • Identify overhead utilities in the work area within safety limits of raised truck bed • Close windows; operate air conditioning to avoid dust conditions. • Only dump when positioned straight and on level ground. • Dump, pull forward just enough to clear load, lower bed completely before moving. • One truck dumps at a time. Never dump side by side.
<ul style="list-style-type: none"> • Exiting the Truck 	<ul style="list-style-type: none"> • Slips, trips and falls • Personal injury • Equipment damage • Pinch points 	<ul style="list-style-type: none"> • Never leave equipment unless engine is shutdown and parking brake is engaged. • Use 3-point dismount. • Stay clear of pinch points. • Watch for any dirt or debris that may be on the steps.
<ul style="list-style-type: none"> • End of day 	<ul style="list-style-type: none"> • Equipment damage • Slips, trips and falls/ mud on steps 	<ul style="list-style-type: none"> • Park truck in designated staging area. Make sure that you are parked in a safe level area. • Apply parking brake. • Allow vehicle to run for 5 minutes to cool down. • Remove key. • Be sure that truck is fueled. • Clean off excess mud from steps.

Additional JSA's to be developed:

Surveying

Clearing/grubbing

Installing silt fence

Appendix D
Site Restricted Zone & Contamination Reduction Zone



DATE:	May 17, 2008	Sheet 1
		Preliminary Site Layout
		Scale: NTS
		Drawn By: SS (Envirocom)
		SS_WB_Base080618.dwg



APPENDIX B1

**DREDGING AND CAPPING (HICKEY MARINE)
CONSTRUCTION QUALITY CONTROL PLAN (CQCP)**

Port of Portland
TERMINAL 4, REMOVAL ACTION
PHASE 1 DREDGING AND CAPPING

Contractor Quality Control Plan

A. General

The Hickey Marine Enterprises, Inc. (HME) Contractor Quality Control Plan (CQCP) shall be implemented to control all aspects and requirements of the Contract. The Plan will be utilized to control all processes within material/construction tolerances and acceptance criteria.

B. Quality Control Organization

The Safety/Regulatory Manager is responsible for the implementation of the Contractor Quality Control Plan. The Project Superintendent is responsible for the execution of the CQCP and will act as the Quality Control Representative. The Project Superintendent has supervised many dredging operations for state, federal and private industry, and will be in charge of all field operations and quality control for this project. The Derrick Operators at the Terminal 4 site will continually monitor location and depths at the work site and report any abnormalities to the Project Superintendent. The Derrick Operators at The Dalles offload site will monitor and control the offloading process to insure a safe and environmentally clean operation. The Quality Control Representatives shall conduct inspections of all aspects of the work specified and shall report to Hickey Marine Enterprises, Inc. General Superintendent.

1. Duties of the Contractor Quality Control Plan Manager:
 - a. Responsible for overall administration of the CQCP.
 - b. Maintain an up-to-date file on the CQCP that includes;
 - i. Program requirements
 - ii. Project specification requirements and;
 - iii. Reference standards.
 - c. Instruct employees and sub-contractors in CQCP requirements and procedures.
 - d. Check compliance with safety hazard analysis and have safety meetings with field crews.
 - e. Notify Contracting Officer (24) hours prior to each initial activity.
2. Hickey Marine Enterprises will notify the Port of Portland Contracting Officer in writing of any proposed change in the CQCP.
3. Records of CQCP operations and activities will be recorded daily on the Daily Quality Control Report.

C. Inspection and Testing Requirements for Dredging

1. The CQCP Manager or Project Superintendent shall inspect all aspects of the various items mentioned in the technical specifications sections for compliance. Inspections and tests will be recorded in the Daily Quality Control Report.
2. The mainline on the crane will be marked with the bucket in the open

position. There will be painted marks at 1 foot intervals (see attached drawing). The Cable Arm bucket does not change its vertical position when closing. The 10yd Atlas bucket has a difference of 3 feet between open and closed, therefore, final grade is achieved by allowing the bucket to dig until the marks painted on the mainline read 3 foot deeper than in the open position. Both buckets require the operator to set the mainline brake when grade is reached to avoid over dredging. Graphs are drawn and posted in the cab to assist the operator in the elevation changes between buckets and tide levels.

3. Horizontal positioning and control is performed with HYPACK 6.2b Hydrographic Survey software supported with a C.S.I. VS100 vector antenna and a C.S.I. VS 110 DGPS beacon receiver. The Hypack system has a horizontal positioning accuracy of (+/-) (3) feet.
4. The vector antenna is mounted on the stern of the dredge. This unit provides the dredge its position. It sends a signal via 900 MHz Maxstream radio to the computer mounted in the crane cab.
5. A Trimble DSM212L DGPS beacon receiver provides the position of the boom tip. There is a 20" flat screen monitor mounted in front of the operator and a bucket target switch at the controls to enable the operator to target each bucket at dredged grade. All targeted buckets will have their positions stored in a saved file and submitted in the daily quality control report.
6. As a backup system there is a C.S.I. Vector Pro receiver and a Trimble DGPS DSM 132 beacon receiver stored on board the dredge.
7. A Tide Trac Electronic Tide Gauge provides a water level reading every 3 minutes and is displayed on the monitor in the cab of the crane. This unit also gives a countdown timer for the next tide update and displays the battery voltage of the gauge. Solar panels are used to keep a constant voltage to the tide gauge and charge the battery.
8. Staff gauges will be set based on Port provided survey control data and placed in direct line of sight of the operator for periodic control verification of the Tide Trac Electronic Tide Gauge.
9. The dredge, materials barges, liquid storage barges, and sediment control equipment will be stationed according to Port specifications and perform dredging within the Port specified area.
10. Bathymetric surveys will be performed on a daily basis as per contract specifications using an Odem Hydrotrac single beam echo sounder operating a frequency of 200 KHz with a accuracy of 0.01 meter +/- 0.1% depth.

D. Inspection and Testing for Sand Layer Placement

1. Horizontal positioning and control is performed with HYPACK 6.2b Hydrographic Survey software supported with a C.S.I. VS100 vector antenna and a C.S.I. VS 110 DGPS beacon receiver. The Hypack system has a horizontal positioning accuracy of (+/-) (3) feet.
2. The vector antenna is mounted on the stern of the dredge. This unit provides the dredge its position. It sends a signal via 900 MHz Maxstream radio to the computer mounted in the crane cab.

3. A Trimble DSM212L DGPS beacon receiver provides the position of the boom tip. A 20" flat screen monitor in the crane is mounted in clear view of the operator. A bucket target switch located adjacent to the crane swing lever enables the operator to log and store the cell is filled following sand deployment. All targeted buckets will have their positions stored in a saved file and submitted in the daily quality control report.
4. As a backup system there is a C.S.I. Vector Pro receiver and a Trimble DGPS DSM 132 beacon receiver stored on board the dredge.
5. A Tide Trac Electronic Tide Gauge provides a water level reading every 3 minutes and is displayed on the monitor in the cab of the crane. This unit also gives a countdown timer for the next tide update and displays the battery voltage of the gauge. Solar panels are used to keep a constant voltage to the tide gauge and charge the battery.
6. Staff gauges will be set based on Port provided survey control data and placed in direct line of sight of the operator for periodic control verification of the Tide Trac Electronic Tide Gauge.
7. Bathymetric surveys will be performed on a daily basis as per contract specifications using an Odem Hydrotrac single beam echo sounder operating a frequency of 200KHz with a accuracy of 0.01 meter +/- 0.1% depth.

E. Inspection and Test Capping

1. Horizontal positioning and control is performed with HYPACK 6.2b Hydrographic Survey software supported with a C.S.I. VS100 vector antenna and a C.S.I. VS 110 DGPS beacon receiver. The Hypack system has a horizontal positioning accuracy of (+/-) (3) feet.
2. The vector antenna is mounted on the stern of the dredge. This unit provides the dredge its position. It sends a signal via 900 MHz Maxstream radio to the computer mounted in the crane cab.
3. A Trimble DSM212L DGPS beacon receiver provides the position of the boom tip. A 20" flat screen monitor in the crane is mounted in clear view of the operator. A bucket target switch located adjacent to the crane swing lever enables the operator to log and store the cell is filled following sand deployment. All targeted buckets will have their positions stored in a saved file and submitted in the daily quality control report.
4. As a backup system there is a C.S.I. Vector Pro receiver and a Trimble DGPS DSM 132 beacon receiver stored on board the dredge.
5. A Tide Trac Electronic Tide Gauge provides a water level reading every 3 minutes and is displayed on the monitor in the cab of the crane. This unit also gives a countdown timer for the next tide update and displays the battery voltage of the gauge. Solar panels are used to keep a constant voltage to the

tide gauge and charge the battery.

6. Staff gauges will be set based on Port provided survey control data and placed in direct line of sight of the operator for periodic control verification of the Tide Trac Electronic Tide Gauge.
7. Bathymetric surveys will be performed on a daily basis as per contract specifications using an Odem Hydrotrac single beam echo sounder operating a frequency of 200 KHz with a accuracy of 0.01 meter +/- 0.1% depth.

F. Inspection and Test Plan for Dredging

1. Inspections will occur daily to assure continuing compliance with contract requirements until completion of the work.
2. Through the use of electronic equipment, monitoring the dredge site for depth, tide height and location is a constant process. Staff gauges are checked periodically to insure accuracy of electronic monitoring equipment.
3. Previous day's surveys will be available for Port review on board the dredge the following morning.

G. Inspection and Test Plan for Sand Layer Placement

1. Prior to any in-water placement of the cap materials a dry run will be performed on the barge to test swing speed and dimensions of bucket opening to dial in the rate of deployment and area coverage to produce the specified cover and depth. This will facilitate a visual inspection and verify the method proposed will produce the specified thickness and cover area. Once rate of deployment is achieved the main lines on the crane will be marked to aid the crane operator for a consistent open bucket position to spread the sand layer. Capping quality control in-water will be managed by the area to volume completed on crane computer system and thoroughly inspected by Port of Portland's inspection Diver. Bathymetric Survey results will be included in the daily report the following day for review. Daily placement volumes will be figured by using the barge displacement method, barge drafts to be taken at the start and end of each day. Copies of each day progress showing dredge location and location of each bucket dredged will also be included. Pre and post-bathymetric surveys will be performed to confirm the coverage and thickness of the sand layer. Any areas found with insufficient thickness shall be addressed to meet the required layer thickness.
2. Absorbent Containment boom will be installed around the head of Slip 3 sand layer area prior to placement. Visual Monitoring will take place whenever construction is actively underway.
3. For the placement of the sand layer, a grid pattern of cells will be drafted and downloaded to the computer in the dredge cab. The cell size will be determined by the size of the bucket and the thickness of the sand layer. The Sand layer placement method will utilize a 10 cubic yard Atlas re-handle bucket with a width of 8'. Material for the sand layer will be furnished by Ross Island Sand and Gravel. The material will be loaded at their facility onto a flat deck barge and transported to the Terminal 4 project site. Ross Island

Sand and Gravel weighed a precise volume sample of the material. Material weight is determined to be 96 LB per cubic foot which extends to approximately 2600 lbs per cubic yard. Placement of 1 ton (approx .80 cy) of the sand layer per 22 square feet of area will be accomplished by setting up the fill area into cells estimated to be 200 square feet (8'x25'). The cells will be displayed on the computer in the cab of the crane. The operator will press the capping target button once each cell has been filled, this will target a position of each filled cell and shade it with a selected color for display. The 200 square foot area will require approximately 7.3 neat line cubic yards of sand layer. Hickey Marine will utilize a 10 yard Atlas re-handle clamshell bucket for placement throughout each cell, assuring at least the minimum coverage of 1 ton per 22 square feet.

4. Positioning the dredge to start the sand layer will be strategically done to eliminate the possibility of spud deployment in areas covered complete with sand. All work will begin in shore and work off shore covering 60' – 75' of width before repositioning the dredge.
5. To spread the sand layer evenly the bucket will be lowered to the water surface and then cracked open. The operator will then swing throughout the cell until all of the material is removed from the bucket. The operator will then position the bucket at the center of the covered cell and push the capping target button located near the swing control lever.

H. Inspection and Test Plan for Capping

1. Base Cap Type 2 material will be barged to a Ross Island Ready-Mix plant in three separate sized aggregate piles, 1-1/2" to 3/4"; 3/8" to #4; and ODOT spec sand. Each aggregate pile will be fed separately into a weight hopper until a predetermined weight is reached from each pile. Upon reaching the predetermined batch weight from each pile, a computer will document each individual weight for an accumulated batch weight of Base Cap Type 2 material. The predetermined weight of Organoclay for the 10 parts of Base Cap Type 2 to 1 part Organoclay will be added to the batch. The Organoclay and Base Cap Type 2 material will then be dumped into the primary concrete drum batch mixing plant and blended to produce the specification Base Cap Type 3. Certified batch ticket weights will be provided for each batch blended, similar to what is practiced in producing high strength ready mix concrete. It is the practice at Ross Island to recertify the hopper scales every six months. For this project, recertification of the hopper scales will be performed immediately prior to producing the Base Cap Type 3 material.
2. Prior to any in-water placement of the cap materials a dry run will be performed on the barge to test swing speed and dimensions of bucket opening to dial in the rate of deployment and area coverage to produce the specified cover and depth. This will facilitate a visual inspection and verify the method proposed will produce the specified thickness and cover area. Capping quality control in-water will be managed by the area to volume completed on crane computer system and thoroughly inspected by Port of Portland's inspection Diver. Bathymetric Survey results will be included in the daily report the following day for review. Daily placement volumes will be figured by using the barge displacement method, barge drafts to be taken at the start and end of each day. Copies of each day progress showing dredge location and location of each cell capped. Pre and post-bathymetric surveys will be performed to confirm the coverage and thickness of the cap. Any areas found with insufficient cap thickness shall be addressed

to meet the required thickness.

3. The upland component will be visually verified as areas are complete to confirm the desired coverage meets the specified requirements prior to replacement of the shoreline protection. The work upland will be performed in combination with the walking excavator and Type 3 material fed by a water crane relaying material from the material barge with a skip box for surgical placement and dressing in the sloped area. Initially, the walking excavator, equipped with a winch to tie off to a much heavier piece of mobile equipment at the top will carefully remove the Class 100 riprap in the area(s) of placement. The processed Type 3 material on the barge will be skip placed in the segment to be capped within reach of the walking excavator. Cap material will then be spread from the base of the slope upward in each segment. Upon completion of the placement and inspection, the riprap will be re-handled and carefully replaced as areas are complete. The plan is to finish a section, total width, in three to four 30' to 40' lengths completely then move to the next segment. This method does not open the entire upland sloped area up, which may be subject to failure of the upper slopes and will greatly reduce the potential to move in and out of the plantings area which can easily be damaged.
4. Capping operations will be conducted to ensure adherence to the turbidity and water quality requirement as stipulated in the permits. Re-suspension of material shall be prevented in the vicinity of the site. An absorbent containment boom will be installed around the head of Slip 3 capping area prior to placement. Stray will be applied as erosion protection to the upland scope of work at the head of slip 3 if needed.
5. Absorbent containment boom will be installed around the head of Slip 3 capping area prior to placement of capping material.
6. Visual monitoring will take place whenever construction is actively underway.

I. Documentation of Quality Control Activities

1. Daily Quality Control Reports will be maintained and (2) copies will be submitted to the Port Contracting Officer.
 - a. Daily fill and dredge volumes taken from barge displacements.
 - b. Daily Progress surveys.
 - c. Daily safety meeting topics.
 - d. Daily equipment inspections.
 - e. Daily bucket target files.
 - f. Compliance with approved submittals.
 - g. Proper storage of materials and equipment.
 - h. Review of quality control tests.
2. Disposal information will be maintained for each barge load of material transported for disposal. Transportation by truck from the offload site at The Dalles to the landfill will be strictly monitored. Daily reports will include records of number of trucks loaded and total tonnage for each day transported to the landfill. Each truck load will be recorded as follows:
 - a. Date loaded
 - b. Ticket number for load
 - c. Tonnage loaded

3. All truck tickets and records will be retained and submitted to the Port at the completion of the project.

J. Corrective Action

1. Non-conformities of dredge, sand layer placement and capping areas will be identified prior to each dredge move and steps will be taken to correct the non-conformity before continuing. In the event shoals, lumps, high spots or lack of pay line depth is disclosed, Hickey Marine Enterprises will remove the discrepancy by re-dredging, or applying additional sand or capping material.

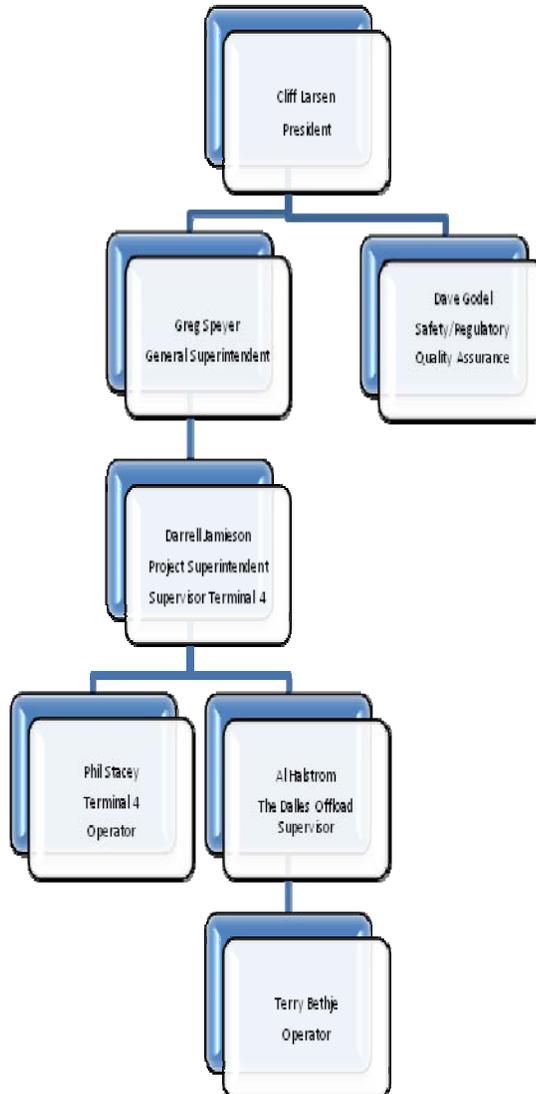
K. Oversight by the Port

1. Hickey Marine Enterprises will furnish, upon request; boatmen, laborers, and materials to make inspections or supervise the work.
2. Suitable transportation will be provided to the Port from shore to the dredge, materials barges and liquids barges at both Terminal 4 and The Dalles offload site.

L. Port Acceptance Testing and Inspection

1. Hickey Marine Enterprises will accommodate and/or assist the Port as necessary to accomplish acceptance testing and inspections.
2. HME will allow sufficient time in the schedule to accommodate the Port for acceptance testing and inspection.
3. HME will furnish samples of materials as required by the Contract or on request by the Port for approval or evaluation.
4. HME is cognizant of the water quality requirements to perform this work and will modify work procedures, methods or equipment in the event of a water quality exceedance.

Hickey Marine Enterprises, Inc. Quality Control Organization



APPENDIX B2

WHEELER BAY (ASH CREEK)
CONSTRUCTION QUALITY CONTROL PLAN (CQCP)

CONTRACTOR QUALITY CONTROL PLAN (C.Q.C.)

TERMINAL 4 PHASE I REMOVAL ACTION

WHEELER BAY STABILIZATION

PORT OF PORTLAND

Portland, Oregon

Submitted to:

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9615 Southwest Allen Blvd., Suite 106
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Revision 1

Submittal date:

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1.0 INTRODUCTION

The Terminal 4 Phase I Wheeler Bay Stabilization project's Quality Control System will be implemented by Envirocon's own management team who have significant responsibility for Project quality. This Contractor Quality Control Plan (C.Q.C.) defines the tasks and responsibilities of the management team, including; policies, procedures, inspections, and documentation.

The CQC. plan shall work in coordination with the following plans; Project Work Plan (PWP.), Environmental Protection Plan (EPP), Health and Safety Plan (HASP), and the Survey Control Plan (SCP). Both the PWP and the SCP shall address the necessary requirements and procedures to achieve specified thickness and extent of the shore stabilization materials. The EPP shall address the necessary requirements and procedures to address minimizing the release of suspended sediment and short-term water quality impacts. Quality assurance measures, inspection and verification activities shall be addressed within these contents.

1.1 Administrative Policies

Envirocon's policy is to maintain a stand-alone QC Program on-site, with corporate involvement to support project start-up. Further, Envirocon's policy is to satisfy the Client's QA/QC requirements, as expressed in the Specifications, Drawings, Change Orders, and documented Field Directives.

1.2 Procedures

Envirocon's QC procedures are structured to fit the project. The Terminal 4 Removal Action-Phase I Project has three main components that must be achieved to assure that the end product meets the original design goals.

The first component is assuring that materials to be installed meet or exceed specifications. Material suppliers and subcontractors will submit to Envirocon product material data that reflects the requirements of the applicable technical section where the material will be incorporated into the project.

The second component for this project is to excavate and fill to achieve the subgrade lines and grades as shown in the drawings.

Starting from supplied by others control points, Envirocon's project surveyor will lay out the work using a total station. This will be primarily slope staking that will be used by grade checkers utilizing a laser level and tape measure to direct machine operation cut and fill tasks. The subgrade will be periodically checked with the total station to assure efficacy of laser level and grade checker.

An area requiring more than two feet of fill will be selected and compaction methodology will be verified using a nuclear densitometer, successful compaction methodology will be utilized for the project.

The third component is placing the imported fill material on the subgrade to the correct depth. Similar to subgrade control, imported material will be placed to grade by referencing slope stakes and grade checkers. Efficacy of both verified with total station shots from project control points.

1.3 Objective

This Quality Control Plan (CQC) presents Envirocon's methodology for furnishing a quality product on the Terminal 4 Phase I Wheeler Bay Stabilization. This CQC plan has been developed to ensure that the completed work complies with the various requirements of the Project Specifications. These requirements are summarized below.

The essential components of this CQC plan are:

- Quality Control System;
- Personnel Training and Qualifications
- Deficiency Corrections;
- Inspections and Tests;
- Documents and Records;

2.0 QUALITY CONTROL SYSTEM

This section describes the planned Quality Control (QC) system to be implemented and maintained throughout the performance of the contract. The QC system is organized to prevent confusion in the lines of authority and avoid assigning personnel with conflicting responsibilities.

2.1 Reporting

Envirocon supervisory personnel will report QC activities to the Project Superintendent, who will consult with the Engineer and Project Manager, as necessary. The Project Manager reports directly to the Project Director.

2.2 Authority

The Project Superintendent has the authority to Stop Work in cases where the quality of the work is unacceptable, particularly where the work in question is about to be built upon or concealed. The Project Manager has encompassing on-site authority for all aspects of the Terminal 4 Phase I Removal Action Wheeler Bay Stabilization project under Envirocon control.

2.3 Responsibility

The Project Manager is responsible for ensuring that the manpower and resources are available to adequately implement and operate the QA Program. He is also responsible for ensuring that the program is fully supported by site staff and that the staff has been properly trained in QC procedures and project specifications.

The Project Manager is responsible for actually implementing and overseeing the QC program. He will support the Project Superintendent and Project Engineer in preparing the Daily Construction Reports, and ensure that QC monitoring, tests, and inspections are conducted, documented, and reported to the Engineer as needed. The Project Superintendent, w/ aid of the Project Engineer, will submit the daily CQC report, inspection report, and test report.

Conflicting QC responsibilities assigned to a single person will be avoided by lines of authority which do not converge until they reach the Project Manager. Alternate lines of communication for exceptional circumstances are available on a case-by-case basis.

2.4 Project Personnel

The key project personnel and their assigned authorities and responsibilities are:

Project Manager (PM) – CQC Supervisor: The PM / CQC Supervisor is responsible for all project activities. He reports directly to the Project Director. The PM provides overall direction and support for field and technical activities and serves as the link between Envirocon and the Client. He represents Envirocon in technical and administrative issues and is authorized to negotiate change orders and make decisions on all aspects of the Project. In addition, the PM:

- Directs the project in compliance with the contract specifications;
- Has final approval of task plans and operating procedures necessary to meet quality objectives; and
- Approves and signs all purchase orders, subcontract agreements, and material supply agreements to provide materials or equipment for work within the scope of the project.

Project Superintendent (PS) The PS is responsible for supervising all construction field activities, including Envirocon employees, subcontractors and off-site material suppliers. The PS operates at the discretion of the PM; his authority is delegated by the PM. In addition, the PS:

- Provides timely input concerning field activities to the PM;
- Supervises construction work by providing over-all direction to field personnel and subcontractors involved in construction;
- Consults with the PM, PE, HSO, and Engineer's QA personnel to ensure Specification compliance;
- Ensures that agreed-upon corrective actions are conducted promptly;
- Contributes to "tailgate" safety meetings by apprising site workers of current and upcoming work and discussing site work issues;
- Reviews task plans and operating procedures necessary to meet quality objectives;
- Ensures materials and fixed equipment meet specifications before being purchased and incorporated into the work;
- Identifies deficient work items;
- Recommends corrective actions; and
- Ensures that agreed-upon corrective actions have been conducted and are sufficient to correct the deficiency.

Project Engineer (PE) The PE is responsible for tracking submittals, overseeing task plans and operating procedures, in coordination with the PS, that involve quality control procedures, tracking, testing, and other documentation necessary to meet specifications and requirements of the CQC plan. The PE operates at the discretion of the PM; his authority is delegated by the PM. In addition, the PE:

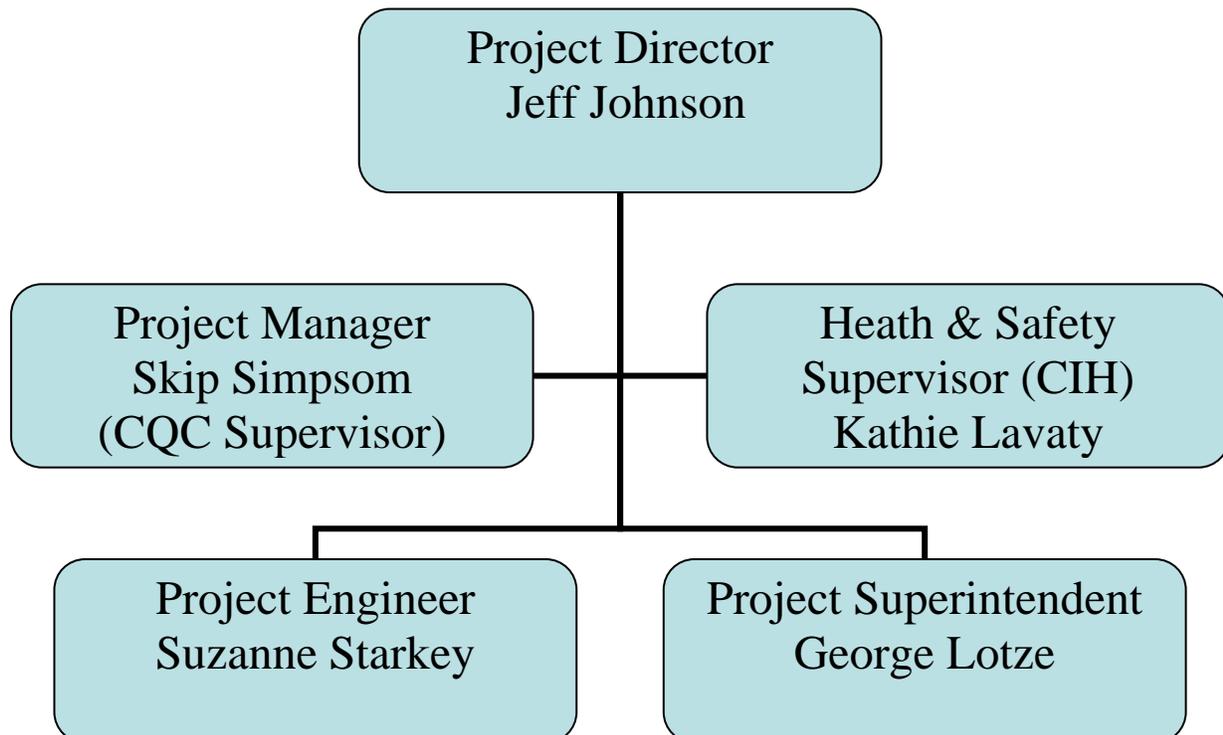
- Contributes to "tailgate" safety meetings by apprising site workers of current and upcoming work and discussing site work issues;
- Prepares and tracks submittals required by the contract specifications;
- Reviews task plans and operating procedures necessary to meet quality objectives;
- Ensures testing is performed, as required by specifications or necessary to provide a quality product;
- Reviews technical reports, submittals, as-built drawings, and other documentation;
- Inspects and accepts materials, equipment, and services provided by Envirocon employees, subcontractors, and vendors;
- Ensures all data required for the as-built drawings are collected before any work is closed/concealed;
- Takes monthly project photographs;
- Ensures materials and fixed equipment meet specifications before being purchased and incorporated into the work;

- Identifies deficient work items;
- Ensures that agreed-upon corrective actions have been conducted and are sufficient to correct the deficiency.

Site Health and Safety Officer (HSO) The HSO is responsible for compliance with the site specific Health and Safety requirements, including OSHA 1910.120 – Hazardous Waste Site Operations, OSHA 1926 – Construction Safety, and other requirements intended to assure the health and safety of site workers and the public. Specifically, the HSO:

- Designates and oversees the installation of signs, barriers, fences, and other protective devices;
- Conducts regularly scheduled “tailgate” safety meetings which will include updating site workers on changes to controls;
- Develops and implements procedures for decontaminating personnel and equipment;
- Documents and tracks employee training and occupational/medical qualifications for work at the site; and
- Works with Client representatives to ensure complete control of equipment, excavated material, personal protective equipment and personnel.

Organizational Chart is as follows:



3.0 PERSONNEL TRAINING AND QUALIFICATIONS

Envirocon's project personnel are qualified to perform their assigned duties. This is accomplished by employing experienced personnel and through site specific/ project specific training. Training and qualifications documentation will be maintained and available for inspection at the on-site office.

Envirocon tracks training for employees through its corporate office. All training conducted by Envirocon or obtained by an outside provider is entered into a database controlled and maintained by the Health and Safety Training Coordinator. The database is queried monthly, and a training matrix is generated to reflect the current status of each employee's training. Notification to personnel is provided through direct correspondence, with a copy routed to the Site Health and Safety Officer; however, every employee is required to be familiar with the required training for their position, and know approximately when his training will expire.

Personnel will be trained to the planned procedures and critical documents including the approved work plans and Site Specific Health and Safety Plan. These guidance procedures will be routed to persons assigned to the project. Documents will contain a sign-off page or use a routing slip. Personnel will be required to sign or initial that they have reviewed and understand the material; the PS will ensure that the sign-offs have been completed before the relevant work task proceeds.

Relevant and major documents will be reviewed, as necessary, during the "tail-gate" safety meetings or during preparatory and initial phase meetings. Attendance at these meetings will be documented with a sign-in sheet.

The following training and qualifications may be required for Project personnel, depending on the nature of the task:

- OSHA 40-Hour Hazardous Waste Worker Training – 20 CFR 1910.120 for personnel entering an exclusion zone;
- Competent Person, 1 person minimum, when required for work within excavations;
- Respirator fit test, as required;
- Site Specific Training; and
- Medical examinations of personnel in accordance with the HASP.

All personnel will be required to attend required site-specific training.

4.0 DEFICIENCY CORRECTIONS

This section describes the corrective action system to be implemented. This system documents deficiencies in items and services, reports the deficiencies, and verifies corrective action accomplishments. Construction deficiencies include any work below the minimum acceptable

contract requirements. All work found to be deficient will require corrective action. Corrective action will be initiated and confirmed by the PS.

4.1 Deficiency Notification and Reporting

The PS or PE shall notify the PM of any potential deficiencies. Potential deficiencies shall be evaluated by the PM to assess their significance. If it is determined that a significant deficiency does exist, a corrective action plan will be formulated and communicated to the Engineer's representative for review, comment and concurrence.

4.2 Resolution and Corrective Action

The PS will be responsible for ensuring that the deficiency is resolved. After completing the corrective action, the resolution shall be documented in the Project Superintendent's Daily Report. This will include a description of the corrective action taken and actions available to prevent a reoccurrence of the deficiency.

4.3 Unresolved Deficiencies

In the event a satisfactory resolution is not accomplished or the deficiency reoccurs, a meeting will be arranged to discuss the unresolved deficiency and arrange a mutually acceptable resolution.

5.0 INSPECTIONS AND TESTS

Acceptance inspections and tests of specified items, services, and processes will be conducted using established acceptance and performance criteria. All routine inspections, and acceptance inspections or tests will be formally documented and submitted as required. The following is a list of test requirements, inspections, identification/documentation, and test frequencies to be conducted:

Select Fill

Prior to source sampling, Envirocon will provide documentation of the origin of borrow source material. A 5-gallon sample of granular material will be obtained from the borrow source. These samples will be provided to the Port at least 14 days before these same materials are delivered to the site. Test sample results will be provided to the Port, containing the required information specified under Division 31, Earthwork 2.2, A.5 of the Specifications. These results will be provided 2 weeks prior to delivery in which the report form will clearly identify all relevant and required data. Truckloads shall be visually inspected and certified tickets shall be collected. One sample for every 20% of total volume shall be taken and submitted for grain size analysis, chemistry, and organic carbon.

Select Fill shall be placed in lifts of not more than 12 inches in loose depth. Each lift will be compacted to a minimum of 85% of AASHTO T-180. (Specification Section No. 312000-3.6J)

Habitat Cover

Prior to source sampling, Envirocon will provide documentation of the origin of borrow source material. A 5-gallon sample of granular material will be obtained from the borrow source. These samples will be provided to the Port at least 14 days before these same materials are delivered to the site. Test sample results will be provided to the Port, containing the required information specified under Division 31, Earthwork 2.2, A.5 of the Specifications. These results will be provided 2 weeks prior to delivery in which the report form will clearly identify all relevant and required data. Truckloads shall be visually inspected and certified tickets shall be collected. One sample for every 20% of total volume shall be taken and submitted for grain size analysis, chemistry, and organic carbon. Habitat cover will be surveyed to confirm final grade.

Armor Type 3:

Shall be placed in accordance with ODOT 00390.00.

Topsoil:

Prior to source sampling, Envirocon will provide documentation of the origin of borrow source material. A 5-gallon sample of granular material will be obtained from the borrow source. These samples will be provided to the Port at least 14 days before these same materials are delivered to the site. Test sample results will be provided to the Port, containing the required information specified under Division 31, Earthwork 2.2, A.5 of the General Specifications. These results will be provided 2 weeks prior to delivery in which the report form will clearly identify all relevant and required data. Truckloads shall be visually inspected and certified tickets shall be collected. One sample for every 20% of total volume shall be taken and submitted for grain size analysis, chemistry, and organic carbon.

Topsoil shall be spread in layers not to exceed 6 inches of uncompacted depth. It shall be compacted to 85% of maximum density, as measured by AASHTO T-180. (Specification Section No. 329119-3.4C)

Geotextile:

Amoco 4553 to be provided. Material product/source tags will be provided to the Port. Samples to be provided upon request. Inspection and approval of Subgrade will be established and documented prior to installation. Visual inspection required on a daily basis. (Specification Section No. 312400-2.4A).

Jute Matting:

Material product/source tags shall be provided to the Port. Samples to be provided upon request. Jute Matting shall be installed after the establishment and approval of

finished grade. Visual inspection required on a daily basis to ensure adherence to specified installation procedures. (Specification Section No. 329119-3.5A,B,C.)

Seeding:

Seeding material shall be blue tag certified grass seed. One copy of the grass seed analysis tag shall be submitted prior to delivery of seed. The tag shall contain all relevant and required information to comply with standards established by the Official Seed Analysts of North America. Seed shall be furnished in containers that will be labeled with the proper information and shall conform to the requirements of the Oregon State Seed Law and, when applicable, the Federal Seed Act.

All seeding, fertilizer, tackifier, and mulch will be provided by Envirocon's Hydroseeding Subcontractor. Fertilizer, tackifier, and mulch products will be inspected on site with proper documentation to assure adherence to material specifications.

Envirocon shall provide the Port a 48 hour notice prior to seeding operations. Visual inspection required on a daily basis to assure specified application rates and procedures are met. (Specification Section No. 329219)

Trees & Shrubs (Mulch & Fertilizer):

Envirocon will provide one supervisor that shall direct work, be familiar with best practices for installation, and be present at all times during execution. All trees and shrubs shall be nursery-grown that have been held in a nursery for at least 1 year. They shall meet specifications in regards to plant size and climatic conditions. All plants of each type shall be obtained from the same nursery. Submittals of plant nursery sources, photographs, samples and certificates shall be in accordance of Specification Section No. 329300-1.4A,B. Tree & Shrub installation shall be inspected and documented by the installation supervisor. Installation shall be in adherence to Specification Section No. 329300-5.

Mulch and Fertilizer materials shall be inspected/identified by product tags and documented according to documentation procedures. Fertilizer and mulch shall be installed in accordance with installation procedures and also inspected and documented by the installation supervisor.

Habitat Logs:

Anchored habitat logs shall be constructed as per drawing no. T4 2008-501 8&9. Envirocon shall alert the Port at least 48 hours before selection and placement of habitat logs, at which a Port representative shall be present. Installation procedures inspected throughout process. Documentation procedures established in documentation section

Large Woody Debris (LWD):

Shall be placed over prepared surface as directed by the Port and per drawing no. T4 2008-501 8&9. They will be installed post habitat log installation. Installation procedures inspected throughout process. Documentation procedures established in documentation section

6.0 DOCUMENTS AND RECORDS

This section describes the processes to be implemented controlling the review, approval, and revision of documents and submittals. Records documenting the work quality will be controlled, protected, maintained, and submitted according to contract specifications.

6.1 Review, Approval, and Revision

All project QC documents are the responsibility of the Project Manager (PM). The PM has sole authority to review and approve all QC documents. These documents include:

- Daily Construction Reports, (daily)
- Daily Test Reports, (daily)
- Calibration Records, (weekly)
- Construction Photographs, (weekly)
- Survey Records, and (bi-weekly)
- Corrective Action Reports. (as generated)

In the PM's absence, designated Staff may make entries and revisions in QC records, but the PM will review and approve these entries and revisions.

Documents such as plans, reports, and procedures will be controlled using revision numbers. Document revisions will be designated as "Revision 0"; subsequent revisions will increase numerically (e.g., 1, 2, 3, ...). No revisions to plans or procedures will be issued until the original signatories approve the revised document.

6.2 Document and Record Control, Protection, and Maintenance

All project documents, including QC records, will be controlled by the Project Manager (PM) and secured in the job-site office under his direct control. Current records of operations, activities, and tests performed will be maintained.

The Project Superintendent's daily report will include, but is not limited to:

- Number of personnel working
- Site weather conditions
- Description of trades working on the project

- Work performed each day stating location, description, and by whom
- Currently active subcontractor(s) and the task/area of responsibility
- Type of equipment used each day stating location and description
- Off-site quarry inspections, including any actions taken or communications with the Quarry Operator
- Materials received at the site and their condition
- Test and/or control activities performed with results, and specification requirements, identification of deficiencies noted along with relevant corrective action(s);
- Instructions received from the Engineer's representative
- Conflicts in plans and/or specifications
- Delays, if any
- Daily Inspection Report (either inclusive or attached to the Daily Report)
- Daily Test Report (either inclusive or attached to the Daily Report)

The records will document contract compliance of workmanship, equipment, and materials. The records will include attached copies of reports and tests performed. The daily report will be reviewed and countersigned by the PM. Copies of the daily report will be given to the Engineer's representative, on the following day.

6.3 Document and Record Submittals

The Project Manager (PM) will be responsible for ensuring that submittals are complete and in accordance with the Specifications; variances will be clearly noted on the submittal. The PM will ensure that project progress and sequencing is not delayed due to incomplete, deficient, or late submittals. All submittals will be reviewed and certified by the PM.

A list of significant submittals includes the following:

Plans and Procedures:

- Project Work Plan
- Survey Control Plan
- Health & Safety Plan
- Environmental Protection Plan
- Quality Control Plan
- Construction Schedule

STEVEN (SKIP) SIMPSON, E.I.T.

Construction Manager

Qualifications

Mr. Simpson has over 37 years of experience in the environmental remediation and civil construction industries. His duties include; management of construction and remediation activities, coordination of subcontractors, construction scheduling, project administration and construction engineering. Mr. Simpson has varied and valuable experience including mass excavation, civil construction, utilities installation, system instrumentation and controls, sheetpiling, and shoring.

Experience

- ◆ Envirocon Construction Manager for team TN&A and Envirocon for Phase II Remedial Action, Landfill Closure Tongue Point Site, Astoria, Oregon for the U.S. Army Corps of Engineers
Project included remediation of ~800 LF intertidal shoreline, excavation and placement ~17,000 CY contaminated sediment and debris, installation of ~ 1,600 LF of slurry wall, drainage structures and temporary cover
- ◆ Project Engineer/Superintendent for environmental dredging/shoreline remediation in Tacoma, Washington. Remediate 3,500 LF intertidal shoreline, build infrastructure to offload/load ~400,000 CY contaminated dredge sediment and debris. Supervised dredging, bathymetric surveys and scheduling.
- ◆ Project Superintendent for the installation of an air sparging system to treat petroleum contaminated soil in Spokane, Washington.
- ◆ Project Superintendent for spent potliner remediation in Mead, Washington. The project required consolidation, grading and placement of approximately 250,000 cubic yards of contaminated solid waste over a footprint of 523,000 SF. A RCRA cap was placed over the material and the surrounding 7 acres was graded and paved.
- ◆ Estimator, Project Manager, and Superintendent for multiple heavy construction projects including road construction, installation of underground utilities, commercial, residential, and public site work, civil construction, and installation of pump stations, force mains, and sanitary sewers.
- ◆ Estimator/Project Manager for subdivision construction in Vancouver, Washington and Oregon City, Oregon. Project tasks included; mass excavation, grading, paving, installation of pump stations, force mains and underground utilities

Experience Highlights

- Environmental Remediation
- Environmental Dredging
- Intertidal Excavation and Capping
- Construction Engineering
- Sheetpiling
- Shoring
- Excavation
- Demolition
- RCRA Cap
- Permitting
- Air Sparge System Installation
- Road Construction
- Underground Utility Installation
- Pump Station/Force Main Installation

- ◆ Estimator/Project Manager for site work construction Albertson's Food Center in Marysville, Washington. The project required; clearing, grading, install all underground utilities, pave seven acres and prepare slab on grade for buildings.
- ◆ Estimator/Project Manager for the installation of 220 miles of buried telephone cable in Long Creek, Oregon and numerous other telephone cable, manhole and conduit projects.

Education

- ◆ B.S., General Engineering, Civil engineering option, Hydrogeology minor (2005)
- ◆ Pre-Engineering Studies – Whitman College
- ◆ Surveying Studies – Walla Walla Community College

Training & Certifications

- ◆ 40-Hour Hazardous Waste Operations Training
- ◆ USACE Dredging Fundamentals (2008)
- ◆ 8-Hour Hazardous Waste Site Annual Refresher Training
- ◆ Fundamentals of Engineering Exam (2005)

References

- ◆ Paul Fuglevand, P.E., Dalton, Olmsted & Fuglevand, Inc. (425) 827-4588
- ◆ Butch Gerbrandt, PhD., P.E., Montana Tech (406) 495-4109
- ◆ Denny Munchmore, P.E., Westech Engineering Inc. (503) 585-2474

APPENDIX C1

**DREDGING AND CAPPING (HICKEY MARINE)
ENVIRONMENTAL PROTECTION PLAN (EPP)**

Port of Portland
**TERMINAL 4, REMOVAL ACTION
PHASE 1 DREDGING AND CAPPING**

Environmental Protection Plan (EPP)

A. General

This plan covers the prevention of environmental pollution and minimizing environmental degradation during and as a result of construction operations for the Port of Portland Terminal 4 dredging and capping project, transport of materials to The Dalles, OR, off-loading operations at The Dalles, OR and transport of materials from The Dalles off-load site to the landfill. The EPP covers control of environmental pollution and takes into consideration noise levels, as well as air, water, and land resources.

B. Contamination Prevention

1. Potential Contaminants

- a. #2 Diesel fuel oil
- b. Unleaded gasoline
- c. Hydraulic oil
- d. Delo 400 15-40 lube oil
- e. Lithium grease
- f. Marvels mystery oil (air line lube)

2. Prevention Measures

- a. Sediment barges are sealed on all four sides to prevent any leakage of sediments or liquid.
- b. Drip pans, steel plates, open top containers and sediment screens will be used at all points of transfer of dredged material to prevent leakage from contacting the surrounding soils or water. All containment structures will be bermed to contain sediments and prevent runoff.
- c. Drip pans will be used under stationary equipment and at points of liquid transfer.
- d. The sediment barges will be monitored continuously by the Site Superintendent at Terminal 4 and the Site Supervisor at The Dalles for any sign of leakage or spillage during loading, off-loading, and transporting from the off-load site to the landfill. If any leakage or spillage is detected, the operations will be terminated until repairs and/or a remedy is in place. All leakage or spillage of dredged materials will be cleaned up promptly and transported to the landfill for disposal.

3. Fuel Transfers

- a. Fuel transfers will be performed in accordance with U.S. Coast Guard Oil Transfer

- Procedures aboard each derrick barge.
- b. Diesel fuel is stored in fuel tanks aboard the derrick barges. Unleaded gasoline is stored in double wall fuel tanks aboard the derrick barges.
 - c. All fuel transfer hoses have been inspected, tested, marked and maintained in accordance with U.S. Coast Guard requirements.
 - d. Flammable or combustible materials will be stored in flammable storage cabinets in either the manufacturer's original shipping container or in portable fire safety containers.
 - i. All containers will be kept tightly closed and sealed when not in use.
 - ii. All containers will be clearly labeled as to contents and capacity.
 - e. Oil sorbent pads and/or sweep will be used to clean up deck spills.
 - f. All equipment maintenance will be performed aboard the derrick or materials barges.

C. Contamination and Cleanup

1. Responsibility and Reporting

- a. The Safety/Regulatory Manager will have overall responsibility for implementing and managing the containment and cleanup effort. The Project Superintendent, at Terminal 4 and the Site Supervisor, at The Dalles off-load site will have direct responsibility at each site for containment and cleanup of spilled materials. The Project Superintendent and Site Supervisor will report all spills of dredged materials or petroleum products to the General Superintendent and Safety/Regulatory Manager who will in turn make all required notifications to the Port of Portland, Federal, State and local authorities.
 - i. Darrell Jamieson
Project Superintendent – Terminal 4
Office: (360) 695-4553
Cell: (360) 772-4072
 - ii. Al Halstrom
Site Supervisor – The Dalles Off-load Site
Office: (360) 695-4553
Cell: (360) 772-4071
- b. The Hickey Marine Enterprises Quick Reference Emergency Numbers will be used to report spills of oil or dredged materials. (See attached)
- c. The General Superintendent or Safety/Regulatory Manager will report immediately any discharge of petroleum products to the U.S. Coast Guard National Response Center.
 - i. Contact: 1-800-424-8802.
- d. Hickey Marine Enterprises, Inc. has a contract with NRC Environmental Services (NRCES) who will be the Primary Spill Response Contractor.
 - i. Contact: 1-800-FE-SPILL

2. On-Site Response Equipment

- a. On site spill response and cleanup materials include 450 feet of 8" x 12" collapsible sea curtain stored onboard Derrick Sea Horse. The derrick Sea Hawk has 300 feet of 8" X 12" collapsible Sea Curtain onboard. An oil spill response and cleanup kit consisting of a pump and skimmer, Skim-Pak model 1800, 3M sorbent pads, sorbent sweep and personal protective equipment (PPE) is available aboard each derrick.
- b. Hickey Marine maintains a complete supply of containment equipment, sorbent materials, pumps, skimmers and PPE at the Vancouver, WA main office location. In addition, Hickey Marine maintains a mobile Environmental Response Unit (See attached Inventory Sheet) to be use in the event of a larger spill or if addition response resources are required.
- c. All Hickey Marine personnel employed have received OSHA 40 Hour HAZWOPER training and are well versed in the use and deployment of spill response equipment, as well as, personal protection equipment (PPE). All sub-contractor personnel will receive orientation prior to beginning work detailing the specific hazards of the project and PPE requirements. Spill equipment will be inspected periodically and documented in the Daily Quality Control Report.

D. Response Procedures

1. Petroleum Spills

- a. Stop the product flow
 - Immediately secure all transfer operations.
 - Relieve pressure on the line, e.g. open valve to empty/slack tank and /or close header valve.
 - Affect temporary repair, if feasible.
- b. Warn personnel
 - Enforce safety and security measures.
- c. Shut off ignition sources / avoid vapors.
 - Motors, electrical circuits, open flames, etc.
 - Secure air intakes, ventilation.
- d. Notify Site Supervisor or Project Superintendent
 - Request assistance.
- e. Contain/Control/Recover spill – Limit its spread
 - On the deck, in the water or on land
 - Use berms, sumps, containment boom, water hose, etc.
 - If gasoline, do not contain on water, use extreme caution due to explosion hazard and vapors.
 - Any mechanical/sorbent recovery method is authorized.
 - Use on-site spill equipment.
 - Request addition response resources and equipment if necessary.

- f. Notify HME Operations Control Center (Main Office, Vancouver, WA)
 - Give pertinent details (Who, what, when, why, where and how much).
 - Extent of damage/injuries.
 - Request additional resources, if needed.
 - Discuss notifications to Port of Portland, federal, state and local authorities to determine who will make the calls. In most if not all cases, HME management will make these calls.
2. Sediment Spills
- a. Stop the product flow
 - Immediately secure all dredging and loading operations.
 - Affect temporary repair, if feasible.
 - b. Warn personnel
 - Enforce safety and security measures.
 - c. Shut off ignition sources / avoid vapors.
 - Motors, electrical circuits, open flames, etc.
 - Secure air intakes, ventilation.
 - d. Notify Site Supervisor or Project Superintendent
 - Request assistance.
 - e. Contain/Control/Recover spill – Limit its spread
 - On the deck, in the water or on land
 - Use berms, shovels, brooms, etc.
 - Any mechanical recovery method is authorized.
 - Use on-site spill equipment.
 - Request addition response resources and equipment if necessary.
 - f. Notify HME Operations Control Center (Main Office, Vancouver, WA)
 - Give pertinent details (Who, what, when, why, where and how much).
 - Extent of damage/injuries.
 - Request additional resources, if needed.
 - Discuss notifications to Port of Portland, federal, state and local authorities to determine who will make the calls. In most if not all cases, HME management will make these calls.
3. Personnel Injury
- a. Evaluate personnel injuries to determine level of medical attention required.
 - b. First Aid kits are available on each derrick barge.
 - c. Call 911 for all injuries requiring medical attend beyond basic First Aid.
 - d. Notify Site Supervisor or Project Superintendent.

4. Fire and Explosion

- a. Call 911 for all fire and explosion other than small non-spreading situations.
- b. Fire extinguishers are located on each derrick barge.
- c. Notify Site Supervisor or Project Superintendent.

E. Erosion and Turbidity Control

- a. Absorbent containment boom will be installed around the head of Slip 3 capping area and sand layer area prior to placement of sand or capping materials.
- b. Capping operations will be conducted to ensure adherence to the turbidity and water quality requirement as stipulated in the permits. Re-suspension of material shall be prevented in the vicinity of the site. An absorbent containment boom will be installed around the head of Slip 3 capping area prior to placement. Straw will be applied as erosion protection to the upland scope of work at the head of slip 3 if needed.
- c. Visual monitoring will take place whenever construction is actively underway.

F. Supervision

1. Throughout the duration of the project, all project operations, including those of sub-contractors, will be supervised by Hickey Marine to ensure compliance with the intent and details of the EPP.
2. Environmental compliance meetings will be conducted with all contractor and sub-contractor personnel and documented on the Daily Quality Control Report. Topics are as follows:
 - a. Applicable pollution standards
 - b. Methods of pollution detection
 - c. Prevention
 - d. Equipment
 - e. Deployment
 - f. PPE

G. Transportation and Disposal

1. Hazardous waste determinations, sample results, and manifests will be furnished on request. All waste will be packaged and labeled in accordance with 40 CFR 172-173.
2. All hazardous wastes will be removed from the site within 90 days and properly disposed of in accordance with 40 CFR 172-173. Hazardous waste shall be packaged and labeled according to 40 CFR 172-173. These products will be stored according to 40 CFR 264 in approved D.O.T. containers.
3. Certificates of Destruction or Disposal for Hazardous Waste will be submitted within 14 days.
4. The Generator's EPA identification number will be used for disposal.

5. An approved T.S.D. facility will be used to handle and recycle wastes to the maximum extent possible.

H. Noise Control

1. Hickey Marine will work within stated operational hours and comply with local noise control regulations.
2. All Hickey Marine Enterprises diesel and gasoline powered equipment have factory installed mufflers.

I. Protection of Air – Equipment fueling and Maintenance

1. Ultra Low Sulfur Diesel Fuel
 - a. All diesel-powered off-road vehicles and equipment over 50 horsepower used on the project sites for 3 consecutive days or more shall be fueled with ultra low-sulfur diesel (ULSD).
 - b. If required, prior to construction, Hickey Marine will submit a list of the diesel-powered equipment that will use ULSD.

QUICK REFERENCE EMERGENCY NUMBERS

24 Hr. (360) 695-4553 or (888) 699-1053

RESPONSIBLE MANAGERS

Cliff Larsen	Cellular (360) 772-4067	Home (360) 687-3232
Doug Larsen	Cellular (360) 772-4069	Home (360) 263-2601
Greg Speyer	Cellular (360) 772-4068	Home (360) 896-6908
Dave Godel	Cellular (360) 901-2622	Home (360) 576-7107
Darrel Jamieson	Cellular (360) 772-4072	Home (360) 263-4838
Al Halstrom	Cellular (360) 772-4071	Home (360) 687-4705

OTHER COMPANY CONTACTS – WEEKENDS/AFTER HOURS/HOLIDAYS:

Duty Operations Phone: 888-699-1053 or (360) 695-4553 24 HRS / 7 DAYS A WEEK

USCG National Response Center (NRC)

(800) 424-8802 or (202) 267-2675

USCG Sector Anchorage (Western AK COTP)	24-Hr. (907) 271-6700
USCG Dutch Harbor Marine Safety Detachment	(907) 581-3466
USCG Kenai Detachment	(907) 283-3292
USCG Kodiak Detachment	(907) 486-5918
USCG Valdez MSU (Prince William Sound COTP)	(907) 835-7200
USCG Sector Juneau (SE AK COTP)	Emer. (907) 463-2000 or (907) 463-2450
USCG Sector Puget Sound	24 Hr. (206) 217-6001 or (206) 217-6200
USCG Portland	(503) 240-9310 or (360) 240-9311
USCG Sector Los Angeles-Long Beach	24 Hr. (310) 521-3800 or (800) 221-8724
USCG Sector San Diego	Emer. (619) 295-3121 or (619) 278-7033
USCG Sector San Francisco	Emer. (415) 556-2103 or (415) 399-3523

STATE EMERGENCY OFFICES

Alaska Department of Environmental Conservation	24-Hr. (800) 478-9300
Washington State Department of Ecology	24-Hr. (800) OILS-911 or (425) 649-7000
Washington Emergency Management Division	24-Hr. (800) 258-5990 or (253) 912-4904
Oregon Emergency Response System	(503) 378-6377

CANADA

Canadian Coast Guard (Pacific Environmental Response)

(800) 889-8852

Comox	(250) 339-3613	Prince Rupert	(250) 627-3074
Tofino	(250) 726-7777	Vancouver	(604) 666-6011

SPILL RESPONSE CONTRACTORS

Alaska Chadux (Western Alaska)	(907) 348-2365
SEAPRO (Southeast Alaska)	(907) 225-7002
Western Canada Marine Response/Burrard Clean Operations (Canada)	(604) 294-9116
Islands Oil Spill Assoc. (San Juan Islands, Washington)	(360) 378-5322 or (360) 378-4151
Washington State Maritime Coop (Washington)	(206) 448-7557
Marine Fire & Safety Assoc. (Columbia River, Oregon)	(503) 220-2055
MSRC (contiguous U.S. waters and Hawaii)	(800) 645-7745 or (800) 259-6772
NRC Environmental Services (NRCES)(West Coast/California)	(800) FE-SPILL or (206) 767-0441
NRCES International Operations Center	(800) 899-4672 (631) 224-9141 Ext. 0 (or stay on line)

OTHER RESPONSE CONTRACTORS

Global Environmental (salvage, cleanup)	(206) 623-0621
Marine Response Alliance (towing, lightering, salvage)	(206) 332-8200
Northwest Underwater Construction LLC (Jesse Hutton)	(360) 518-3641 or (866) 270-1114
J. Cameron McKernan	(503) 232-7211
The Glosten Associates, Inc.	(206) 624-7850 or (206) 993-0626 pager

INSURANCE (Responsible Managers use only)

Durham and Bates		Office (800) 929-0171 or (503) 224-5170
Sean McCarthy	Cellular (503) 887-0383	Direct (503) 241-9228
Bob White	Cellular (541) 352-7429	Direct (503) 241-9215
Katrina Green	Cellular (503) 705-7002	Direct (503) 241-9214
Greg Ryerson	Cellular (503) 887-0243	Direct (503) 242-9405

NOTE: This list is provided for quick reference. Refer to Section 7 of the USCG approved SOPEP for complete reporting and notification requirements. Be sure to log all reporting and notification contacts (date/time, agency, and contact name).

— HME Interstate Trailer Response Equipment Inspection Checklist —
Onboard Response Equipment — WA DOE Rate B Transfers

Instructions: Check appropriate box when equipment is inspected/tested. Check OK if found to be correct and in good working order. Check Deficient if maintenance, replacement or items are missing. Include specific remarks/comments regarding condition of equipment, maintenance or replacement needed, or used or missing items. Write up Deficient items on a Parts Request or a Work Request, as appropriate.

18' INTERSTATE CARGO TRAILER:				DATE:
INSPECTOR/SUPERVISOR/SUPERINTENDENT:				
OK	Deficient	Quantity Required	Item	Remarks (be specific)
<input type="checkbox"/>	<input type="checkbox"/>	500'	12" x 8" containment boom	
<input type="checkbox"/>	<input type="checkbox"/>	2 ea	Boom tow bridal assemblies (¾" X 50' line/bridal)	
<input type="checkbox"/>	<input type="checkbox"/>	2 ea	Anchor/buoy systems	
<input type="checkbox"/>	<input type="checkbox"/>	1 ea	Skim-Pak 18000 skimmer	
<input type="checkbox"/>	<input type="checkbox"/>	1 ea	Yanmar L90 2" trash pump/308 gpm for skimmer	
<input type="checkbox"/>	<input type="checkbox"/>	1 ea	2"x 50' suction hose with quick connect (Cam-Locks)	
<input type="checkbox"/>	<input type="checkbox"/>	2 ea	2" x 50' discharge hoses with quick connects (Cam-Locks)	
<input type="checkbox"/>	<input type="checkbox"/>	2 ea	Bales SPC 300 sorbent pads (100 ea per bale)	
<input type="checkbox"/>	<input type="checkbox"/>	2 ea	Bales SPC 1900 sorbent sweeps (100 ft per bale)	
<input type="checkbox"/>	<input type="checkbox"/>	2 ea	Bales Sausage sorbent booms (40 ft per bale)	
<input type="checkbox"/>	<input type="checkbox"/>	2 ea	95-gallon open-top salvage drums	
<input type="checkbox"/>	<input type="checkbox"/>	2 ea.	Boxes waste bags – 4 mil. plastic (100 per box)	
<input type="checkbox"/>	<input type="checkbox"/>	1 Roll	Black Visqueen	
<input type="checkbox"/>	<input type="checkbox"/>	1 ea	Non-sparking scoop shovels (Aluminum)	
<input type="checkbox"/>	<input type="checkbox"/>	2 ea	Non-sparking scoop shovels (Fiberglass)	
<input type="checkbox"/>	<input type="checkbox"/>	2 ea	Plastic hand scoops	
<input type="checkbox"/>	<input type="checkbox"/>	2 ea	Metal 9 gallon totes	
<input type="checkbox"/>	<input type="checkbox"/>	1 ea	5 gallon container of boom cleaner	
<input type="checkbox"/>	<input type="checkbox"/>	5 ea.	Tyvek suits (Yellow)	
<input type="checkbox"/>	<input type="checkbox"/>	1 Boxes	Tyvek suits (White)	
<input type="checkbox"/>	<input type="checkbox"/>	1 Bag	Neoprene Gloves	
<input type="checkbox"/>	<input type="checkbox"/>	10 ea	Sets rain gear (size XL)	
<input type="checkbox"/>	<input type="checkbox"/>	5 pair	Safety Goggles (Splash Proof)	
<input type="checkbox"/>	<input type="checkbox"/>	5 pair	Over boots (3–XL, 2–L)	
<input type="checkbox"/>	<input type="checkbox"/>	9 ea	Half-face respirators (3–size L, 4–size M 2 – size S)	
<input type="checkbox"/>	<input type="checkbox"/>	5 case	Organic Vapor respirator cartridges	
<input type="checkbox"/>	<input type="checkbox"/>	1 Box	Dust Masks	
<input type="checkbox"/>	<input type="checkbox"/>	1 ea	First Aid Kit (size ZZZ-G)	
<input type="checkbox"/>	<input type="checkbox"/>	2 ea	Fire Extinguishers (1 – 10lb., 1 – 20lb.)	
<input type="checkbox"/>	<input type="checkbox"/>	2 ea	Rolls duct tape #398	
<input type="checkbox"/>	<input type="checkbox"/>	1 ea	Ring Buoy/Line	
<input type="checkbox"/>	<input type="checkbox"/>	1 ea.	Decon cleaning brush	
<input type="checkbox"/>	<input type="checkbox"/>	1 ea.	1 gallon spray can	
<input type="checkbox"/>	<input type="checkbox"/>	2 ea.	Spray bottles	
INSPECTOR'S PRINTED NAME:			SIGNATURE:	

This form is to be completed at the end of each quarter per HME policy.

Appendix 1

DIETRICH TRUCKING LLC. SPCC Plan

For

Port of Portland Terminal 4, Phase 1 Removal Action

Under a subcontract with

Wasco County Landfill and Hickey Marine Enterprises

June 2008

Introduction

This Spill Prevention Control and Countermeasure (SPCC) Plan has been prepared by Dietrich Trucking LLC (Dietrich), a subcontractor of Wasco County Landfill (“Wasco”), to satisfy the contractual specifications with Hickey Marine Enterprises (“HME”) developing a site-specific SPCC plan that covers the project scope of work (including equipment, materials, and activities) we have agreed to.

Federal regulations governing the requirement of fixed facility SPCC plans are found under 40 Code of Federal Regulations (CFR) 110 and 40 CFR 112.

SPCC Plan Elements

The Hickey Marine Enterprises (“HME”) project for which this SPCC plan was developed is the Port of Portland Terminal 4, Phase 1 Removal Action. The specific responsibilities of Dietrich Trucking, LLC includes the loading of trucks at the Wasco County Landfill Barge Unloading Facility (“WCLBUF”) and transporting dredge spoils to the Wasco County Landfill (“Wasco”).

A brief description of the elements of the SPCC plan for the project are as follows:

- **Introduction** - Provides a description of the purpose of preparing and implementing an SPCC plan, and identifying federal.
- **Site Information** - Identifies general site information useful in construction planning, recognizing potential sources of spills, and identifying the “person in charge” responsible for managing and implementing the SPCC plan.
- **Management Approval** - Provides a commitment from the management at Dietrich Trucking, LLC to control and cleanup any harmful quantity of oil or hazardous substance released to the waters or land of the State of Oregon.
- **Site Description** - Provides a general description of the site including site location, topography, soils, storm drainage system, and adjacent waterways that are of importance to our scope of work.
- **Planning and Recognition** - Identifies site-specific information including critical areas around the construction site, soil type and other pertinent site information, drainage pathways, and location of staging, fueling, and decontamination areas.
- **Spill Prevention and Containment** - Describes types of secondary containment or diversion structures that will be used to handle sources of spills at the project site.
- **Spill Response** - Outlines spill response procedures including assessing the hazard, securing spill response and personal protective equipment, containing and eliminating the spill source, and mitigating and removing the spilled material.
- **Reporting** - Describes federal, state, and Oregon DEQ notification and reporting requirements.
- **Program Management** - Identifies site security measure, inspection and audit requirements, and personnel training for construction personnel.
- **Attachments A** - EAP

Site Information

Name of Project	Port of Portland Terminal 4, Phase 1 Removal Action
Type of Project	Loading trucks at WCLBUF, transporting dredge spoils to Wasco.
Project Location	Wasco County Landfill Barge Unloading Facility 2649 River Road The Dalles, Oregon 97958
Primary Contractor	Dietrich Trucking, LLC. 7211 NE 43 rd Ave, Vancouver WA (360) 892-3881
Contractor Personnel Responsible for Spill Prevention	Richard Dietrich, (360) 518-0519 Todd Embury, (360) 518-0410 Mike Dalton, (360) 907-9412

Management Approval

This Spill Prevention Control and Countermeasure Plan (SPCC) plan is supported by management with the authority to commit the necessary resources including manpower, equipment, and materials to expeditiously control and remove any harmful quantity of oil or hazardous substances released to the water or land of the State of Oregon.

Dietrich Trucking LLC.

Richard Dietrich, Operation Manager

Site Description

- Description of the project and the project location.

The project site is located at Wasco County Landfill Barge Unload Facility and the Wasco County Landfill. The project consists of loading trucks and transporting dredge spoils to the Wasco County Landfill..

- Description of general site features (topography, surface water, and structures).

The site is located next to the Columbia River at the Bernert Barge company yard on River Road. The Dalles, OR. Property slopes towards the river. The trucks will be traveling on county road River Rd., US-30, I-84, US-197, County Road 115, Steele Rd. Truck transport route is quite hilly.

- Description and location of any known areas of soil or groundwater contamination. It should also be noted if there are no known areas of contamination on site.

There is no known soil or groundwater contamination at the WCLBUF or Wasco County Landfill access roads.

- Description of any environmental work to be conducted to determine on-site contamination (if applicable).

None.

Planning and Recognition

- Soil Type and Site Conditions.

The geology of the project site consists of unconsolidated sediment. The sediments consist of silts, sands, gravels, and cobbles. Substantial quantities of materials have been paved or undisturbed for many years. The WCLBUF is completely paved. Only the Wasco County Landfill access road is gravel.

- Critical Areas.

1. *All gentle sloping areas that drain towards the River.*
2. *Any slopes leading off the property.*
3. *Wasco County Landfill Site entrance.*

- Drainage Pathways.

Ditches along all roads.

- Designation of Staging, Fueling, Decontamination, and Waste Storage Areas.

Our company will fuel the onsite equipment using a company fuel truck. All trucks will be fueled off site at local card locks.

- Material Staging Area.

The material storage area will be located at North side of site next to the river in a containment bin.

- Equipment Staging Area.

Heavy equipment brought on site will include an excavator, dump truck, and pickup trucks. All equipment will be stored in a secured equipment parking area on site.

- Fueling and Staging Areas.

The fuel staging area will be located at the proposed "Staging Area. Fueling will be performed on-site by our company fuel truck. All fuel trucks are required to carry a spill prevention kit. The Spill Kit is to include a containment boom, absorbent spill pad, plastic sheeting, tarps, etc.

- Decontamination Area.

Will be determined at the time that any contaminated material is determined on site.

- Waste Storage Area.

Waste will not be stored. All waste will immediately be placed in trucks and delivered to the Wasco County Landfill provided at the site.

- Pre-existing Site Conditions.

Site is fully paved and uncontaminated.

Potential Sources of Spills Table

Assigned Source Number	Potential Spill Source	Planned Spill Prevention
Known Site Conditions (Materials/Equipment Brought On-site)		
1	Oil leak	Daily inspections of leak sources
2	Fuel spillage	Daily inspections of leak sources
3	Hydraulic hose leak	Daily inspections of leak sources
4	Blown hydraulic hose	Daily inspections of leak sources
5	Dredge spoils spillage at WCLBUF	Operator training and daily safety reminders. Plastic Liners, Tarps, Haze Locks
6	Dredge Spoils spills during transit	Operator training and good driving skills
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
Unknown Site Conditions		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		

Spill Prevention and Containment

- Known Potential Sources of Spills

Equipment Staging Area. An equipment leak from a fuel tank, equipment seal, or hydraulic line will be contained within a spill pad placed beneath leak sources. An undetected leak from parked equipment will be contained within the equipment staging area using absorbent towels. All catch basins in this area will be sealed with drain seals.

Fuel Staging Area. A spill during fueling operations will be contained with the spill prevention kit. The transfer of fuel into portable equipment will be performed using a funnel and/or hand pump, and a spill pad used to absorb any incidental spills/drips. A spill response kit will be located in all fueling trucks for easy access. The spill response kit will include containment boom, absorbent spill pad, plastic sheeting, tarps, etc.

- Unknown Potential Sources of Spills.

Unknown soil and groundwater contamination. N/A

Underground storage tanks. N/A

Underground pipeline. N/A

Contaminated Soil. Contaminated dredge spoils spillage during transportation activities will be contained by constructing a soil berm around the contaminated soil. The soil will be reloaded and transported to landfill. Our Spill Response Contractor will sample the spill surface to verify all spilled materials have been removed.

Material Staging Area. Will have perimeter containment to stop any soil flow to the river and there will be tarps between the truck and bunker.

Decontamination Area. N/A

Spill Response

Dietrich Trucking LLC understands the importance of immediate response to any spills of regulated materials. As such, we recognize the elements of Spill Response, and train our personnel and sub-contractors on the appropriate actions that must be taken and information that must be communicated to the “person in charge.” A detailed spill response plan has been developed for each potential spill source identified for the site.

Potential Spill Source 2:

FUELING OPERATION/FUEL STAGING AREA

<u>Spill Type:</u>	Diesel fuel
<u>Spill Response Equipment:</u>	Appropriate PPE (fuel resistant gloves, eye protection), absorbent pads, kitty litter, 30-gallon plastic bags, “non-sparking” shovel, plastic sheeting, and on 55-gallon open top drum.
<u>Spill Response Equipment Location:</u>	Spill Kit No. 1 located at the Equipment Staging Area, and Pickup truck.

Spill Response Procedures:

In the case of a release or spill in the Fueling Area, the following spill response procedures will be conducted:

1. Stop operations immediately.
2. Notify the “person-in-charge” for the project.
3. Assess the hazard. If the spill cannot be safely, and effectively controlled, direct safe evacuation of the area, and notify outside response services. Implement EAP as appropriate.
4. If the spill is “incidental” and can be safely and effectively controlled by contractor personnel, then:
If the spill is “incidental” and can be safely and effectively controlled by contractor personnel, then:
Secure the area.
Obtain appropriate spill response equipment and personal protective equipment.
Identify the source of the release. Determine the origin of the release. Is the release from a leaking fuel tank? A ruptured hydraulic hose? An overfilled fuel tank?
Shut off source/shut off equipment. If the release occurred as a result of fueling operations, turn off the fuel source. If the release occurred due to faulty equipment, make sure equipment is turned off.
Contain the spill.
Contain the spill using appropriate spill response equipment provided in the on-site spill response kit.
Protect sensitive areas.
5. Cleanup spill.
6. The fuel staging area is paved therefore any spills or releases in this area will not contaminate surface soil. Once the source and the spill have been contained, remove pads or booms used in the containment and place in a labeled drum for disposal. Remove visibly contaminated surface soil (wet, stained, and/or odorous) with a shovel (found in the spill response kit). Depending on the volume, removed soil is to be placed in either a labeled drum, or in a stockpile. If removed soil is to be placed in a stockpile, the stockpile must be placed on and covered with plastic (visqueen). Sandbags will be used to anchor the plastic sheeting down.
7. The “person-in-charge” will notify the appropriate local, state, and/or federal agencies.

Potential Spill Source 3:

HYDRUALIC FITTING LEAK

Spill Type: Hydraulic fluid

Spill Response Equipment: Appropriate PPE (fuel resistant gloves, eye protection), absorbent pads, kitty litter, 30-gallon plastic bags, “non-sparking” shovel, plastic sheeting, and on 55-gallon open top drum.

Spill Response Equipment Location: Spill Kit No. 1 located at the Equipment Staging Area, and Pickup truck.

Spill Response Procedures:

In the case of a release or spill in the Fueling Area, the following spill response procedures will be conducted:

1. Stop operations immediately.
2. Notify the “person-in-charge” for the project.
3. Assess the hazard. If the spill cannot be safely and effectively controlled, direct safe evacuation of the area, and notify outside response services. Implement EAP as appropriate.
4. If the spill is “incidental” and can be safely and effectively controlled by contractor personnel, then:

Secure the area.

Obtain appropriate spill response equipment and personal protective equipment.

Identify the source of the release. Determine the origin of the release. Is the release from a leaking fuel tank? A ruptured hydraulic hose? An overfilled fuel tank?

Shut off source/shut off equipment. If the release occurred as a result of fueling operations, turn off the fuel source. If the release occurred due to faulty equipment, make sure equipment is turned off. Contain the spill.

Contain the spill using appropriate spill response equipment provided in the on-site spill response kit.

Protect sensitive areas.

5. Cleanup spill.
6. The fuel staging area is paved therefore any spills or releases in this area will not contaminate surface soil. Once the source and the spill have been contained, remove pads our booms used in the containment and place in a labeled drum for disposal. Remove visibly contaminated surface soil (wet, stained, and/or odorous) with a shovel (found in the spill response kit). Depending on the volume, removed soil is to be placed in either a labeled drum, or in a stockpile. If removed soil is to be placed in a stockpile, the stockpile must be placed on and covered with plastic (visqueen). Sandbags will be used to anchor the plastic sheeting down.
7. The “person-in-charge” will notify the appropriate local, state, and/or federal agencies.

Potential Spill Source 4:

HYDRUALIC HOSE BREAKING

Spill Type: Hydraulic fluid

Spill Response Equipment: Appropriate PPE (fuel resistant gloves, eye protection), absorbent pads, kitty litter, 30-gallon plastic bags, “non-sparking” shovel, plastic sheeting, and on 55-gallon open top drum.

Spill Response Equipment Location: Spill Kit No. 1 located at the Equipment Staging Area, and Pickup truck.

Spill Response Procedures:

In the case of a release or spill in the Fueling Area, the following spill response procedures will be conducted:

1. Stop operations immediately.
2. Notify the “person-in-charge” for the project.
3. Assess the hazard. If the spill cannot be safely, and effectively controlled, direct safe evacuation of the area, and notify outside response services. Implement EAP as appropriate.
4. If the spill is “incidental” and can be safely and effectively controlled by contractor personnel, then:

Secure the area.

Obtain appropriate spill response equipment and personal protective equipment.

Identify the source of the release. Determine the origin of the release. Is the release from a leaking fuel tank? A ruptured hydraulic hose? An overfilled fuel tank?

Shut off source/shut off equipment. If the release occurred as a result of fueling operations, turn off the fuel source. If the release occurred due to faulty equipment, make sure equipment is turned off.

Contain the spill.

Contain the spill using appropriate spill response equipment provided in the on-site spill response kit.

Protect sensitive areas.

5. Cleanup spill.
6. The fuel staging area is paved therefore any spills or releases in this area will not contaminate surface soil. Once the source and the spill have been contained, remove pads our booms used in the containment and place in a labeled drum for disposal. Remove visibly contaminated surface soil (wet, stained, and/or odorous) with a shovel (found in the spill response kit). Depending on the volume, removed soil is to be placed in either a labeled drum, or in a stockpile. If removed soil is to be placed in a stockpile, the stockpile must be placed on and covered with plastic (visqueen). Sandbags will be used to anchor the plastic sheeting down.
7. The “person-in-charge” will notify the appropriate local, state, and/or federal agencies.

Potential Spill Source 5:**Dredge Spoils spillage at WCLBUF****Spill Type:**

Soil on asphalt paving

Spill Response Equipment:

Appropriate PPE (fuel resistant gloves, eye protection), absorbent pads, kitty litter, 30-gallon plastic bags, “non-sparking” shovel, plastic sheeting, and on 55-gallon open top drum.

Spill Response Equipment Location:

Spill Kit No. 1 located at the Equipment Staging Area, and Pickup truck.

Spill Response Procedures:

In the case of a release or spill on the haul route, the following spill response procedures will be conducted:

1. Stop operations immediately.
2. Notify the “person-in-charge” for the project.
3. Assess the hazard. If the spill cannot be safely, and effectively controlled, direct safe evacuation of the area, and notify outside response services. Implement EAP as appropriate.
4. If the spill is “incidental” and can be safely and effectively controlled by contractor personnel, then:
 - Secure the area.
 - Obtain appropriate spill response equipment and personal protective equipment.
 - Identify the source of the release. Determine the origin of the release. Is the release from the box or gate? Improper loading? Or haze lock location?
 - Contain the spill.
 - Contain the spill using appropriate spill response equipment provided in the on-site spill response kit.
 - Protect sensitive areas.
5. Cleanup spill.
6. The fuel staging area is paved therefore any spills or releases in this area will not contaminate surface soil. Once the source and the spill have been contained, remove pads and booms used in the containment and place in a labeled drum for disposal. Remove visibly contaminated surface soil (wet, stained, and/or odorous) with a shovel (found in the spill response kit). Depending on the volume, removed soil is to be placed in either a labeled drum, or in a stockpile. If removed soil is to be placed in a stockpile, the stockpile must be placed on and covered with plastic (visqueen). Sandbags will be used to anchor the plastic sheeting down.
7. The “person-in-charge” will notify the appropriate local, state, and/or federal agencies.

Potential Spill Source 6:

Dredge Spoils spillage in transport

Spill Type:

Soil

Spill Response Equipment:

Appropriate PPE (fuel resistant gloves, eye protection), absorbent pads, kitty litter, 30-gallon plastic bags, “non-sparking” shovel, plastic sheeting, and on 55-gallon open top drum.

Spill Response Equipment Location: *Anderson Environmental Contracting,
Phone: (360) 577-9194*

Spill Response Procedures:

In the case of a release or spill on the haul route, the following spill response procedures will be conducted:

1. Stop operations immediately.
2. Notify the “person-in-charge” for the project.
3. Assess the hazard. If the spill cannot be safely, and effectively controlled, direct safe evacuation of the area, and notify outside response services. Implement EAP as appropriate.
4. If the spill is “incidental” and can be safely and effectively controlled by contractor personnel, then:
 - Secure the area.
 - Obtain appropriate spill response equipment and personal protective equipment.
 - Identify the source of the release. Determine the origin of the release. Is the release from the box or gate? Improper loading? Or haze lock location?
 - Contain the spill.
 - Contain the spill using appropriate spill response equipment provided in the on-site spill response kit.
 - Protect sensitive areas.
5. The transportation route area is paved therefore any spills or releases on asphalt will not contaminate asphalt surface. The ditches and sides of transportation routes are not paved therefore any spills or releases in this area will contaminate the surface soil. Once the source and the spill have been contained, remove visibly contaminated surface soil (wet, stained, and/or odorous) with appropriate equipment. Depending on the volume, removed soil is to be placed in either a labeled drum, or dump truck.
6. Notify *Spill response contractor: Anderson Environmental Contracting, Phone: (360) 577-9194*
7. The “person-in-charge” will notify the appropriate local, state, and/or federal agencies.

Notification and Reporting

The “Person-in-Charge” will contact regulatory agencies regarding spill response activities. We will work with the HME General Superintendent, Project Superintendent or Site Superintendent to ensure the proper information and data is collected, so that it can accurately be communicated to the appropriate agencies. An overview of the reporting requirements is provided below as a reference.

Federal Reporting Requirements

- Any spill of oil which 1) violates water quality standards, 2) produces a “sheen” on a surface water, or 3) causes a sludge or emulsion must be reported immediately by telephone to the National Response Center Hotline at (800) 424-8802.
- Any oil, hazardous substance, or hazardous waste release which exceeds a reportable quantity must be reported immediately by telephone to the National Response Center Hotline at (800) 424-8802.
- Any emergency event that requires activation of the SPCC plan or a fire, explosion or spill of any amount that reaches navigable waters of the United States, must be reported in writing to the USEPA Regional Administrator within fifteen (15) days.
- If a discharge of more than 1,000 gallons of oil reaches waters of the U.S., or if two spill events, reportable under the Federal Water Pollution Control Act, occur within any 12 month period, a report must be submitted in writing to the USEPA Regional Administrator within 60 days.

Local Reporting Requirements

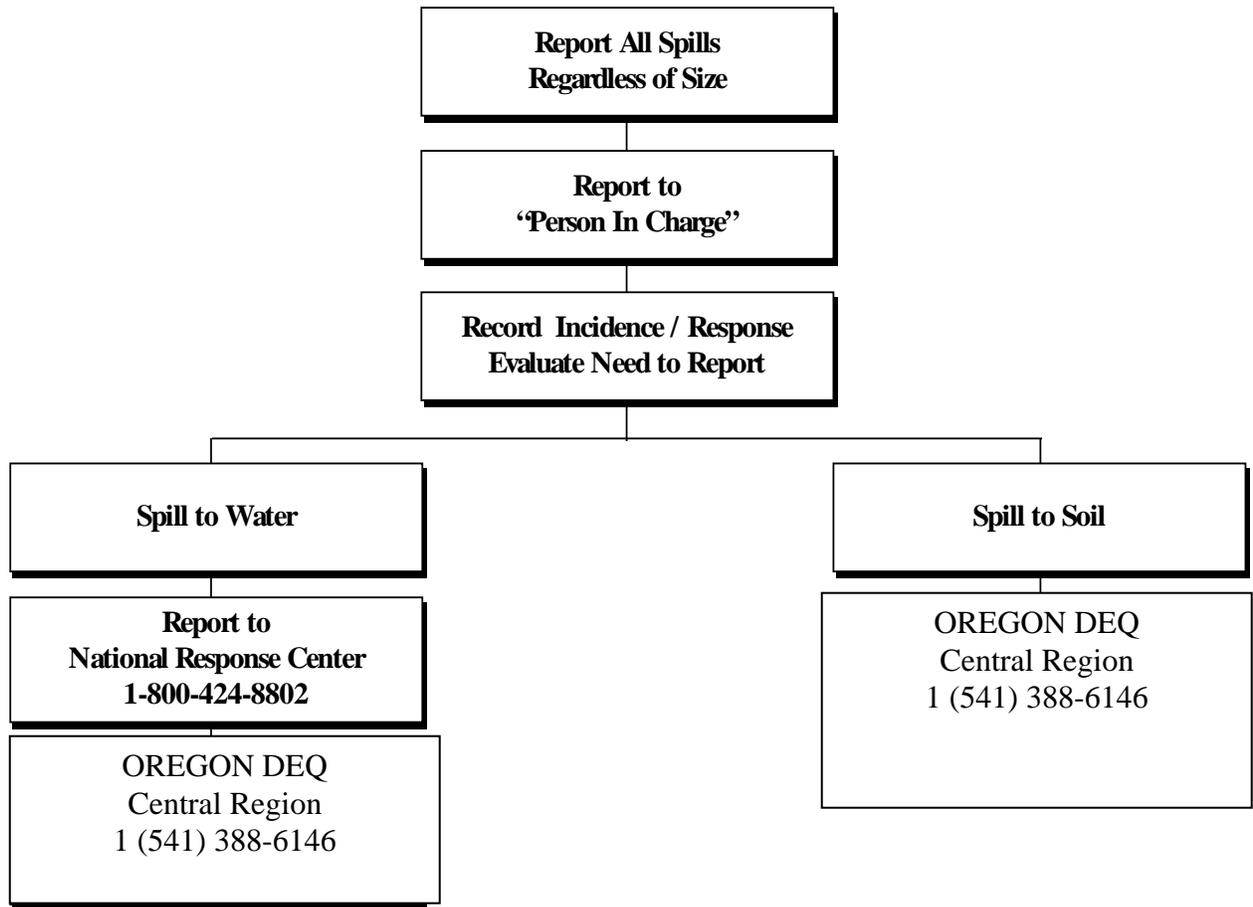
- In the event of a fire and/or explosion, contact the local (911) fire and police departments.
- If a spill enters the storm drainage system, contact Wasco County Public Works.

Hickey Marine Enterprises Reporting Requirements

Dietrich Trucking, LLC understands the importance of reporting incidents quickly. We understand these reporting requirements to include:

- All leaks, spills, and other incidents
 - Subcontractors must report to the Dietrich Trucking LLC. “Person-in-charge.”
 - Dietrich Trucking LLC must report to the regulatory agencies and the HME General Superintendent.
- Dietrich Trucking LLC and HME General Superintendent will determine the manner and time frame in which the contractor will report spills to the Project Office.

SPCC Plan Reporting



External Notification Reference List

Agency & Responsibilities	Contacts
Agency & Responsibilities	Contacts
<p><u>City of Dalles Fire Department</u></p> <ul style="list-style-type: none"> • Fire fighting • Emergency medical response • Community evacuation 	<p>phone :</p> <p style="text-align: center;">911</p>
<p><u>City of Dalles Police Department</u></p> <ul style="list-style-type: none"> • Police authority 	<p>phone :</p> <p style="text-align: center;">911</p>
<p><u>City of The Dalles Public Works Department</u></p> <ul style="list-style-type: none"> • Information on storm drains and other utilities 	<p>phone :</p> <p style="text-align: center;">(541) 296-5481</p>
<p><u>Wasco County Public Works/Health Department</u></p> <ul style="list-style-type: none"> • Information on storm drains and other utilities 	<p>phone :</p> <p style="text-align: center;">(541) 506-2600</p>
<p><u>Mid Columbia Medical Center</u></p> <ul style="list-style-type: none"> • Emergency medical treatment 	<p>phone :</p> <p style="text-align: center;">(541) 296-7220</p>
<p><u>OREGON DEQ CENTRAL REGION</u></p> <ul style="list-style-type: none"> • Reporting spills to land • SW Regional spill response team 	<p>phone :</p> <p style="text-align: center;">(541) 388-6146</p>
<p><u>National Response Center</u></p> <ul style="list-style-type: none"> • Reporting spills to water 	<p>phone :</p> <p style="text-align: center;">(800) 424-8802</p>

Program Management

The management of the implementation of this SPCC plan is the responsibility of Dietrich Trucking LLC “person in charge.” As such, we recognize that periodic review of material and equipment storage practices and equipment integrity and supplies is important to our success in implementing this SPCC plan. Also, we recognize the importance of a secured facility to protect against accidents and vandalism that may result in a spill of material that threatens human health or the environment. Our procedures to address these issues are provided below.

- Site Inspections.

Daily site inspections are conducted throughout the day to ensure that spill controls are in place and remain effective.

Dietrich Trucking LLC will conduct inspections at the site at least weekly, or more often as required.

- Site Security.

The fueling, and staging area for the project is located on site and only authorized personnel are permitted into this specific project area.

The master flow and drain valves for all tanks will be securely locked in the closed position when not in operation.

- Personnel Training.

Dietrich Trucking LLC employees will be trained on the contents of this SPCC plan including spill source and receptor recognition, spill prevention planning, spill prevention techniques, spill response measures, and spill reporting protocol.

- Responsibilities of On-site Personnel.

All personnel have responsibility for spill prevention. Any Dietrich Trucking LLC or sub-contractor employee who notices a leak will respond as appropriate based on their training, or if a spill has occurred, they will assume a defensive posture by avoiding the area and immediately notifying the “person in charge.”

- Person-in-Charge.

*The designated person responsible for assessing spills, implementing this SPCC plans, and contacting regulatory agencies is: **Richard Dietrich** of **Dietrich Trucking LLC**. His alternate is **Todd Embury**.*

- Emergency Services.

The local fire department is responsible for emergency containment procedures when called to the site. The fire department takes measures necessary to prevent fire and explosion, and to protect people and property in the event of a fire or explosion.

- Spill Response Contractor.

The spill response contractor is responsible for cleanup activities required as a result of spills or leaks when Dietrich Trucking LLC does not have the training, equipment, or materials to cleanup spills.

Spill response contractor: Anderson Environmental Contracting

705 Colorado Street, Kelso WA

Phone: (360) 577-9194

APPENDIX C2

**WHEELER BAY (ASH CREEK)
ENVIRONMENTAL PROTECTION PLAN (EPP)**

**CONSTRUCTION ENVIRONMENTAL PROTECTION PLAN
(E.P.P.)**

**TERMINAL 4 PHASE I REMOVAL ACTION
WHEELER BAY STABILIZATION
PORT OF PORTLAND
Portland, Oregon**

Submitted to:

**Ash Creek Associates, Inc.
9615 Southwest Allen Blvd., Suite 106
Portland, OR 97005-4814**

Submitted by:

**Envirocon, Inc.
3330 NW Yeon Suite 240
Portland OR 97210**

Revision 1

Submittal date:

June, 5 2008

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A. Environmental Protection Plan

Shown below is the Environmental Protection Plan in accordance with Section 015719 Terminal 4 Wheeler Bay Stabilization Construction Specifications and Section 050332-01-5.1.4 Appendix A of the Design Analysis Report. Both references are draft documents that have not been reviewed or approved by USEPA and its federal, state and tribal partners and are subject to change in whole or in part. The Environmental Protection Plan includes Envirocon's best management practices (BMPs) for near water construction work.

B. Erosion and Turbidity Control

Selected stormwater Temporary Erosion and Sediment Controls (TESC) will be installed in accordance with the design details and drawings and Best Management Practices (BMPs) Envirocon will inspect these measures on a daily basis and will be documented in accordance to Envirocon's Quality Control Plan. In the event of TESC failure, Envirocon will implement added measures consistent with current BMPs.

C. Spill Prevention: Of Fuel oil, oil, and solvents

1. Flammable materials will be stored in flammable storage cabinets, while non-flammable materials will be stored in portable storage units.
 - a. All containers will be kept tightly closed and sealed when not in use.
 - b. All containers will be clearly labeled as to contents and capacity.
 - c. Flammable or combustible liquid containers of less than 5 gallons capacity shall be stored in a flammable storage cabinet when not in use.

- d. Flammable or combustible liquids shall be kept in one of the following:
 - (1) The manufacturer's original shipping container.
 - (2) A hand portable fire safety container (not to exceed 5 gallons).
 - (3) An approved double walled above ground storage tank.
- 2. Fuel transfers
 - a. All fuel transfers will be monitored and leaks or spills will be immediately cleaned up and corrective action will be taken.
 - b. All spouts and funnels must be of metal construction.
 - c. All fuel transfer hoses will be inspected and maintained in good condition.
- 3. Fuel Requirements
 - a. Diesel equipment will be fueled with ultra low-sulfur diesel.

D. Response to spills

- 1. Organization and responsibilities
 - a. Envirocon shall be responsible for spills related to the scope of their work.
 - b. This spill contingency plan conforms to all Federal and State requirements.
 - c. All spills will be documented in accordance with the Site Health and Safety plan.
- 2. Reporting / Notification:
 - a. **REPORT SPILLS TO YOUR SUPERVISOR IMMEDIATELY REGARDLESS OF SIZE!** Provide the following information at a minimum:
 - (1) information on material spilled,
 - (2) quantity,
 - (3) personnel injuries, and
 - (4) immediate life threatening hazards.
 - b. Spill notification is as follows:

Reporting from Field to Project Manager: Skip Simpson
Office: 503-285-6164
Cell: 503-930-1985

Reporting to Project Superintendent: George Lotze
Office: 503-285-6164
Cell: 503-784-1203

c. The senior Envirocon supervisor on site shall report the spill immediately to the Ash Creek Associates and the Port. The Port will be responsible for notifying the appropriate agencies.

4. Pre-positioned response equipment

- a. At least one “spill kit” will be maintained on site for the purpose of cleaning up refueling, lube, or general equipment servicing spills.
- b. Kits will contain suitable sorbent materials for cleaning up petroleum spills. For petroleum spills this includes:
 - (1) Oleophilic/hydrophobic sorbent pads. Sorbent pads are appropriate for wiping up small petroleum based spills on solid surfaces. These pads are also appropriate for removing light oil sheens off of water surfaces (including accumulated water inside of storage containments).
 - (2) Granular solid sorbents (i.e., “kitty litter”). Litter is appropriate for adsorbing oils spilled on solid surfaces and/or the ground where it can be mechanically gathered up completely after sorbing spilled liquids. These sorbents are not appropriate for spills on water surfaces.
 - (3) Oleophilic/hydrophobic sorbent boom or pillows (i.e., “sausage boom”). Sorbent booms of this type are appropriate for preventing oil spills from spreading on solid surfaces. Sorbent booms can also be used for removing sheen oils or other light oils from water surfaces.
 - (4) Oleophilic/hydrophobic oil snares or mops. These devices are appropriate for removing non-spreading, heavy oils from water surfaces.
 - (5) Waste containers.
 - (6) Nitrile gloves.

5. Appropriate response procedures

It is not appropriate to dictate the specific response procedures that will be used in that each incident is unique. In the event of a release or spill of a hazardous material, the following general response guidelines will be followed where appropriate.

- a. Take care of injured personnel as a priority.
 - (1) Injured personnel with any indication of broken bones should not be moved.
 - (2) If an injured person is in a life-threatening situation, the life-threatening circumstances should be removed or the injured person should be moved with the injury supported as best as possible.
 - (3) First aid and/or decontamination procedures will be implemented as appropriate.
 - (4) First aid will be administered to injured/contaminated personnel.
- b. Prevent further injury or contamination
 - (1) First responders do not have the necessary equipment or support to perform high risk tasks and should perform only those defensive, low-risk tasks that they judge can be performed with minimal risk.
 - (2) Keep non-essential persons/ vehicles out of the area.
 - (3) All personnel will act to prevent any non-essential persons from coming in contact with spilled materials by alerting other nearby persons.
 - (4) Without taking unnecessary risks, personnel will attempt to stop the spill at the source. This may involve activities such as righting a drum, closing a valve, or temporarily sealing a hole with a plug.
- c. Evaluate hazards before responding or cleanup.
 - (1) Appropriate air monitoring will be implemented by the site safety officer.
 - (2) The supervisor will promptly make an assessment of the spill / release and direct confinement, containment, and control measures.
- d. Contain the spilled materials to prevent further spreading.

- (1) Place sorbent materials downstream of spreading spills.
 - (2) Construct a temporary containment berm utilizing onsite clay or soil.
 - (3) Dig a sump.
 - (4) Install a polyethylene liner.
 - (5) Divert the spill material into a sump.
 - (6) Place drums under the leak to collect the spilling material before it flows over the ground.
 - (7) Transferring the material from its original container to another container.
- e. Prior to cleaning up spilled materials
- (1) Ensure all unnecessary persons are removed from the hazard area.
 - (2) Put on protective clothing and equipment.
 - (3) If a flammable material is involved, remove all ignition sources and use spark and explosion proof equipment for recovery of material.
 - (4) Remove all surrounding materials that could be especially reactive with materials in the waste.
 - (5) Determine the major components in the waste at the time of the spill.
 - (6) If wastes reach a storm sewer, try to dam the outfall by using sand, earth, sandbags, etc. If this is done, pump this material out into a temporary holding tank or drums as soon as possible.
 - (7) Place all small quantities of recovered liquid wastes (55 gallons or less) and contaminated soil into drums for incineration, recycling or removal to an approved disposal site.
 - (8) Spray the spill area with foam, if available, if volatile emissions may occur.

E. Procedures to Prevent Offsite Tracking of Sediments

1. Decontamination Procedure

- a. Envirocon will utilize dry-type equipment decontamination. Equipment that has come in contact with potentially contaminated materials will receive an initial dry decontamination. The dry decontamination method will consist of shoveling, scraping and brushing all loose materials from the equipment on a decontamination pad or onto an impacted area.
- b. If deemed necessary, wet method decontamination will be utilized prior to final demobilization. This will be done on a case-by-case basis after a thorough dry decontamination has been completed and equipment has been inspected.
- c. The decontamination pad, if needed, will be located adjacent to the work area. The ground surface will be prepared so that it slopes to one corner of the pad area and with a berm around the perimeter.
- d. A hole will be dug at the low end and a collection drum or sump will be installed.
- e. Liner material will be placed directly on the graded work area to extend over the berm with an opening at the sump. A pump will be placed in the sump for transferring decontamination water to the water treatment system or to a holding tank.
- f. Decontamination wastewaters will be consolidated, sampled and disposed of offsite. Analytical sampling performed will be dependent on disposal facility requirements.

F. Methods to Reduce Noise, Dust and Diesel Smoke

1. Dust Control

- a. Water trucks will be used to control dust in excavation areas, stockpiles and hauling routes.

2. Noise Control

- a. Envirocon will work within stated operational hours and shall comply with local noise control regulations.

3. Diesel Smoke

- a. Envirocon will maintain all equipment optimally, thus reducing emissions.

APPENDIX D1

**DREDGING AND CAPPING (HICKEY MARINE)
TRANSPORTATION AND DISPOSAL PLAN (TDP)**

APPENDIX D1

TRANSPORTATION AND DISPOSAL PLAN

TERMINAL 4 PHASE I REMOVAL ACTION PORT OF PORTLAND, PORTLAND OREGON

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Prepared for

Port of Portland
Portland, Oregon

Prepared by

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June 2008

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1 INTRODUCTION

This Transportation and Disposal Plan (TDP) is an appendix to the Removal Action Work Plan (RAWP) and is one of the design documents submitted to the U.S. Environmental Protection Agency (USEPA) for the Phase I Removal Action at the Terminal 4 Removal Action Area. The location of the site and the full scope of the Phase I Removal Action are discussed in the RAWP. The scope of the Phase I Removal Action includes off-site disposal of dredged sediment, encountered debris, potentially excavated capping materials, and other waste that will be generated in implementing the Removal Action. The purpose of this document is to provide plans for managing these materials, including describing:

- Details regarding the transportation of dredged materials, including loading materials onto barges, adding drying reagent to the sediments, transferring materials from barges to trucks, and transport by truck to the disposal facility
- Precautions that will be used while mixing sediments, and during transport and disposal of the material
- Contingencies for any spills that might occur
- Details regarding the disposal of waste materials, including the disposal facility location

This revised and updated TDP incorporates details of the transportation and disposal developed by the Contractor, Hickey Marine Enterprise Dredging, in their work plan. The following sections describe methods that will be applied to achieve the objectives of safely disposing of all wastes generated during the Phase I Removal Action with no off-site tracking of contamination.

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2 TRANSPORTATION

The loading and transportation of dredged materials and waste from the Removal Action Area are described in the following sections. In general, dredged sediment will be loaded into haul barges and taken to a transloading facility, where the material will be transferred from the barges to trucks for transportation to disposal facilities. Upland soils and other wastes may be loaded directly onto trucks for transport to disposal facilities. The waste materials will be delivered to the disposal facilities by truck.

The haul route from the site to the disposal facility, including the location of the transloading facility, has been determined by the Contractor. The Contractor has provided a plan for transportation and disposal that identifies:

- The disposal facility
- Methods of transportation and haul routes
- The location of the transloading facility and schematic diagrams depicting operations at such facilities
- Amendments and anticipated mixture ratios needed to meet waste acceptance criteria
- Methods for mixing sediment with the drying agent and the locations for performing sediment amendment
- Source of amendments and method to deliver amendments to the mixing location
- The Oregon Department of Environmental Quality (DEQ) permit for the transfer stations

2.1 Loading

2.1.1 Barge Loading

Water-tight haul barges will be used to transport sediment from the dredge area to the transloading facility. The dredge will load sediment directly into the barges. Loading operations will be managed to protect water quality and minimize the loss of dredged material through the implementation of best management practices (BMPs). BMPs will include, at a minimum, sealing barge scuppers and repairing holes in the deck fence to prevent sediment from draining off the barge, not overfilling barges, and not grounding barges. A schematic diagram of the barge loading operation is provided as Figure 1.

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Debris encountered while dredging will be loaded onto barges for transport. Large debris will be separated from other sediment on the deck of the barge to facilitate unloading it at the transloading facility. Prior to unloading debris from barges, the size of the debris will be reduced, as necessary, to fit it into the trucks that will be used to take it to the disposal facility.

The Contractor has identified three barges that will be used to haul sediment from the site to the transloading facility:

- *Umpqua 2* (2,500-ton capacity)
- *Umpqua 3* (2,500-ton capacity)
- *Chetco* (3,000-ton capacity)

2.1.2 Truck Loading

Lined trucks will be used to haul excavated upland materials and other wastes to disposal facilities. Truck-loading operations will be performed on lined containment pads. Containment pads will be designed with sumps to remove rainwater or other fluids. Collected fluids will be contained and treated prior to discharge. The Contractor will hire a permitted service to collect the fluids and properly discharge the treated material.

BMPs will be used to prevent releases or off-site tracking of contaminants from loading areas. BMPs will include, at a minimum, immediately picking up any material spilled on the containment pad to keep truck tires from rolling over it and to minimize contamination of rainwater that is collected on the containment pad. Trucks, including all tires and all surfaces near the truck bed that could collect spilled material, will be thoroughly inspected before the truck is cleared to leave the containment pad.

Debris encountered while performing upland excavation will be loaded into trucks for transport to the disposal facility. Large debris will be crushed or cut, as necessary to fit it into trucks, prior to loading.

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2.2 Sediment Drying

The sediment will be dried by amendment to meet the waste acceptance criteria of the Wasco County Landfill, The Dalles, Oregon. The drying agent is an ash-based byproduct of paper production obtained from Georgia-Pacific LLC in Camas, Washington. This product has been used previously to dry materials sent to the Wasco County Landfill. The anticipated amount of drying agent that will be added to the sediment is 4 to 5 percent by weight; this mixture ratio will be adjusted as necessary to absorb free liquids in the material before it is sent to the landfill.

2.3 Transloading

Sediment and other materials from the site will be transloaded from barges to trucks to transport it from the site to the disposal facility. The transloading facility is the Bernert Barge Lines Terminal in The Dalles, Oregon. This facility is a solid waste transfer station permitted by DEQ (Wasco County Landfill Barge Unloading Facility, Permit Number 500, issued May 28, 2003, expires April 10, 2013). As described in Section 2.1.2, truck-loading operations will be performed on lined containment pads. Containment pads will be designed with sumps to remove rainwater or other fluids. Collected fluids will be contained and treated prior to discharge. The sides of trucks will be protected with shields or spill aprons from material that may drop prematurely from transfer buckets. Material deflected by shields or spill aprons will land on secondary containment pads outside the area traveled by the trucks to avoid tracking material on tires or wheels. Figure 2 is a schematic diagram of the transloading facility, showing the locations of equipment that will be used to transfer sediment from barges to trucks.

The facility for transloading sediment from barges to trucks includes cantilevered spill aprons to prevent material from falling into the water between the barge and the dock. Spill aprons will direct any dropped material back into the barge or onto other contained areas. The clamshell bucket that is used to remove sediment from the transport barge will deposit the sediment into a large metal box. An excavator will be used to load sediment from the transload box to the lined trucks. The use of the excavator for loading the trucks will allow

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for greater control in loading the trucks, reducing the potential for spilling material or overloading trucks. The travel of buckets used to transfer sediment from barges to trucks will be limited such that they are always above the transport or support barges, the spill aprons, or the lined loading area.

BMPs will be used to prevent releases or off-site tracking of contaminants from loading areas. BMPs will include, at a minimum, the following items. The movement of buckets or other equipment used to transload sediment will be restricted to a path where the barges, spill aprons, or containment pad will catch dropped material. Material spilled on the containment pad will be immediately picked up to keep truck tires from coming into contact with such material and to minimize contamination of rainwater that is collected on the containment pad. The sides, wheels, and tires of trucks will be protected from spilled material through the use of barrier shields or spill aprons. Trucks, including all tires and all surfaces near the truck bed that could collect spilled material if barriers malfunction, will be thoroughly inspected before the truck is cleared to leave the containment pad.

2.4 Barge Water Handling

Water that contacts sediment on the barges will be removed for treatment prior to discharge. The Contractor may elect to remove excess water at Terminal 4, at a water treatment facility, and/or at the transloading facility. The three sources of water in the barge are water dredged with the sediment, precipitation, and spray from the river. Collected precipitation and spray may be minimized by covering the load and side rails of the barge with a tarp during transport from the site to the transloading facility. Tarping the load will be unnecessary if the transloading facility or water disposal facility is sufficiently close to the site that water gain during transport is minimal. Otherwise, tarps covering the load, if used, will be secured to the barge once the barge has been loaded with sediment. The tarps, if used, will be removed once the barge is secured at the transloading facility, prior to beginning to unload the barge. Tarping of barges may not be required if calm conditions, no excessive spray, or dry weather prevail during barge transport from the Terminal 4 site to The Dalles. Dry weather, sun, and moderate winds will actually help dry the sediment if the load is uncovered and, therefore, further minimize the potential for dripping and

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spilling material during offloading. As stated in the Biological Assessment, the barges will be covered if weather warrants. Weather with high winds and hot, dry weather will trigger the need for covering.

Due to settlement of solids during transport, water may collect on the surface of the sediment in the barge. In this case, the Contractor may choose to pump water from the surface of the sediment in the barge to holding tanks or vacuum trucks at the transloading facility prior to dewatering the sediment. The Contractor may also work the sediment in the barge with loading equipment at the transloading facility to consolidate ponded water, create sumps for removing water, and facilitate evaporation of water. All water removed from the barges will be collected in tanks or vacuum trucks at the transloading facility for treatment and disposal.

Prior to transloading sediment from the barges to trucks, a dewatering agent will be mixed with the sediment, as needed, on the barge or in the transload box to eliminate free liquids. Once the barge has been emptied of sediment, and prior to releasing the barge from the transloading facility, any remaining water will be pumped to the holding tank or vacuum truck at the transloading facility.

After a barge has completed the final trip with sediment from the Phase I Removal Action, the deck and side rails of the barge will be decontaminated prior to releasing the barge from the transloading facility. Water collected on the barge during decontamination will be pumped to the transloading facility for proper disposal.

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3 ENVIRONMENTAL PROTECTION

Precautions to protect the environment will be implemented throughout the removal action, including during transfer to upland transport and transportation to the disposal site.

Environmental controls for these processes, and contingencies for potential spills, are outlined below, but are discussed in greater detail in the Environmental Protection Plan.

3.1 Spill Prevention

BMPs will be implemented during transport to prevent accidental spills on land. The primary goals of the environmental controls and BMPs at the site, during transport, and at the upland transfer facility will be:

- Prevent spilling contaminated material or sediment drying reagent into surface water at the site, in transit, or at the upland transfer facility.
- Prevent tracking contaminated material off-site or into any area where it may contact water that would be uncontrolled by containment measures at the transfer facility.
- Control surface runoff from the upland portion of the transfer facility so that contaminated runoff does not enter the river.
- Prevent material spilling from the truck during transport from the transfer facility to the disposal facility.

Operations will be visually observed at all times. If there is a threat of the above goals not being met, work will be stopped and controls will be modified as needed until these goals are met. If, despite these controls, accidental releases of material occur, the released material will be recovered, conditions leading to the accident will be corrected, and the releases will be documented and reported to USEPA at that time. BMPs for transport include:

- No excessive piling of material in the haul barge or other methods of transport and tarping (or similar covering) as required to contain material in transport containers
- Visual inspection of the haul barge deck area (and removal of any material to barge interior) prior to transport from the site
- Overwater spill apron at transloading facility
- Spill/material return control curbing on the dock at the transloading facility

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- Water-tight barges and trucks to prevent leakage during transport
- Addition of the drying agent at a minimal height above the sediment surface to prevent windborne loss and spilling of the drying agent or sediment
- Slow addition of the drying agent to avoid spills
- Under-loading of trucks to prevent sloshing loss
- Clean tarping of truck loading area to prevent tire contact with materials
- Spill apron to prevent spilling contaminated material on the outside surfaces of trucks
- Visual inspection of the truck loading area and the truck prior to releasing the truck and visual inspection of the access route for tracking prior to releasing the truck from the offload facility to public roads
- Cleaning of tires (if necessary) before leaving offloading site including dry brushing and/or tire/wheel washing
- Decontamination or disposal of transloading area and all equipment used in transloading

3.2 Contingencies for Spills

The marine and trucking contractors and their subcontractors will be informed prior to start of construction that they will be hauling contaminated materials. They will acknowledge in writing their understanding and acceptance of responsibility for preventing spills and conducting spill contingency procedures in the event of spills. If a barge accidentally spills (e.g., turns over, breaks, or collides with something) the following will immediately occur:

- Once equipment is under control and safety of personnel is ensured, the tug operator will note the exact area of the spill by recording Global Positioning System (GPS) coordinates and visual notes (e.g., 300 yards upstream of visible landmark). The operator will also note to the best of their ability the approximate quantity of material lost (i.e., 25 percent of barge load).
- If visual sheen or oil is present on the water, the tug operator will notify the Construction Quality Assurance Officer (CQAO) and the spill response team immediately via radio or cell phone. The telephone number for the Oregon Emergency Response System (OERS) is (800) 452-0311. The telephone number for

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- the USEPA spill response hotline is (206) 553-1263. Both the OERS and USEPA spill-response numbers will be called immediately.
- The CQAO will notify USEPA immediately of the spill no matter the quantity of material spilled. The CQAO will notify the USEPA National Response Center, at (800) 424-8802, if a reportable quantity of a hazardous substance is released to the environment.
 - As notified, the spill response team will deploy booms, absorbent materials, etc. and operate oil skimming boats as necessary to contain the sheen/floating oil to the extent practicable. Cleanup will be completed as soon as possible and take precedence over normal site-related activities.
 - The CQAO will set up a site meeting with USEPA to determine further actions.
 - In consultation with agencies, further actions may include conducting bathymetry or other testing in the spill area to determine the location of spilled material, dredging spilled material for reloading onto another barge, and subsequent monitoring of the spill location after dredging. Depending on the quantity of the spill, all of these actions may not be necessary or other actions may be warranted.

If a truck accidentally spills (e.g., collision during transport or turns over) the following will immediately occur:

- Once the safety of personnel is ensured, the truck driver will estimate to the best of their ability the approximate quantity of material lost (e.g., 25 percent of load).
- The driver will notify OERS, USEPA, the CQAO, and the spill response team immediately via radio or cell phone. The telephone number for OERS is (800) 452-0311, and the telephone number for the USEPA spill response hotline is (206) 553-1263. The CQAO will notify the USEPA National Response Center, at (800) 424-8802, if a reportable quantity of a hazardous substance is released to the environment.
- As notified, the spill response team will deploy booms, absorbent materials, etc., as necessary to contain the material to the extent practicable. Cleanup will be completed as soon as possible and take precedence over normal site-related activities.

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- The CQAO will notify USEPA for a site meeting and determination of further actions.
- In consultation with agencies, further actions may include conducting testing in the spill area to determine the extent of the spilled material (if not on paved surfaces), and removing all affected materials. Depending on the quantity of the spill, these actions may not be necessary or other actions may be warranted.

3.3 Transloading Facility

The primary BMP to avoid releasing contaminants at the transloading facility is visual monitoring of the loading operation to avoid spilling material that is being transferred from the barge to the trucks (see Section 2.3). The operator will be required to maintain the swing path of the transfer bucket over the spill apron and open the transfer bucket the smallest amount possible to unload the material into the transload box slowly to avoid spilling material. An excavator will be used to mix sediment with drying agent in the transload box and to transfer sediment to trucks. The excavator, with greater control and a much smaller bucket than the dredge and clamshell bucket, will load trucks with very low likelihood of spilling material or overloading trucks. The loading area will be lined to collect any material that potentially spills in the direct vicinity of the trucks. During loading, visual monitoring will be conducted continuously by the transloading personnel and transloading oversight contractor to detect any spilled material and prevent it from being tracked off-site. Spilled material will be removed from the liner until no visual signs of the material remain. If the material cannot be adequately removed, the liner will be removed for disposal and replaced with a new liner.

Following loading of each truck, the loading area will be inspected for spilled material and the container of the truck will be covered. Spilled material will be removed and placed into the barge. Material on the outside of the truck will be removed prior to releasing the truck from the transloading facility. Contaminated material that cannot be removed from the containment pad prior to moving the truck will be covered to avoid contaminating tires. Following moving of the truck, the liner will be removed for disposal and replaced.

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The transloading facility will be lined and bermed to contain contaminants. Rainfall runoff will be collected in sumps for removal and disposal.

3.4 Transloading Facility Soil Sampling

The Removal Action Construction Sampling and Analysis Plan (SAP) (Appendix I to the RAWP) will be revised to incorporate requirements for monitoring soil for evidence of off-site tracking of contaminants. An inspection of the transloading facility is scheduled for early July; details of the monitoring program will be resolved during the site inspection.

The SAP will contain provisions for:

- Selecting representative sampling locations (sampling locations shall include, at a minimum, one location on the designated truck path near the entry to the loading containment pad, one location on the designated truck path near the exit from the loading containment pad, one location on or near the designated truck path near the exit from the transloading facility—i.e., near the beginning of a public road, and one location within the transloading facility but not on or near the designated truck path—a control location).
- Sampling soil prior to beginning use of the transloading facility (sample locations should be as near as possible to the sampling locations indicated above, recognizing that sampling such locations may be impractical and unhelpful if the facility surface is paved). (The plan may include the creation of sampling locations if the facility surface is paved or gravel. Sampling locations may be prepared by removing a small area of pavement or gravel and filling the area with clean sand. The sand will then serve as the sampling medium during the operation of the transloading facility.)
- Sampling soil weekly during the operation of the transloading facility. Created sample locations may be used for the weekly sampling.
- Sampling soil after the operation of the transloading facility. (Post-Operation sampling will be performed after operations have been completed and temporary facilities, such as containment liners, have been removed. Created sample locations may be used for the Post-Operation sampling.)

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- Requiring expedited analysis of Post-Operation samples within two weeks of collecting the Post-Operation samples to allow delivery of a statistical evaluation of off-site tracking data.
- Selecting analytical parameters, methods, and chemical quality assurance parameters.
- Maintaining the integrity of samples, sampling field data, and analytical laboratory data.

The transloading facility soil sampling data will be used to ascertain whether the use of the facility for the project has had a significant impact on surface contamination at the facility. Data from the pre-operation, weekly, and post-operation samples will be compared to assess whether there is evidence of contamination increases attributable to the project. The data from each location will be evaluated separately to determine where, if anywhere, the project has had an impact. If the sampling data indicate that the project has had an impact on the transloading facility, appropriate follow-up actions—which may include additional sampling, containment, or decontamination—will be proposed. Data from the sampling program and observations of transloading operations will be evaluated during the course of the project and could trigger any of the follow-up actions, if appropriate, during the project; follow-up actions will not necessarily be limited to the end of the project after all weekly and post-operation samples have been analyzed.

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4 DISPOSAL

Material from the removal action will be taken to the Wasco County Landfill for disposal. The Contractor has established a contract for disposal. The haul route from the transloading facility to the landfill is illustrated in Figure 3.

The following subsections describe waste profiling for disposal, operations at the disposal facility, and the administrative requirements for documenting and tracking the disposal process.

4.1 Disposal Facility

Upon entering the disposal facility, shipments of sediment and other Removal Action materials may be sampled by the facility operator to confirm that the materials meet the waste acceptability criteria. Truck drivers will conform to the facility's health and safety procedures at all times while on-site.

Shipments will be weighed at the disposal facility to determine the quantity of material sent to the disposal facility during the Phase I Removal Action. Weight records will be maintained in the project file as described in Section 4.4.

4.2 Waste Profiling

Sediment cores were collected from the Slip 3 dredge area in December 2007. The results of the analyses, including Toxicity Characteristic Leaching Procedure (TCLP) tests, were presented in Appendix G to the Design Analysis Report. The concentrations of TCLP constituents are below the regulatory levels; therefore, the sediment is not characteristically toxic. Because the sediment does not meet any of the other regulatory definitions of hazardous waste, the sediment will be managed at a landfill for nonhazardous waste. The characterization data will also be provided to disposal facilities and used to characterize the sediment for disposal.

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4.3 Compliance Status

The USEPA Region 10 Off-Site Rule Coordinator confirmed by e-mail on March 25, 2008, that the Wasco County Landfill meets the requirements for accepting material from a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) removal action. Documentation of Off-Site Rule compliance verification is being maintained in the project waste management files.

4.4 Documentation and Tracking

Accurate documentation of transport and disposal will be collected and tracked during the transportation process. The approximate volume of material loaded onto the receiving haul barge and the date of the removal operation will be recorded in the field log. Each shipment to the disposal facility will be accompanied by a bill of lading. Records of shipments sent to the disposal facility and logged into the disposal facility will be reconciled on a daily basis by the CQAO. The disposal facility will provide weight records and confirmation of shipments received at the facility to the CQAO. The CQAO will maintain a log of shipments to the disposal facility and the weight of each shipment throughout the Phase I Removal Action. The gross, net, and tare weights of all loads of material removed from the site will be presented in a table in the Removal Action Completion Report.

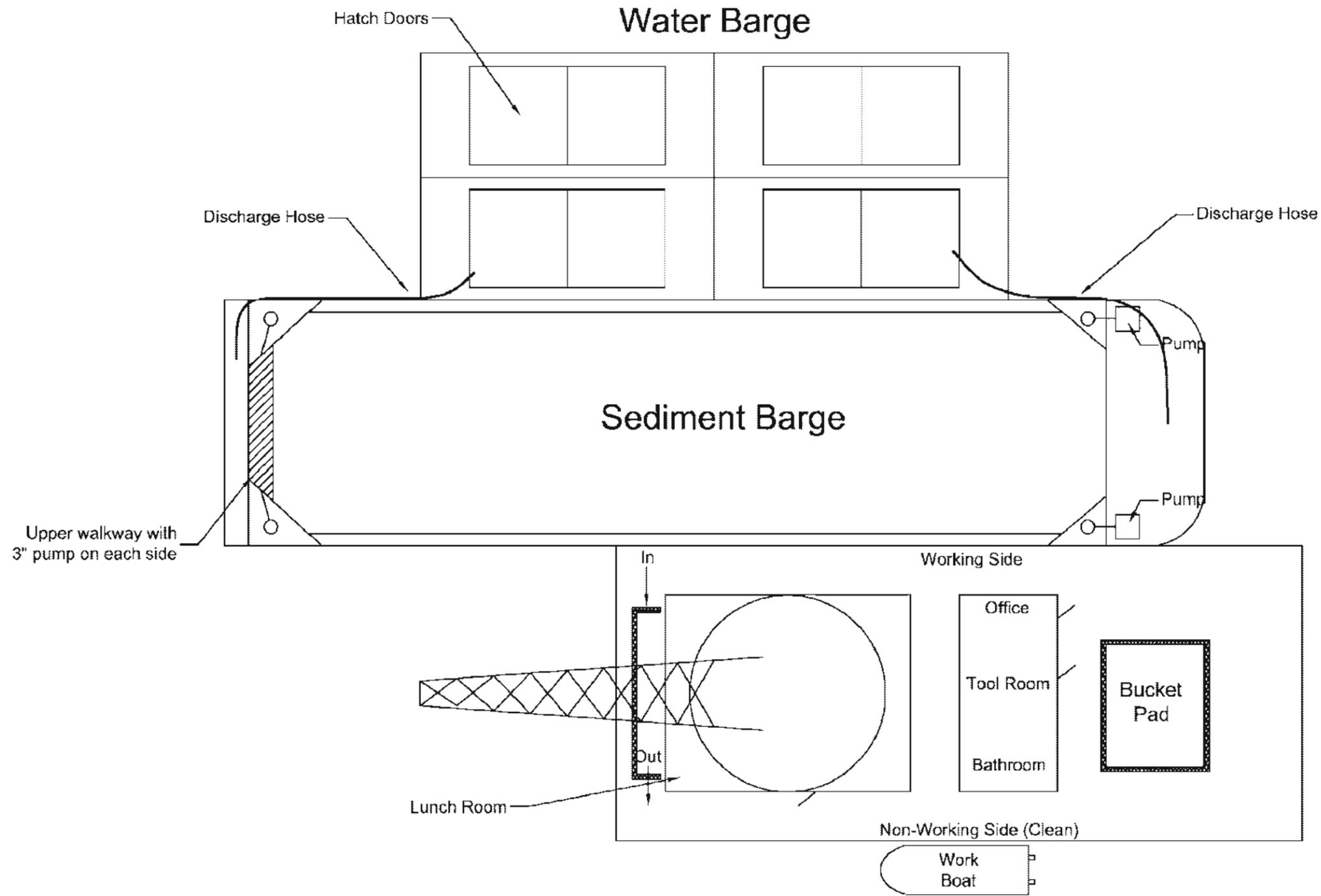
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FIGURES

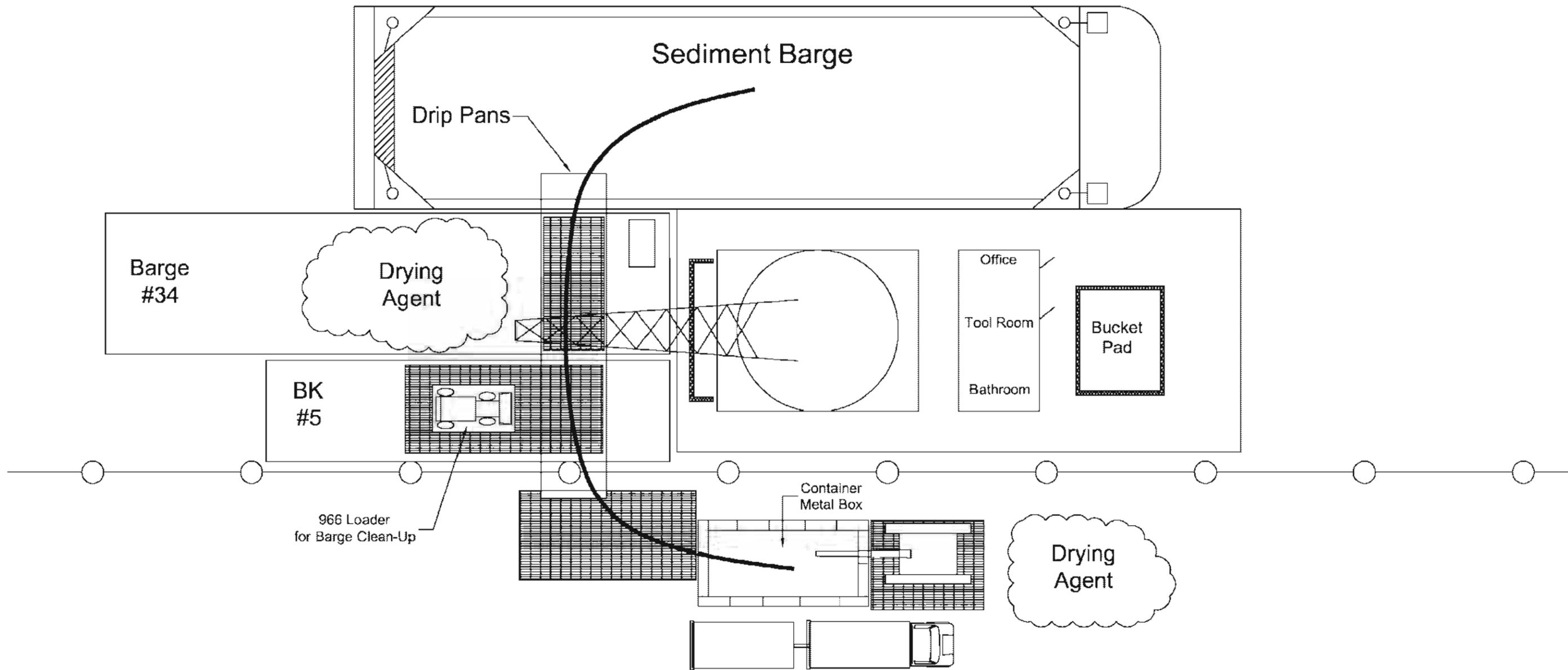
T-4 DREDGE SITE



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K:\Jobs\050332-PORT_OF_PORTLAND\05033201 TERMINAL 4 Phase I RAWP FIG 4-9.dwg TDP FIG 1 Jun 19, 2008 11:15am tgriga

THE DALLES OFFLOAD SITE



K:\Jobs\050332-PORT_OF_PORTLAND\05033201 TERMINAL 4\ Phase 1\RAWP FIG 4-9.dwg TDP FIG 2

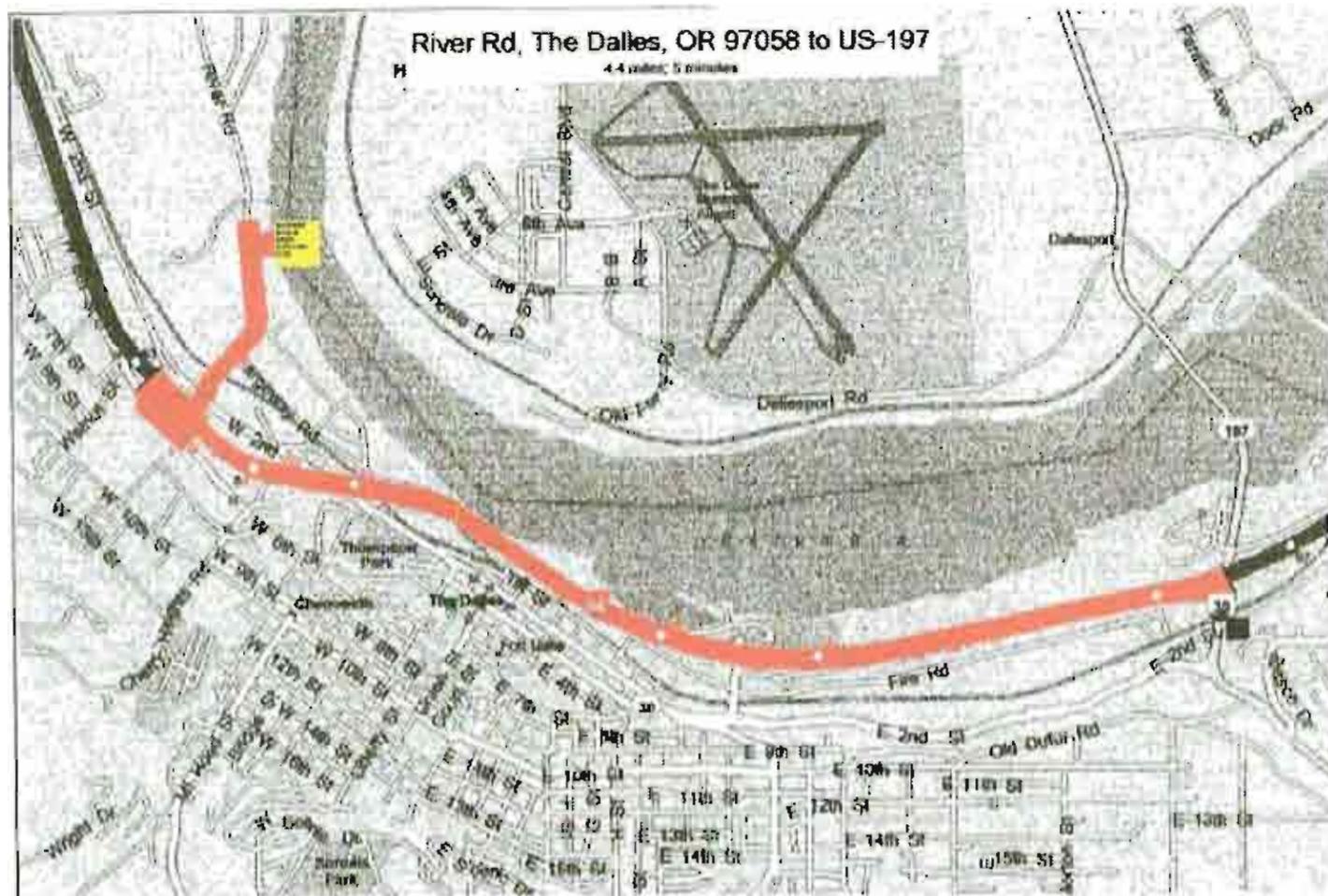
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K:\Jobs\050332-PORT_OF_PORTLAND\05033201 TERMINAL 4 Phase I\RAWP FIG 4-9.dwg TDP FIG 3

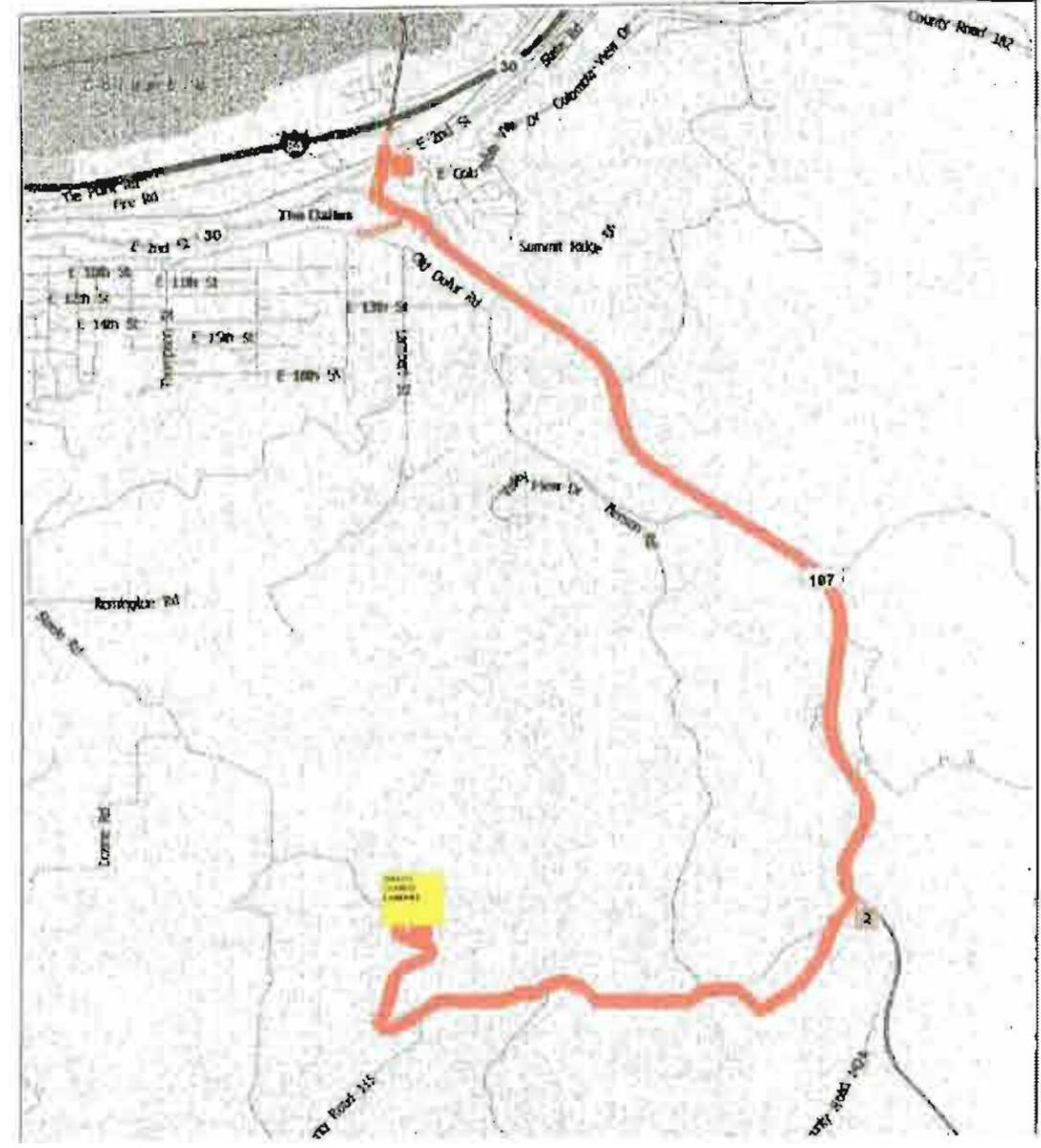
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US-197 to Steele Rd, The Dalles, OR 97058
0.3 miles, 11 minutes



- 9:00 AM 0.0 mi ■ Depart River Rd, The Dalles, OR 97058 on River Rd (South) for 0.6 mi
- 9:01 AM 0.5 mi Bear RIGHT (South West) onto US-30 [Webber St] for 0.1 mi
- 9:02 AM 0.7 mi Turn RIGHT (North-West) onto US-30 [W 6th St] for 0.1 mi
- 9:02 AM 0.8 mi Take Ramp (RIGHT) onto I-84 for 3.3 mi towards I-84 / Pendleton
- 9:05 AM 4.1 mi At exit 67, turn RIGHT onto Ramp for 0.2 mi towards US-197 / Dubar / Bend
- 9:05 AM 4.3 mi Turn RIGHT (South) onto US-197 [US-30] for 120 yds
- 9:05 AM 4.4 mi ■ Arrive US-197

THE DALLES OFFLOAD SITE
TRUCK ROUTE
APPENDIX D1.E
EXHIBIT F
PAGE 1 OF 2



- 9:00 AM 0.0 mi ■ Depart US-197 on US-197 [US-30] (South) for 0.2 mi
- 9:00 AM 0.2 mi Turn LEFT (South-East) onto US-197 for 3.5 mi
- 9:04 AM 3.6 mi Turn RIGHT (South-West) onto County Road 115 [Five Mile Rd] for 142 yds
- 9:05 AM 3.7 mi ■ At 2020 County Road 115, The Dalles, OR 97058, stay on County Road 115 (South-West) for 1.9 mi
- 9:09 AM 5.6 mi Keep STRAIGHT onto Steele Rd for 0.7 mi
- 9:11 AM 6.3 mi ■ Arrive Steele Rd, The Dalles, OR 97058

PAGE 2 OF 2

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Figure 3
Truck Haul Route
Terminal 4 Phase I Removal Action - Transportation and Disposal Plan
Portland, Oregon

APPENDIX D2

**WHEELER BAY (ASH CREEK)
TRANSPORTATION AND DISPOSAL PLAN (TDP)**

TRANSPORTATION AND DISPOSAL PLAN (TDP)

TERMINAL 4 PHASE I REMOVAL ACTION

WHEELER BAY STABILIZATION

PORT OF PORTLAND

Portland, Oregon

Submitted to:

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Submitted by:

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Revision 0

Submittal date:

June, 11 2008

A. Introduction

The Transportation and Disposal Plan shall establish the means of handling unsuitable material encountered during the construction process. This handling is to include; excavation, loading, hauling, spill prevention, and documentation of the material to Waste Connection's Subtitle D Landfill, located in Wasco County.

B. Excavation, Loading, Hauling, Spill Prevention

Debris encountered while performing upland excavation will be loaded into trucks for transport to the disposal facility. Loading shall be performed from a stockpile near the excavation area, within the Restricted Zone. Large debris will be reduced in size or cut, as necessary to fit into trucks, prior to loading. Debris will be gripped by the excavator and soil shaken loose at the point of removal. Trucks will follow decontamination / inspection procedures as stated below. Truck loads will also be covered during transport.

C. Procedures to Prevent Offsite Tracking of Sediments

1. Decontamination / Inspection Procedure

- a. Envirocon will utilize dry-type equipment decontamination. Equipment that has come in contact with potentially contaminated materials will receive an initial dry decontamination. The dry decontamination method will consist of shoveling, scraping and brushing all loose materials from the equipment.
- b. If deemed necessary, wet method decontamination will be utilized. This will be done on a case-by-case basis after a thorough dry decontamination has been completed and trucks have been inspected.
- c. The decontamination area, if needed, will be near the loading area. The ground surface will be prepared so that it slopes to one corner of the area and with a berm around the perimeter.
- d. A hole will be dug at the low end and a collection drum or sump will be installed.
- e. Liner material will be placed directly on the graded work area to extend over the berm with an opening at the sump. A pump will be placed in the sump for transferring decontamination water to the water treatment system or to a holding tank.

- f. Decontamination wastewaters will be consolidated, sampled and disposed of offsite. Analytical sampling performed will be dependent on disposal facility requirements.

C. Documentation

Analytical sampling of the unsuitable material will be performed and submitted to the Landfill to finalize acceptance. The material may also be sampled by the facility operator to confirm that the materials meet the waste acceptability criteria.

Shipments will be weighed at the disposal facility. Weight records will be maintained in the project file in accordance with project specifications and Envirocon's Quality Control Plan.

APPENDIX E

**HICKEY MARINE'S DREDGING, TRANSPORTATION,
AND DISPOSAL PLAN**

June 16, 2008

Terminal 4 Phase I Removal Action Work Plan

Port of Portland, Portland, Oregon

APPENDIX D1, E- Hickey Marine Enterprises Dredging, Transportation and Disposal Plan

Introduction

The Terminal 4 Phase 1 Removal Action will consist of dredging both Berths 411 Plus and 410; furnishing and installing a sand layer at the head of the slip in Berth 411; placing a cap at the head of Slip 3; dewatering and transporting sediment barges to a trans-load facility in The Dalles, OR; trans-loading sediment with the supplement of drying agents into lined on-highway truck and trailers for transport and disposal at the Wasco County Subtitle D Landfill.

Hickey Marine Enterprises has successfully completed previous maintenance and sediment removal projects of a similar scope in the Portland Harbor. The projects were performed for The Port of Portland, Schnitzer Steel (Terminal 4 in 2005), Ashgrove Cement, CLD Grain and Glacier Northwest. All of these projects were sediment dredging, trans-load and on-highway transportation for disposal at the Subtitle D Wasco County Landfill.

Key Facilities and Components utilized on this project are:

-Disposal Facility: Waste Connections Wasco County Landfill, The Dalles, Oregon (RE: Exhibit G1).

-Trans-Load Facility: The Oregon Department of Environmental Quality (ODEQ) permitted Wasco County Waste Transfer Station-Bernert Barge Lines, The Dalles, OR Terminal.

-Sediment Drying Agent: ODEQ and Waste Connections approved Drying Agent (ash based paper production byproduct) from the Georgia Pacific LLC mill located in Camas, WA.

- **Work Sequence and Equipment (RE: 352023-1.6F, section 1)**

Sequencing

Upon mobilization, set up of the upland components trans-load facility at The Dalles, OR and uploading of pre-dredge survey data on board of the water crane Sea Horse performed by the Port's surveyor in late July, sediment removal will initiate in the Berth 414 correction area. The anticipated start date of dredging is 11 August 2008. The Berth 414 correction area dredging is anticipated to be completed in one day. Next move will be to the Slip 3 center square, 12 August 2008. The Slip 3 center square dredging is estimated to be complete in one day.

The tow of the Sea Vulture, BK5, Barge 34 and the 414 corrections and Slip 3 center square will occur for the initial off load and final set up of spill containment at The Dalles off load site.

Berth 411 plus will be the next move starting at the head of slip offshore of dock face working toward the mouth for a duration of approximately ten (10) dredging days, starting Monday, 18 August, with an anticipated completion of 28 August. Berth 411 plus sediment removal will be complete at this time. Post dredge survey will be performed at the completion of this component immediately following declaration this component sediment removal is complete. Off loading at The Dalles trans-load facility will occur concurrently with the dredging operation starting 19 August (Exhibit A Preliminary Schedule).

The dredge plant, material barges, upland trans-load equipment and on-highway haul trucks will demobilize for the scheduled shutdown for facilitation of Kinder Morgan commerce at Terminal 4 from Friday, 29 August through Thursday, 04 September.

Remobilization of equipment shall begin 05 September with an anticipated start of sediment removal on Berth 410 Saturday, 06 September.

Three (3) days of dredging, 06 September through 08 will be performed to remove a partial segment of the Berth 410 area. The equipment will be demobilized as described above to facilitate a second seven day commerce window for Kinder Morgan occurring Tuesday, 09 September through Sunday 15 September.

The Sea Horse plant will be refitted to perform the Type 3 capping at the head of slip 3. Concurrently with the 09 through the 15th of September Kinder Morgan commerce window, the Head of Slip 3 capping will be completed.

The Sea Horse Plant will then be refitted back in the dredging configuration to complete the Berth 410 component of dredging. Concurrently, trans-load equipment will be remobilized the 16th of September with dredging performed to completion the 20th of September. Upon declaration of completion, the post dredge survey will be performed.

The Sea Horse plant will be refitted to perform the sand Layer component. This work will be performed in approximately 2 work days commencing 21 September with an anticipated completion 23 September.

Detailed Preliminary Schedule attached as Exhibit A illustrating the above described activities.

Equipment Marine

Primary Clamshell Dredge: The Seahorse, 1000 horsepower CAT 3508 main draw works power, 400 KW power generator for swing, heavy lift and bucket tag line hydraulics, , with three hydraulically controlled spuds. She is a Dravo water crane on 142' by 58' by 12' ABS certified barge with state of the art GPS control and instant screen displays. All hydraulic units on the Sea Horse utilize biodegradable mineral oil. The unit is a complete reconstruct finished in 2007 with approximately 6000 hours of duty in steady use. The Certified lifting capacity of the unit at 40' is 135 tons.

Transport barges will consist of 2500 Ton capacity "Umpqua 2", 2500 Ton capacity "Umpqua 3" and the 3000 Ton capacity "Chetco". These barges are at a high level maintenance with water tight side boards and will be fully prepared for dedicated usage on the Terminal 4 project.

The water management barge is a 4 module Lash unit. She is 123' by 62' by 12' with four watertight compartments that are covered to eliminate additional water generation by inclement weather events. She is set up with four hatches to facilitate pumping of water from Berth 408 to the designated upland manhole at Terminal 4 at the prescribed maximum flow and below the turbidity threshold.

The supplemental capping water crane will be the Sea Hawk. She is a Manitowoc Vicon 3900B pedestal mounted unit on a 110' x 48' x 8' barge. Power is provide by a Cummins 250 HP Diesel engine. She is also equipped with two spuds for location stability.

The upland capping excavator will be a walking (spider type) unit, winch equipped, with a weight of approximately 19,000 LB.

The offload unit to be fixed at the dock in The Dalles, OR will be the Sea Vulture. She is a Manitowoc Series 1 4600 pedestal mounted crane on a 112' x 60'x 10' barge. Main draw-works power is provided by a Detroit Diesel 12-71 (450 HP) with swing motors powered by a Detroit Diesel 6-71 (250 HP). She is set up with two winch controlled spuds. This unit is also equipped with state of the art GPS instantaneous on screen controls.

Support barges to be fixed at the off load site in The Dalles will be the 103' x 29' "BK5" barge and the 170' x 36' "Barge "34". Affixed to these units will be the swing drip pans in the swing radius of the off load Cable Arm clam.

The Clamshell bucket for sediment removal at T-4 on the primary dredge will be a "Cable Arm" 20 cubic yard capacity unit, purpose built for environmental sediment removal.

The backup Clamshell bucket is an Atlas 10 cubic yard capacity unit in the event hard material is encountered to achieve the specified depths. This unit will be available for the project if material beyond soft sediments is encountered.

The Clamshell Bucket for sediment offload on the offload unit will be a "Cable Arm" 14 cubic yard capacity unit also purpose built for environmental sediment removal.

Barge transportation to the disposal trans-load facility will be performed by Tidewater Barge Lines with multiple crew river tug boats with horsepower ranges of 2000 to 4000. Actual tugs utilized for the transport will be dependent on availability.

Support equipment will be a twin outboard powered crew/ survey boat, "Piggy" equipped with a single beam recording fathometer to verify daily sediment removal has been achieved to the prescribed lines, grades and tolerances. In addition, two outboard powered work skiffs and the tug/tender Husky with 800 horsepower will be utilized at Terminal 4.

A front end loader will be staged on one of the affixed flat deck barges at the trans-load facility. The loader will be picked and placed on the sediment transport to consolidate material for efficient offload to the surge/trans-load box.

Equipment Upland

The primary trans-load excavator will be a +/-70,000 LB class excavator equipped with a 60" wide spoon bucket and thumb. This will facilitate sediment off load and the collateral debris removed from Terminal 4.

Haul units will be 8 axle end dump on-highway truck and trailers equipped with onboard axle scales to verify loads are within legal weight limits prior to transport to the Landfill. The operation will start out with 5 haul units and may increase to 8 depending on efficiency and material flow without compromising cleanliness and safety.

Hours of Operation

Terminal 4 activities are proposed to run 8-10 hour shifts, 6 and 7 days per week. Tows, as barges are prepared for movement up river to the disposal site will be performed on demand, 24/7.

The trans-load operation will run up to 14 hours per day primarily 6 days per week, with an occasional Sunday as needed.

- **Means and Methods For Dredging, Transport, and Handling (RE 352023-1.6F sect 2):**

All dredging will be performed by the Dredge Sea Horse utilizing a 20yd Cable Arm clamshell bucket for the removal of soft sediments. If grade cannot be achieved due to a firmer river bottom, a 10yd heavy duty Atlas round nose clamshell bucket will be used to reach final grade.

The mainline on the crane will be marked with the bucket in the open position. There will be painted marks at 1 foot intervals (see Exhibit B). The Cable Arm bucket does not change its vertical position when closing. The 10yd Atlas bucket if needed, has a difference of 3 foot between the open and closed position. Therefore final grade is achieved by allowing the bucket to dig until the marks painted on the mainline read 3 foot deeper than in the open position. Both buckets require the operator to set the mainline brake when grade is reached to avoid any over dredging. Detailed drawings of the clamshell configurations will be posted in the cab to assist the operator in the elevation changes between buckets and tide levels. Horizontal positioning and control is performed with HYPACK 6.2b DREDGEPACK software which is supported with a C.S.I. VS100 vector antenna and a C.S.I. VS 110 DGPS beacon receiver. The vector antenna is mounted on the stern of the dredge. This unit provides the dredge its position. It sends a signal via 900 MHz Maxstream radio to the computer mounted in the crane cab.

A Trimble DSM212L DGPS beacon receiver provides the position of the boom tip. There is a 20" flat screen monitor mounted in front of the operator and a bucket target switch at the controls to enable the operator to target each bucket at dredged grade. All targeted buckets will have their positions stored in a saved file and submitted in the daily quality control report.

As a backup system there is a C.S.I. Vector Pro receiver and a Trimble DGPS DSM 132 beacon receiver stored on board of the dredge.

A TideTrac electronic tide gauge will provide a water level reading every 3 minutes and will be displayed on the monitor in the cab of the crane. This unit also gives a countdown timer for your next tide update and displays the battery voltage of the gauge. Solar panels will be used to keep a constant voltage to the gauge.

Staff gauges will be set in plain sight of the operator for control verifications.

Once dredging commences the operator slowly begin lowering the open bucket until it reaches bottom without going below the required depth. He will then close the bucket in a slow manner while holding it at depth. Once closed it is to be hoisted slowly until it reaches the water surface in which it is stopped to dewater.

After the bucket has dewatered the operator will continue to slowly hoist and swing until the bucket is inside the bin walls of the material barge. It will then be lowered into the barge and cracked open to allow material to be released and prevent any mud from splashing outside of the bin walls. Each flat deck material barge will have temporary barrier walls in all four corners. Walls will have slotted holes that will allow water to pass through, while stopping mud flow. A slotted, secondary containment will be placed inside of the barrier for placement of suction hose for a diesel trash pump. Trash pumps will be stationed on every corner of material barge with up to three men monitoring pumping operation. Discharge of water will be pumped into the four compartment Lash Combo Barge Unit in an evenly manner to prevent listing. Water will be gauged daily for volumes.

The barge will be loaded in a manner to prevent listing, and material will be loaded with special care to maintain at least 1 foot of freeboard from top of bin wall. To prevent splashing when loading the barge each bucket will be cracked open in small increments to allow the material to slowly fall out until completely open. The bucket will then be closed before swinging into position for another cycle. It will not be opened until it reaches the water surface.

It is anticipated that during the first scheduled dredging shut down the Lash Barge will be transported to Terminal 4 berth 408 Port of Portland for water pumping into the City of Portland sewer manhole (Appendix D1,E exhibit H). Prior to pumping Hickey Marine will test water for suspended solids and NTU's to meet City of Portland specifications. Historically 48 hours has been needed to meet these specifications. Once water is in compliance it will be discharged through a flow meter to achieve proper gpm established by the City of Portland. If water removal is required from the Lash Barge prior to the first scheduled shutdown the barge

would be transported to Cascade General located in Swan Island to be pumped into large holding tanks without any discharge flow restriction, this work could be done at night with no impact on dredging operations.

Once all of the dredging operations have ceased, pumping will reoccur at berth 408. Hickey Marine will test water for suspended solids and NTU's to meet City of Portland specifications. Residual sludge left in the Lash Barge will be mixed with a drying agent and disposed of at the Wasco County Landfill. West Coast Marine Services will pressure wash and use a vacuum truck to finish barge clean-up for final evaluation.

Daily progress surveys will be performed by survey/crew boat "Piggy" equipped with an Odem single beam echo sounder operating a frequency of 200MHz with an accuracy of 0.01 meter +1-0.1% depth. Survey results will be included in the daily report the following day for review. Daily dredged volumes will be figured by using the barge displacement method, barge drafts to be taken at the start and end of each day. Copies of each day's progress showing dredge location and location of each bucket dredged will also be included.

Best Management Practices For Dredging (BMP's)

- Dredge passes shall proceed from the head of the slip towards the mouth.
- HME will complete a horizontal dredge pass across the dredge surface before moving to the next deeper pass.
- HME will begin dredging at the highest elevation of material to be removed and work toward the lowest elevation.
- "Glory holing" will not be allowed.
- HME will sequence our work such that there is one last pass across the entire Berth 411 "Plus" dredge area.
- Overfilling of the bucket is not allowed.
- HME will pause the dredge bucket as it breaks the surface of the water and allow the bucket to drain free water prior to swinging and placing dredge material on the haul barge.
- No bottom stockpiling or multiple bites of the clamshell bucket is allowed.
- HME will seal off barge scuppers on haul barges and repair any holes in fences to prevent water or sediment from draining off haul barge.
- Barges will not be overfilled.
- No grounding of construction barges is allowed.
- Over-dredging at the base of a slope shall not occur.
- Dragging of the dredged surface to level the mud-line is not allowed

Sediment barges will be transported to the Bernert Barge Lines Terminal located in The Dalles, OR. The transport starts at Willamette River mile 4, with movement

initially downstream to Willamette River mile 0/Columbia River mile 101.5. The upstream transport will initiate at Columbia River mile 101.5 to the Bernert Barge facility in the Dalles, OR, Columbia River mile 189. The 2500-3000 Ton sediment barges will be attached to the Sea Vulture with fleeting facilitated by a winch affixed to the Sea Vulture for offload. The material will be off loaded with a Cable Arm 14 CY environmental clamshell bucket. Two drip containment barges will be strategically located with fabricated drip plate(s) that overlap between the sediment barge, the two drip containment barges, 20' x 8' watertight open top container and the water tight sediment transfer box will be placed at dock's edge. The placement of the drip containment will be in the path of the Sea Vulture's off load swing radius to eliminate the potential of spilling sediments into the river, the dock and on the ground upland.

Best Management Practices for Offloading (BMP's)

- HME will conduct daily safety meetings at the start of each day with all parties involved.
- All proper PPE as identified in CHASP to be used where applicable.
- Offloading clamshell bucket to be maintained fully enclosed and tight lipped.
- Overfilling of the bucket is not allowed.
- Containment to be placed around all drying agent storage and material re-handling operations.
- Drip pans to prevent in- water and upland spillage of the equipment working radius.
- All trucks to be lined.
- All loads to be covered before departure to landfill.
- Drying agent to be added to maintain material consistency.
- Site to be maintained cleaned at all times.
- Excess water from material barge to be pumped into baker tanks.
- HME will seal off barge scuppers on haul barges and will have water tight fences to prevent water or sediment from draining off haul barge.
- Barges will not be overfilled.
- No grounding of construction barges is allowed.

Prior to departure of any loaded sediment barge from the Portland harbor, an extended weather forecast will be researched for the transit to The Dalles offload facility.

If high winds or heavy rains are predicted, crews of a minimum of 6 will tarp the load with a plastic sheeting of 10 mil or thicker. Tarps will be secured as needed, taking into consideration of weather conditions. Securing of tarps will not hinder in any way access along deck walkway of material barge. Tarps may be reused if deem to do so.

All proper PPE as identified in the CHASP will be worn during all tarping operations.

A custom fully welded, water tight steel fabricated box will facilitate a large target for the clam to transfer the sediments for re handle to on-highway 8 axle truck and trailers. The walls of the box will be of sufficient height to eliminate the potential of splattering sediment outside of the containment as the clam opens.

Drying agent stockpiled inside ecology block containment will be supplemented to the sediments with either the excavator or the Sea Vulture clam bucket to absorb any latent free liquids that may surface under tow from Terminal 4. The drying agent will be stockpiled on both the barge and the ground adjacent to the excavator.

Prior to load out in the trucks, each bed will be fully lined with visqueen before the sediments are loaded. Visqueen will be of sufficient size to facilitate draping of the truck bed on each side.

Upon completion of loading the trucks, each truck bed will be covered prior to departure to the Landfill.

If sediment spillage occurs at the transfer point, the material will be immediately hand shoveled, swept up and incorporated into the load.

The procedure will be as follows:

- Fully line the beds of the trucks as they arrive for load out. Visqueen lining will be laid in truck bed so excess covers each side of truck bed. Once truck is loaded the excess visqueen will be draped over the top of the load and secured.

- Position the truck for trans-load to allow excavator to have a 90 degree rotation from the fully contained sediment re-handling box into the truck bed. Lay drip pan from truck bed to the fully contained sediment box to prevent any material from reaching the ground. Add drying agent as needed to the sediment. Load out the truck beds with the excavator that will also have a spill containment pan between the steel surge box and the truck.

- Fill to legal weight.

- Thoroughly inspect the truck for any latent dribbles of sediments and if present, immediately clean off with shovels and brooms, containing the material as appropriate for incorporation in the next load.

Tarp removal will take place just prior to offloading. Tarps will be unlashd and rolled in small sections for safe handling and then stowed at end bin walls of the each material barge.

- Move the truck up to the covering station for tarping before transport.

-Send the truck to the Landfill for official weigh in and disposal.

Two Baker/Frak tanks will be permanently stationed on one of the drip containment barges and the upstream end of the Sea Vulture to facilitate free liquids (if any) pumped off of the sediment transport barges as a precaution.

Each flat deck material barge will have up to six foot fully enclosed water tight welded steel bin walls; all scupper holes will be closed off and secured.

Temporary barrier walls will be secured at a 45 degree angle in all four corners of the transport barge(s) to facilitate sediment dewatering. The barriers will have seepage holes cut along the base with screens secured at the openings to retain the solids and allow water to flow behind the barrier for pumping to the Lash Combo Barge. Slotted 55 gallon drums will be set behind the temporary barrier for water gathering and pump placement.

There will be pumps stationed on each corner of the material barge during dredging operations with 2-3 men dedicated for transfer of water to the Lash Barge.

The 123'x 62'x 12' Lash Combo Barge is made up of four compartments and has approximately 500,000 gallons of total liquid capacity.

Collateral debris may be encountered during sediment removal. If logs, cables etc. are encountered, this material will be segregated on the transport barge(s) for special handling at the off load facility. This material will be incorporated in the loads of sediment to the designated landfill as practicable.

Pollutants generated by the proposed marine equipment dedicated to this Contract will be remediated as discussed in the CHASP section dedicated to fuel/oil spills and the Pollution Prevention and Emergency Response Plan.

Clean up of equipment and facilities will be handled and described in components as follows:

Marine Equipment

The Sea Horse will be continually cleaned in the event any sediment drippage occurs when removing soft sediments. Deck hands will perform this task as an ongoing process utilizing square point shovels and or brooms with water tight containment and incorporation in the sediment barges.

The Sea Vulture and associated drip containment barges affixed to the Bernert Terminal will also be cleaned up continually as the situations present themselves. Upon completion, it is anticipated minor hand clean up will be all that is left to prepare this equipment for demobilization.

Barges

The sectional lash barge will require extensive cleanup as this unit will have latent sediments in the bottoms of the tank(s) generated by particulate settlement. This material will be supplemented with drying agent, mixed with the sediment then clammed off for haul and disposal at the designated disposal facility.

The sediment transport barges have steel flat deck arrangements. A rubber tired loader will scrape up any latent sediments for clam off to on-highway dump trucks and disposal at the designated disposal facility.

Sweeping and hand shoveling which is anticipated to be minimal, will supplement equipment work. Following the sweeping of the Lash and flat deck transport barges, steam cleaning will be done. Rinsate will be vacuumed up by West Coast Marine Services who will deliver the liquids and latent sediments to a waste water disposal facility.

Upland Equipment and Trucks

The upland equipment will be thoroughly inspected and swept clean of latent sediment (if any) prior to demobilization. This equipment consists of a 70000 LB excavator, rubber tired loaders for barge clean up and the on-highway end dump truck and trailers.

All latent material will be loaded and hauled to the designated Landfill for proper disposal.

Facilities

The barge trans-load facility will be the focal point of dismantling and clean up. The splash pans will be scraped and swept of any latent sediment; the transfer/surge box will have drying agent added to the bottom to facilitate any liquefied sediments for scrape out with the trans-load excavator. Hand labor will be deployed as needed to sweep out any remaining sediment in the bottom of the box. Pressure washing and vacuuming the rinsate by Coast Marine Services will be the final step in the process prior to demobilization of the Sediment transfer box.

Containment linings will be gathered up for consolidation in a dump truck for disposal at the Landfill.

The entire site will be swept of any latent debris with acceptance of the agencies and owner.

Methods and Procedures to prevent interference with tenant activity

Methods and procedures to prevent interference with tenant activity will be to fully demobilize the dredging equipment from the Berth 410 and 411 vicinity during the seven day time windows to facilitate Kinder Morgan commerce.

Methods and Procedures to prevent damage to Port facilities

Methods and procedures to prevent damage to Port facilities include double checking tie ups, verifying equipment is secure during shut downs, clear, unobstructed communication with barge movements and tug boat captains and alert diligent vigilance with experienced high quality people performing duties.

3. RE Appendix F

- **Dredging (RE: 352023, Section 3.2)**

The marine equipment layout for the Terminal 4 Dredge site will be as shown on Exhibit C.

Dredging sequencing will be performed as shown on attached Exhibit D. Overall project scheduling will be as shown in attached Exhibit A.

- **Offloading and Hauling of Dredged Material and Debris (RE: 352023, Section 3.5)**

The initial activity will be the development of the upland offload facility which includes but is not limited to pavement improvements, storm water management berms, and water tight trans-load box installation, drying agent storage, truck lining station, truck covering and dry decontamination station (Exhibit E).

Pavement improvements will include subgrade preparation and pavement of the existing gravel area along the east side of the property. In addition to the new pavement in this area, existing joints and transitions will be sand seal coated.

Extruded asphalt curbing will be installed to corral precipitation and add a redundant mechanism to isolate potential spillage (if any) in the re-handle/ trans-loading process.

Ecology blocks will be used to develop the drying agent containment within reach of the load out excavator. The Drying agent will be stockpiled at the Landfill and on board Barge # 34. Drying agent at the Landfill will be backhauled to the Bernert Barge

Line facility as needed to maintain a sufficient quantity to supplement the sediment moisture reduction program. Drying agent on Barge # 34 will facilitate direct access with the trans-load water crane to supplement the moisture sediment reduction. Historically the mixing ratio for drying agent has been 4 - 5% added to the sediment to pass the required (paint filter test).

The off load crane barge “Sea Vulture”, barge “34” and barge “BK5” will be mobilized with a partial quantity of the drying agent, 20,000 gallon Baker/Frak tank, the surge/trans-load water tight box and the sediment drip pans.

HME proposes to ship a partial sediment load which will have the Berth 411 correction area and Slip 3 center square removal with the Sea Vulture, BK5, and Barge 34 tow to The Dalles off load facility. This will facilitate fine tuning of the drip aprons, dial in the swing radius, set clearances and balance out the trans-load operation.

Upon arrival, the barges and offload crane will be secured in the planned stationary positions, the surge/trans-load box will be set and sediment drip pans will be secured.

Concurrently, bed liners will be shipped/stored, the lining and truck bed covering stations will be constructed and the truck haul routes (temporary pavement markers) will be established. “Trucks entering and leaving” signs will be installed on both sides of the road accessing the Bernert yard to establish notice to the public.

Dust suppression will be handled with water misting of the sediment VIA the water pumps on the Sea Vulture. A wide spread water misting system will be strategically placed to moisten the exposed sediments and completely eliminate air born particulates if necessary.

In addition, dust will be fully suppressed at the surge/trans-load box. This will be accomplished in the same manner as described above with water sourced from either one of the two pumps on the Sea Vulture or the upland fire hydrant located at the entrance to the Bernert facility.

Upon set up of the facility with a sufficient quantity of drying agent on hand, the trans-load operation will commence as follows:

- a. Trucks beds will be lined at the bed lining station.
- b. Trucks will pull into the loading zone.
- c. Sediments offloaded by the Sea Vulture will be placed in the Surge/trans-load box.

- d. The 70,000 LB excavator will supplement and mix the drying agent with the sediments as needed to absorb any moisture prior to loading in the truck.
- e. Trucks will be loaded with special care to direct the material for transport to the Wasco County Landfill. On board axle scales will facilitate loads to legal limits.
- f. The loaded truck will be inspected for any latent spillage of sediment and immediately cleaned off.
- g. The loaded truck will then move to the tarping station for load coverage prior to disembarking to the Landfill.
- h. The trucks will haul on the designated haul route shown on exhibit F.
- i. Trucks will weigh in, generating certified scale weights of each load for detailed recording.
- j. The load will be dumped, trucks will exit and return to the Bernert yard to start another round of the cycle.
- k. Concurrently with the offload of sediments, submersible pumps will be available to pump off any free liquids generated in the process either in the transport barges or surge box. Water generated will be allowed to settle and will be pumped off to a water hauler for disposal at an approved municipal treatment site or the Wasco County Landfill.
- l. Housekeeping is imperative and personnel will be dedicated to maintain drip pans, haul routes and truck cleanliness through the entire cycle of operations.

The proposed Landfill is the Subtitle D facility in The Dalles, Oregon called The "Wasco County Landfill".

Drying agent is a Landfill approved material produced at the Camas, WA Georgia Pacific paper plant. This material is an ash based by-product generated in the process of paper production. The material has proven historical effectiveness as experienced on previous sediment removal projects performed throughout the Portland Harbor and specifically the previous contract at Terminal 4. Detailed data and constituents on the Landfill approved drying agent are illustrated in Exhibit G.

MAINLINE
DREDGING
DEPTH
PAINT-MARK
DIAGRAM

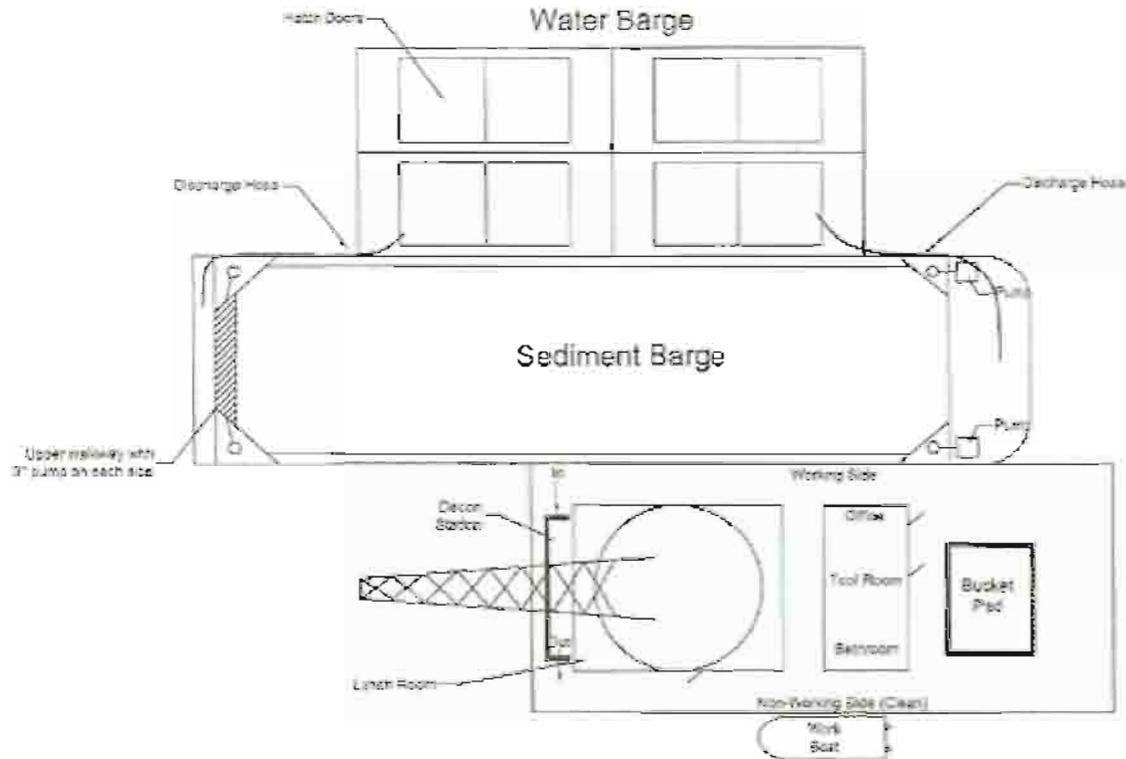


HICKEY MARINE ENTERPRISES
TERMINAL 4 PHASE 1
REMOVAL ACTION

APPENDIX D 1, E

EXHIBIT B

T-4 DREDGE SITE



APPENDIX D1.5
EXHIBIT C

	CLIENT HICKEY MARINE	DATE MAY 2008
		PROJECT PORT OF PORTLAND TERMINAL 4 REMOVAL ACTION PHASE I DREDGING AND CAPPING PROJECT
AMEC Earth & Environmental 7075 SW 62nd Avenue PORTLAND, OR 97224 	DESIGNER URS	REVISED BY URS
	PROJECT NO. -	REV. NO. -
	SITE PLAN	SCALE NOT TO SCALE
		FIGURE NO. 3

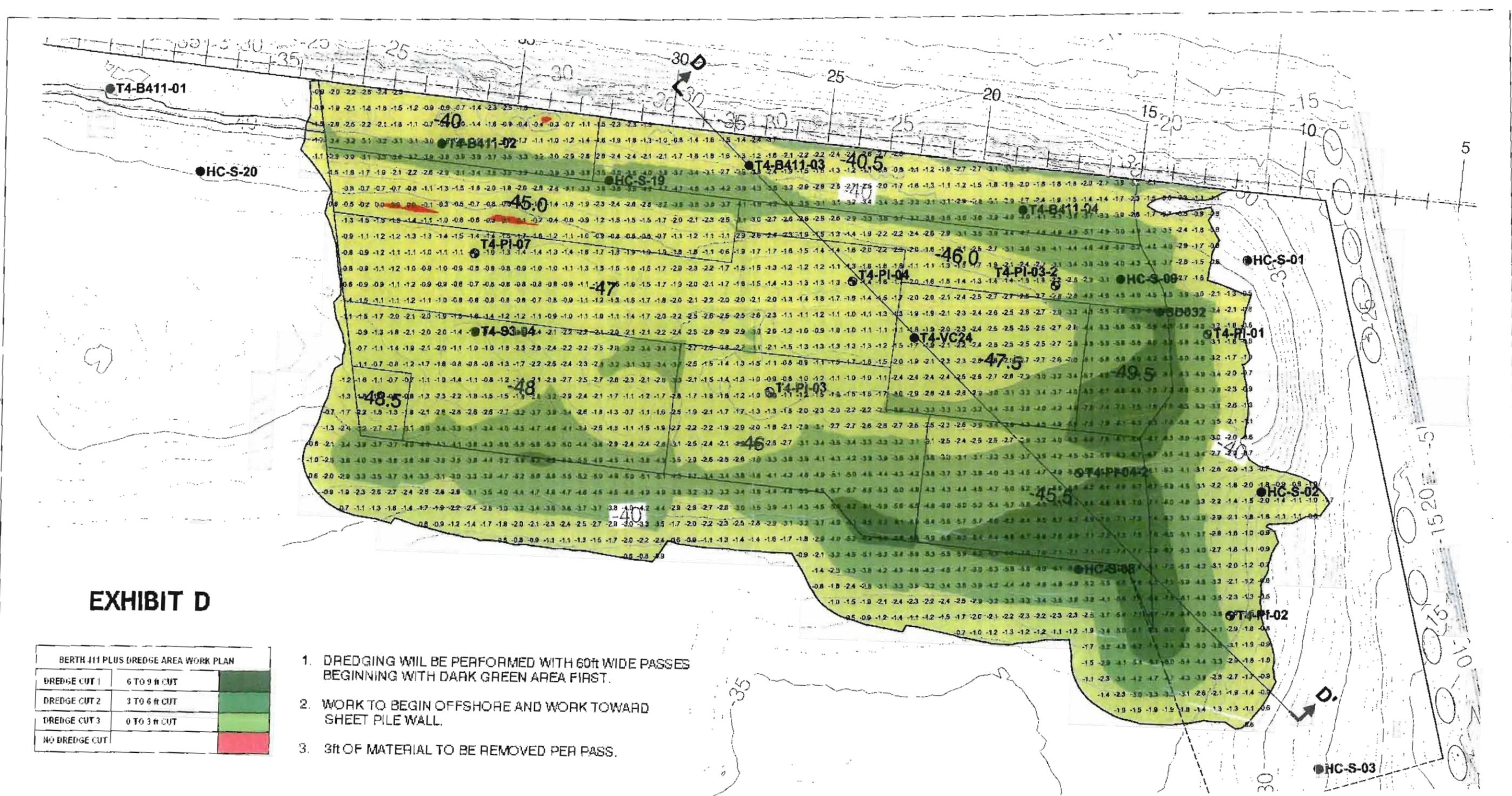


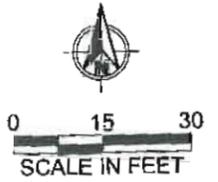
EXHIBIT D

BERTH 411 PLUS DREDGE AREA WORK PLAN		
DREDGE CUT 1	6 TO 9 ft CUT	
DREDGE CUT 2	3 TO 6 ft CUT	
DREDGE CUT 3	0 TO 3 ft CUT	
NO DREDGE CUT		

1. DREDGING WILL BE PERFORMED WITH 60ft WIDE PASSES BEGINNING WITH DARK GREEN AREA FIRST.
2. WORK TO BEGIN OFFSHORE AND WORK TOWARD SHEET PILE WALL.
3. 3ft OF MATERIAL TO BE REMOVED PER PASS.

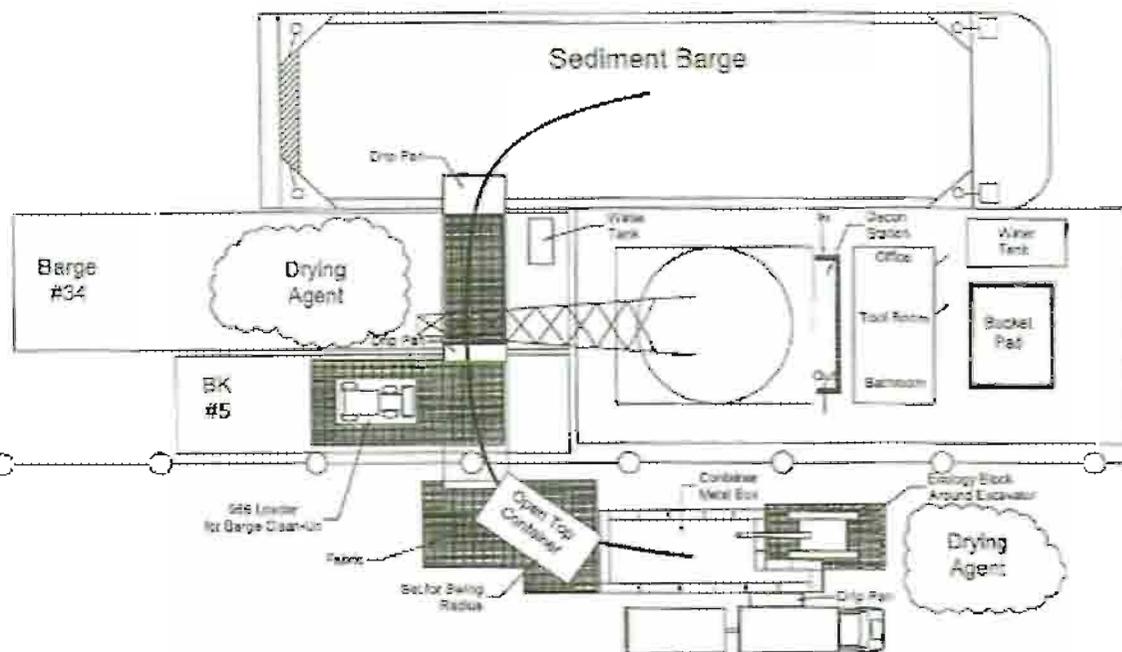
NOTES:
 1. HORIZONTAL DATUM: PORT OF PORTLAND LOCAL PROJECTION (INTERNATIONAL FEET)
 VERTICAL DATUM: NGVD 29-47
 CONTOUR INTERVAL = 1FT
 2. BATHYMETRIC SURVEY BY PORT OF PORTLAND DATED MAY, 2007

LEGEND:
 -46 BERTH 411 DREDGE AREA AND NEATLINE TARGET ELEVATION (FT)
 47 DREDGE CUT IN FEET
 DAYLIGHT LINE AT EDGE OF CUT
 T4-PI-03 SAMPLE LOCATION AND ID



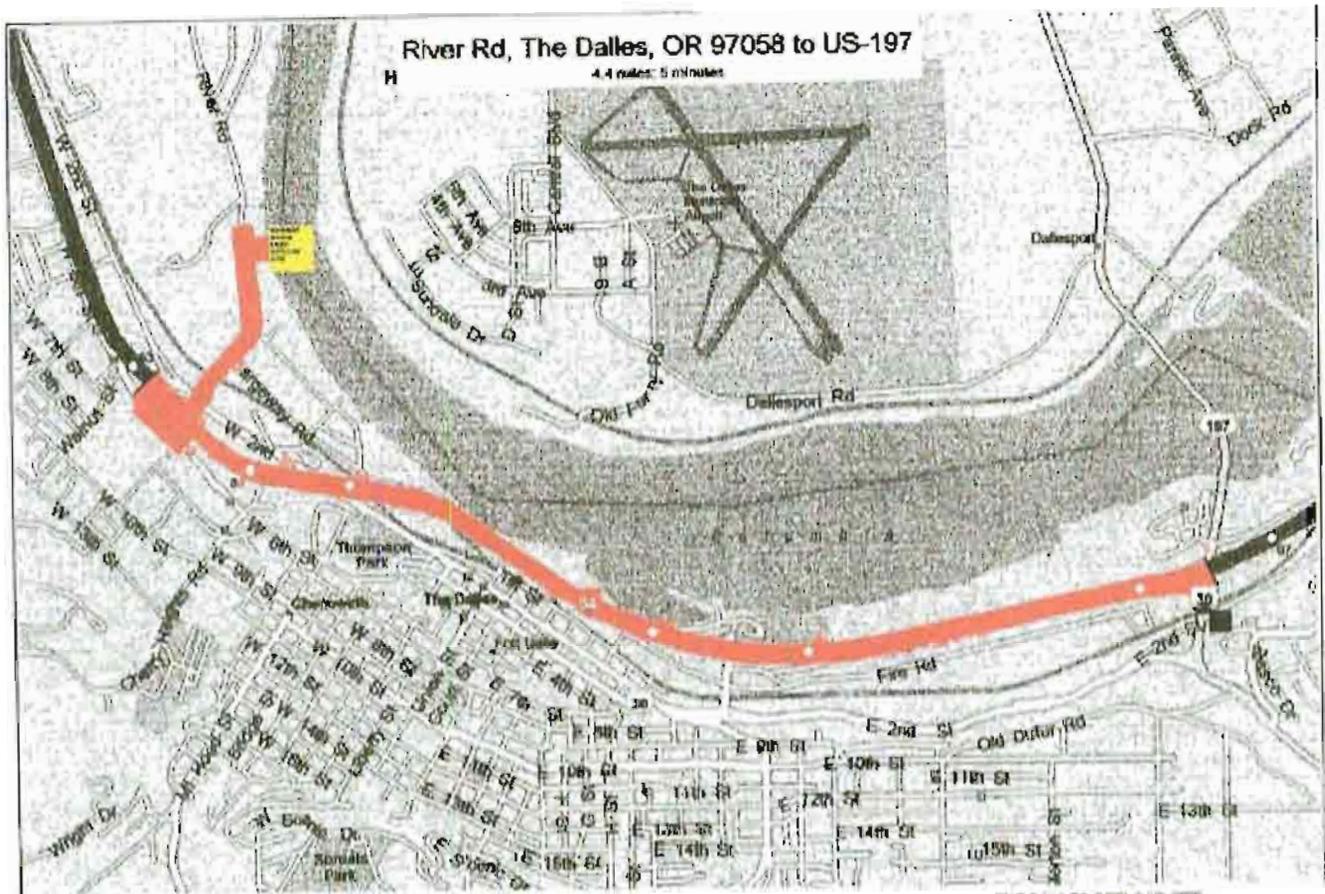
**HICKEY MARINE ENTERPRISES
 TERMINAL 4 PHASE 1 REMOVAL ACTION
 APPENDIX D1,E**

THE DALLES OFFLOAD SITE



APPENDIX D.I.E
EXHIBIT E

SUBJECT HICKEY MARINE		DRAWN BY CHECKED BY DATE PROJECT NO. SHEET NO. TOTAL SHEETS	PROJECT PORT OF PORTLAND TERMINAL 4 REMOVAL ACTION PHASE I, DREDGING AND CAPPING PROJECT	DATE MAY 2004
CLIENT AMEC Earth & Environmental <small>3700 NE CLATSOP ROAD PORTLAND, OR 97211</small>			TITLE SITE PLAN	PROJECT NO. 001111001

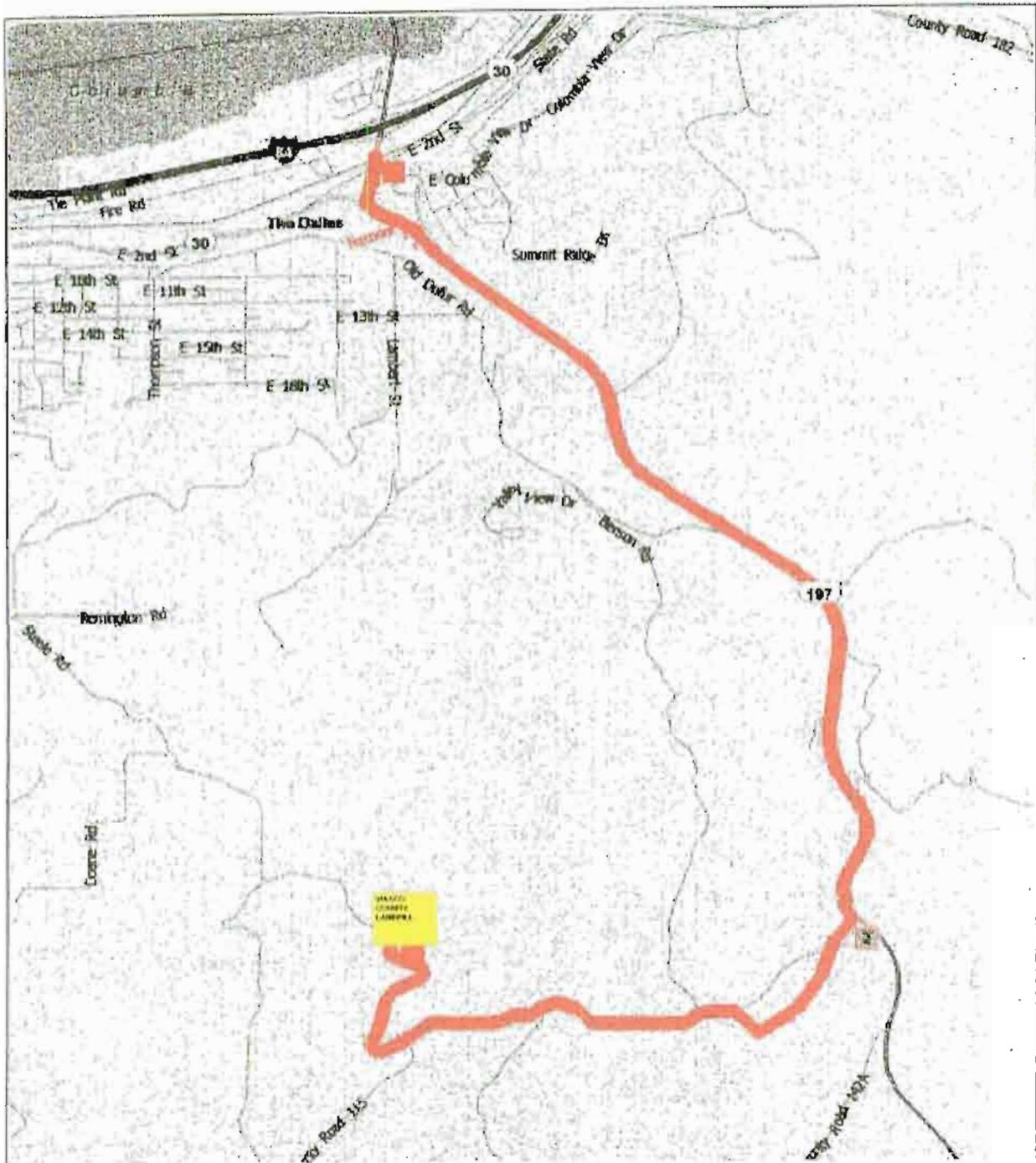


River Rd, The Dalles, OR 97058 to US-197
 4.4 miles / 5 minutes

- 9:00 AM 0.0 mi ■ Depart River Rd, The Dalles, OR 97058 on River Rd (South) for 0.5 mi
- 9:01 AM 0.5 mi Bear RIGHT (South West) onto US-30 (Webber St) for 0.1 mi
- 9:02 AM 0.7 mi Turn RIGHT (North-West) onto US-30 (W 6th St) for 0.1 mi
- 9:02 AM 0.8 mi Take Ramp (RIGHT) onto I-84 for 3.3 mi towards I-84 / Pendleton
- 9:05 AM 4.1 mi At exit 87, turn RIGHT onto Ramp for 0.2 mi towards US-197 / Durfur / Bend
- 9:05 AM 4.3 mi Turn RIGHT (South) onto US-197 (US-30) for 120 yds
- 9:05 AM 4.4 mi ■ Arrive US-197

THE DALLES OFFLOAD SITE
 TRUCK ROUTE
 APPENDIX B, C
 EXHIBIT F

US-197 to Steele Rd, The Dalles, OR 97058
6.3 miles, 11 minutes



- 9:00 AM 0.0 mi ■ Depart US-197 on US-197 [US 30] (South) for 0.2 mi
- 9:00 AM 0.2 mi Turn LEFT (South-East) onto US-197 for 3.5 mi
- 9:04 AM 3.6 mi Turn RIGHT (South-West) onto County Road 115 [Five Mile Rd] for 142 yds
- 9:05 AM 3.7 mi ■ At 2020 County Road 115, The Dalles, OR 97058, stay on County Road 115 [Five Mile Rd] (South-West) for 1.9 mi
- 9:09 AM 5.6 mi Keep STRAIGHT onto Steele Rd for 0.7 mi
- 9:11 AM 6.3 mi ■ Arrive Steele Rd, The Dalles, OR 97058

Exhibit G



HME
T-4 Removal Act
Phase 1
Part of Portland

January 17, 2001

Service Request No: K2009556

Steve Young
Fort James
NE 4th & Adams
Camas, WA 98607-1999

Dear Steve:

Enclosed are the results of the sample(s) submitted to our laboratory on December 11, 2000. For your reference, these analyses have been assigned our service request number K2009556.

All analyses were performed according to our laboratory's quality assurance program. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the samples analyzed.

Please note that the analysis for Bioassay was performed at MEC Analytical Systems, Inc.

Please call if you have any questions. My extension is 3358.

Respectfully submitted,

Columbia Analytical Services, Inc.

Lynda A. Huckestein
Client Services Manager

LAB/1

Page 1 of 38

Drying Agent chemical Analysis
Approved Wasco County Material

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

00002

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
 - i The MRL/MDL has been elevated due to a matrix interference.
- X See case narrative.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- B The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- E The reported value is estimated because of the presence of matrix interference.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
 - i The MRL/MDL has been elevated due to a matrix interference.
- X See case narrative.
- * The duplicate analysis not within control limits. See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results (25% for CLP Pesticides).
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
 - i The MRL/MDL has been elevated due to a chromatographic interference.
- X See case narrative.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

00003

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Fort James - Campus
Project:
Sample Matrix: Solid

Service Request: K2009556
Date Collected: 12/5/00
Date Received: 12/11/00
Date Extracted: NA
Date Analyzed: 12/12/00

Solids, Total
EPA Method 160.3 Modified
Units: Percent (%)

Sample Name	Lab Code	Result
Primary Solids	K2009556-001	33.8

Approved By:

[Signature]

Date:

12/14/00

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Fort James - Camex
Project:
Sample Matrix: Solid

Service Request: K2009556
Date Collected: 12/5/00
Date Received: 12/11/00

ASH

Prep Method: NONE
Analysis Method: 160.4M
Test Notes:

Units: PERCENT
Basis: DRY

Sample Name	Lab Code	Date Analyzed	Result	Result Notes
Primary Solids	K2009556-001	12/12/00	21.0	

Approved By: UMMR

Date: 12/14/00

Task: 00000000

Worksheet - ASI 12/14/00

Page No.:

00005

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Fort James
 Project: NA
 Sample Matrix: Solid

Service Request: K2009556
 Date Collected: 12/15/00
 Date Received: 12/11/00
 Date Extracted: NA

Characteristics of Hazardous Waste
 RCRA, 40 CFR Part 261

Sample Name: Primary Solids
 Lab Code: K2009556-001
 Test Notes:

Basis: Dry Weight

Analyte	Analysis Method	Units	MRL		Dilution Factor	Date Analyzed	Result	Regulatory Limits
			MRL	MDL				
pH, DOE	DOE	pH UNITS	--	--	1	12/15/00	8.42	≤ 2 or ≥ 12.5
Flashpoint	SW-846 Sec. 7.1*	DEG F	--	--	1	12/15/00	> 200	< 140°F
Cyanide	9010B	mg/Kg (ppm)	0.65	0.15	1	12/21/00	< 0.65	250 mg/Kg
Sulfide, Reactive	SW-846 Sec. 7.3*	mg/Kg (ppm)	35	35	1	12/16/00	< 35	500 mg/Kg

Analytical methods, regulatory limits and action levels used in this report are from Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Ed., September 1986 and as amended by Update I, July 1992.

Approved By: _____

Date: 12/18/00

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01550WEL/PW1 - client 12/28/00

Page No:

01006

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Fort James
 Project: NA
 Sample Matrix: Soil

Service Request: K2009556
 Date Collected: NA
 Date Received: NA
 Date Extracted: NA

Characteristics of Hazardous Waste
 RCRA, 40 CFR Part 261

Sample Name: Method Blank
 Lab Code: K2009556-MB
 Test Notes:

Basis: Dry Weight

Analyte	Analysis Method	Units	MRL	MDL	Dilution Factor	Date Analyzed	Result	Result Notes	Regulatory Limits
Flashpoint	SW-846 Sec. 7.1*	DEG F	-	-	1	12/19/00	> 200		<140°F
Cyanide	9010B	mg/Kg (ppm)	0.01	0.002	1	12/21/00	< 0.01		250 mg/Kg
Sulfide, Reactive	SW-846 Sec. 7.2*	mg/Kg (ppm)	2	2	1	12/16/00	< 2		500 mg/Kg

Analytical methods, regulatory limits and action levels used in this report are from Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Ed., September 1986 and as amended by Update I, July 1992.

Approved By: _____



Date: 12/29/00

12/29/00

02/20/2000

02/20/2000 - MS 11/25/00

Page No.:

00007

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

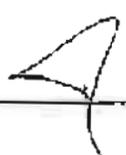
Client: Fort James
 Project: NA
 Sample Matrix: Soil

Service Request: K2009556
 Date Collected: 12/5/00
 Date Received: 12/11/00

Halides, Extractable Organic (EOX)
 EPA Method 9020 Modified
 Units: mg/Kg (ppm)
 As Received Basis

Sample Name	Lab Code	MRL	Result	Date Extracted	Date Analyzed
Primary Solids	K2009556-001	10	32	12/21/00	12/22/00
Method Blank	K2009556-MB	10	ND	12/21/00	12/22/00

Approved By: _____



Date: 12/28/00

QA/QC CONTROL SHEET - EOX (EPA 9020)

Page No.:

00003

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Fort James
 Project: NA
 Sample Matrix: Solid

Service Request: K2009556
 Date Collected: 12/5/00
 Date Received: 12/11/00
 Date TCLP Performed: 12/15/00
 Date Extracted: 12/19/00

Toxicity Characteristic Leaching Procedure (TCLP)
 EPA Method 1311
 Metals
 Units: mg/L (ppm) in TCLP Extract

Sample Name: Primary Solids Method Blank
 Lab Code: K2009556-001 K2009556-MB
 Date Analyzed: 12/20/00, 1/2/01 12/20/00, 1/2/01

Analyte	EPA Method	MRL	Regulatory Limit*	Primary Solids	Method Blank
Arsenic	3010A/6010B	0.1	5	ND	ND
Barium	3010A/6010B	1	100	ND	ND
Cadmium	3010A/6010B	0.01	1	ND	ND
Chromium	3010A/6010B	0.01	5	ND	ND
Lead	3010A/6010B	0.05	5	ND	ND
Mercury	7470A	0.001	0.2	ND	ND
Selenium	3010A/6010B	0.1	1	ND	ND
Silver	3010A/6010B	0.05	5	ND	ND

* From 40 CFR Part 261, et al., and *Federal Register*, March 29, 1990 and June 29, 1990.

Approved By: _____

Date: 1/3/01

TCLP/02194
 92562P.BRI - TCLP LONI

Page No.:

0009

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Fort James
 Project: NA
 Sample Matrix: Solid

Service Request: K2009556
 Date Collected: 12/05/00
 Date Received: 12/11/00

Polychlorinated Biphenyls (PCBs)

Sample Name: Primary Solids
 Lab Code: K2009556-001
 Test Notes: X

Units: mg/Kg (ppm)
 Basis: Dry

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3540C	8082	0.4	1	12/13/00	12/16/00	ND	
Aroclor 1221	EPA 3540C	8082	0.8	1	12/13/00	12/16/00	ND	
Aroclor 1232	EPA 3540C	8082	0.4	1	12/13/00	12/16/00	ND	
Aroclor 1242	EPA 3540C	8082	0.4	1	12/13/00	12/16/00	ND	
Aroclor 1248	EPA 3540C	8082	0.4	1	12/13/00	12/16/00	ND	
Aroclor 1254	EPA 3540C	8082	0.4	1	12/13/00	12/16/00	ND	
Aroclor 1260	EPA 3540C	8082	0.4	1	12/13/00	12/16/00	ND	

Approved By: LT

Date: 12-28-00

12/27/2007

00556500.A11 - 1 12/28/00

00010

Page No.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Fort James
 Project: NA
 Sample Matrix: Solid

Service Request: IC2009156
 Date Collected: NA
 Date Received: NA

Polychlorinated Biphenyls (PCBs)

Sample Name: Method Blank
 Lab Code: KWG2685762-4
 Test Notes:

Units: mg/Kg (ppm)
 Basis: Dry

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3540C	8082	0.2	1	12/13/00	12/16/00	ND	
Aroclor 1221	EPA 3540C	8082	0.4	1	12/13/00	12/16/00	ND	
Aroclor 1222	EPA 3540C	8082	0.2	1	12/13/00	12/16/00	ND	
Aroclor 1242	EPA 3540C	8082	0.2	1	12/13/00	12/16/00	ND	
Aroclor 1248	EPA 3540C	8082	0.2	1	12/13/00	12/16/00	ND	
Aroclor 1254	EPA 3540C	8082	0.2	1	12/13/00	12/16/00	ND	
Aroclor 1260	EPA 3540C	8082	0.2	1	12/13/00	12/16/00	ND	

Approved By: LT Date: 12-25-00

2010-02-07
 0600000000 - 01-02-00

031011

Analytical Report

Client: Fort James
 Project: NA
 Sample Matrix: SoEd

Service Request: K2009556
 Date Collected: 12/5/00
 Date Received: 12/11/00
 Date TCLP Performed: 12/18/00
 Date Extracted: 12/20/00
 Date Analyzed: 12/27/00

Toxicity Characteristic Leaching Procedure (TCLP)
 EPA Method 1311
 Chlorinated Herbicides

Sample Name: Primary Solids
 Lab Code: K2009556-001
 Test Notes:

Units: mg/L (ppm)
 Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Regulatory Limit*	Result	Result Notes
2,4-D	METHOD	8151A	0.10	1	10	ND	
2,4,5-TP (Silvex)	METHOD	8151A	0.010	1	1	ND	

From 40 CFR Part 261.24.

Approved By: _____

TH

Date: 12/29/00

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Fort James
 Project: NA
 Sample Matrix: Solid

Service Request: K2009556
 Date Collected: NA
 Date Received: NA
 Date TCLP Performed: 12/18/00
 Date Extracted: 12/20/00
 Date Analyzed: 12/27/00

Toxicity Characteristic Leaching Procedure (TCLP)
 EPA Method 1311
 Chlorinated Herbicides

Sample Name: Method Blank
 Lab Code: K001220-LB
 Test Notes:

Units: mg/L (ppm)
 Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Regulatory Limit*	Result	Result Notes
2,4-D	METHOD	8151A	0.10	1	10	ND	
4,5-TP (80vex)	METHOD	8151A	0.010	1	1	ND	

From 49 CFR Part 261.24.

Approved By: _____

TN

Date: _____

12/29/00

Analytical Results

Client: Fort James
 Project:
 Sample Matrix: Solid

Service Request: K2009556
 Date Collected: 12/05/2000
 Date Received: 12/11/2000

Volatile Organic Compounds

Sample Name: Primary Solids
 Lab Code: K2009556-001
 Extraction Method: EPA 5050A
 Analysis Method: 8260B

Units: ug/kg ^{ppb}
 Basis: Dry ¹
 Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dichlorodifluoromethane	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
Chloromethane	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
Vinyl Chloride	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
Bromomethane	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
Fluoroethane	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
Trichlorofluoromethane	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
Acetone	660		240	1	12/12/00	12/12/00	KWG2010119	
1,1-Dichloroethene	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
Carbon Disulfide	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
Methylene Chloride	ND	U	49	1	12/12/00	12/12/00	KWG2010119	
trans-1,2-Dichloroethene	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
1,1-Dichloroethane	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
2-Butanone (MEK)	140		98	1	12/12/00	12/12/00	KWG2010119	
2,2-Dichloropropane	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
cis-1,2-Dichloroethene	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
Chloroform	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
Bromochloromethane	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
1,1,1-Trichloroethane (TCA)	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
1,1-Dichloropropene	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
Carbon Tetrachloride	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
1,2-Dichloroethane (EDC)	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
Benzene	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
Trichloroethene (TCE)	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
1,2-Dichloropropane	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
Bromodichloromethane	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
Dibromomethane	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
2-Hexanone	ND	U	98	1	12/12/00	12/12/00	KWG2010119	
cis-1,3-Dichloropropene	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
Toluene	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
trans-1,3-Dichloropropene	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
1,1,2-Trichloroethane	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
4-Methyl-2-pentanone (MIBK)	ND	U	98	1	12/12/00	12/12/00	KWG2010119	
1,3-Dichloropropane	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
Tetrachloroethene (PCE)	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
Dibromochloromethane	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
1,2-Dibromoethane (EDB)	ND	U	98	1	12/12/00	12/12/00	KWG2010119	

00014

Analytical Results

Client: Fort James
 Project:
 Sample Matrix: Solid

Service Request: K2009556
 Date Collected: 12/05/2000
 Date Received: 12/11/2000

Volatile Organic Compounds

Sample Name: Primary Solids
 Lab Code: K2009556-001
 Extraction Method: EPA 5030A
 Analysis Method: 8260B

Units: µg/kg
 Basis: Dry
 Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Chlorobenzene	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
1,1,1,2-Tetrachloroethane	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
Ethylbenzene	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
m,p-Xylenes	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
o-Xylene	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
Styrene	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
Bromoform	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
Isopropylbenzene	ND	U	98	1	12/12/00	12/12/00	KWG2010119	
1,1,2,2-Tetrachloroethane	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
1,2,3-Trichloropropane	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
Bromobenzene	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
n-Propylbenzene	ND	U	98	1	12/12/00	12/12/00	KWG2010119	
2-Chlorotoluene	ND	U	98	1	12/12/00	12/12/00	KWG2010119	
4-Chlorotoluene	ND	U	98	1	12/12/00	12/12/00	KWG2010119	
1,3,5-Trimethylbenzene	100		98	1	12/12/00	12/12/00	KWG2010119	
tert-Butylbenzene	ND	U	98	1	12/12/00	12/12/00	KWG2010119	
1,2,4-Trimethylbenzene	300		98	1	12/12/00	12/12/00	KWG2010119	
sec-Butylbenzene	ND	U	98	1	12/12/00	12/12/00	KWG2010119	
1,2-Dichlorobenzene	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
4-Isopropyltoluene	130		98	1	12/12/00	12/12/00	KWG2010119	
1,4-Dichlorobenzene	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
n-Butylbenzene	ND	U	98	1	12/12/00	12/12/00	KWG2010119	
1,2-Dichlorobenzene	ND	U	24	1	12/12/00	12/12/00	KWG2010119	
1,2-Dibromo-3-chloropropane	ND	U	98	1	12/12/00	12/12/00	KWG2010119	
1,2,4-Trichlorobenzene	ND	U	98	1	12/12/00	12/12/00	KWG2010119	
1,2,3-Trichlorobenzene	ND	U	98	1	12/12/00	12/12/00	KWG2010119	
Naphthalene	ND	U	98	1	12/12/00	12/12/00	KWG2010119	
Hexachlorobutadiene	ND	U	98	1	12/12/00	12/12/00	KWG2010119	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	97	75-132	12/12/00	Acceptable
Toluene-d8	89	83-109	12/12/00	Acceptable
4-Bromofluorobenzene	102	49-131	12/12/00	Acceptable

01015

Analytical Results

Client: Fort James
 Project:
 Sample Matrix: Solid

Service Request: K2009556
 Date Collected: NA
 Date Received: NA

Volatile Organic Compounds

Sample Name: Method Blank
 Lab Code: KWG2010119-?
 Extraction Method: EPA 5030A
 Analysis Method: 8260B

Units: ug/Kg
 Basis: Dry
 Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dichlorodifluoromethane	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
Chloromethane	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
Vinyl Chloride	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
Bromomethane	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
Chloroethane	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
Trichlorofluoromethane	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
Acetone	ND	U	50	1	12/12/00	12/12/00	KWG2010119	
1,1-Dichloroethene	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
Carbon Disulfide	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
Methylene Chloride	ND	U	10	1	12/12/00	12/12/00	KWG2010119	
trans-1,2-Dichloroethene	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
1,1-Dichloroethane	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
2-Butanone (MEK)	ND	U	20	1	12/12/00	12/12/00	KWG2010119	
2,2-Dichloropropane	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
cis-1,2-Dichloroethene	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
Chloroform	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
Bromochloromethane	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
1,1,1-Trichloroethane (TCA)	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
1,1-Dichloropropene	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
Carbon Tetrachloride	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
1,2-Dichloroethane (EDC)	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
Benzene	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
Trichloroethene (TCE)	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
1,2-Dichloropropane	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
Bromodichloromethane	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
Dibromomethane	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
2-Hexanone	ND	U	20	1	12/12/00	12/12/00	KWG2010119	
cis-1,3-Dichloropropene	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
Toluene	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
trans-1,3-Dichloropropene	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
1,1,2-Trichloroethane	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
4-Methyl-2-pentanone (MIBK)	ND	U	20	1	12/12/00	12/12/00	KWG2010119	
1,3-Dichloropropane	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
Tetrachloroethene (PCE)	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
Dibromochloromethane	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
1,2-Dibromoethane (EDB)	ND	U	20	1	12/12/00	12/12/00	KWG2010119	

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Analytical Results

Client: Fort James
 Project:
 Sample Matrix: Solid

Service Request: K2008556
 Date Collected: NA
 Date Received: NA

Volatile Organic Compounds

Sample Name: Method Blank
 Lab Code: KWG2010119-7
 Extraction Method: EPA 5030A
 Analysis Method: 8260B

Units: ug/Kg
 Basis: Dry
 Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Chlorobenzene	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
1,1,1,2-Tetrachloroethane	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
Ethylbenzene	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
m,p-Xylenes	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
o-Xylene	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
Styrene	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
Bromoform	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
Isopropylbenzene	ND	U	20	1	12/12/00	12/12/00	KWG2010119	
1,1,2,2-Tetrachloroethane	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
1,2,3-Trichloropropane	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
Bromobenzene	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
n-Propylbenzene	ND	U	20	1	12/12/00	12/12/00	KWG2010119	
2-Chlorotoluene	ND	U	20	1	12/12/00	12/12/00	KWG2010119	
4-Chlorotoluene	ND	U	20	1	12/12/00	12/12/00	KWG2010119	
1,3,5-Trimethylbenzene	ND	U	20	1	12/12/00	12/12/00	KWG2010119	
tert-Butylbenzene	ND	U	20	1	12/12/00	12/12/00	KWG2010119	
1,2,4-Trimethylbenzene	ND	U	20	1	12/12/00	12/12/00	KWG2010119	
sec-Butylbenzene	ND	U	20	1	12/12/00	12/12/00	KWG2010119	
1,2-Dichlorobenzene	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
4-Isopropyltoluene	ND	U	20	1	12/12/00	12/12/00	KWG2010119	
1,4-Dichlorobenzene	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
n-Butylbenzene	ND	U	20	1	12/12/00	12/12/00	KWG2010119	
1,2-Dichlorobenzene	ND	U	5.0	1	12/12/00	12/12/00	KWG2010119	
1,2-Dibromo-3-chloropropane	ND	U	20	1	12/12/00	12/12/00	KWG2010119	
1,2,4-Trichlorobenzene	ND	U	20	1	12/12/00	12/12/00	KWG2010119	
1,2,3-Trichlorobenzene	ND	U	20	1	12/12/00	12/12/00	KWG2010119	
Naphthalene	ND	U	20	1	12/12/00	12/12/00	KWG2010119	
Hexachlorobutadiene	ND	U	20	1	12/12/00	12/12/00	KWG2010119	

Surrogate Name	% Rec	Control Lots	Date Analyzed	Note
Dibromobromomethane	95	75-132	12/12/00	Acceptable
Toluene-d8	97	85-109	12/12/00	Acceptable
4-Bromofluorobenzene	92	49-131	12/12/00	Acceptable

00017

Analytical Results

Client: Fort James
 Project:
 Sample Matrix: Solid

Service Request: K2009556
 Date Collected: 12/05/2000
 Date Received: 12/11/2000
 Date Prepared: 12/18/2000

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Primary Solids
 Lab Code: K2009556-001
 Preparation Method: EPA 1311
 Extraction Method: EPA 3510C
 Analysis Method: 8270C

Units: mg/L
 Basis: NA
 Level: Low

Analyte Name	Result	Q	MRL	Regulatory Limit	Dilution Factor	Date Extracted	Date Analyzed	Note
Pyridine	ND	U	0.50	5	1	12/20/00	01/05/01	
2-Methylphenol	ND	U	0.10	200	1	12/20/00	01/05/01	
Hexachloroethane	ND	U	0.10	3	1	12/20/00	01/05/01	
2- and 4-Methylphenol Coelution	ND	U	0.10	200	1	12/20/00	01/05/01	
Nitrobenzene	ND	U	0.10	2	1	12/20/00	01/05/01	
Hexachlorobutadiene	ND	U	0.10	0.5	1	12/20/00	01/05/01	
2,4,6-Trichlorophenol	ND	U	0.10	2	1	12/20/00	01/05/01	
2,4,5-Trichlorophenol	ND	U	0.10	400	1	12/20/00	01/05/01	
2,4-Dinitrotoluene	ND	U	0.10	0.13	1	12/20/00	01/05/01	
Hexachlorobenzene	ND	U	0.10	0.13	1	12/20/00	01/05/01	
Pentachlorophenol	ND	U	0.25	100	1	12/20/00	01/05/01	

Surrogate Name	%Rec	Control Limits	Note
2-Fluorophenol	65	19-107	Acceptable
Phenol-d6	69	32-115	Acceptable
Nitrobenzene-d5	91	42-117	Acceptable
2-Fluorobiphenyl	78	33-120	Acceptable
2,4,6-Tribromophenol	87	30-121	Acceptable
Terphenyl-d14	84	39-120	Acceptable

00018

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Fort James
 Project:
 Sample Matrix: Solid

Service Request: K2009556
 Date Collected: NA
 Date Received: NA
 Date Prepared: 12/18/2000

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
 Lab Code: KWG2005871-3
 Preparation Method: EPA 1311
 Extraction Method: EPA 3510C
 Analysis Method: 8270C

Units: mg/L
 Basis: NA
 Level: Low

Analyte Name	Result	Q	MRL	Regulatory Limit	Dilution Factor	Date Extracted	Date Analyzed	Note
Pyridine	ND	U	0.50	5	1	12/20/00	12/30/00	
1-Methylphenol	ND	U	0.10	200	1	12/20/00	12/30/00	
Hexachloroethane	ND	U	0.10	3	1	12/20/00	12/30/00	
1- and 4-Methylphenol Coelution	ND	U	0.10	200	1	12/20/00	12/30/00	
Nitrobenzene	ND	U	0.10	2	1	12/20/00	12/30/00	
Hexachlorobutadiene	ND	U	0.10	0.5	1	12/20/00	12/30/00	
1,4,6-Trichlorophenol	ND	U	0.10	2	1	12/20/00	12/30/00	
1,4,5-Trichlorophenol	ND	U	0.10	400	1	12/20/00	12/30/00	
1,4-Dinitrotoluene	ND	U	0.10	0.13	1	12/20/00	12/30/00	
Hexachlorobenzene	ND	U	0.10	0.13	1	12/20/00	12/30/00	
Pentachlorophenol	ND	U	0.25	100	1	12/20/00	12/30/00	

Surrogate Name	%Rec	Control Limits	Note
2-Fluorophenol	69	19-107	Acceptable
2-nol-d5	70	32-115	Acceptable
Nitrobenzene-d5	95	42-117	Acceptable
2-Fluorobiphenyl	88	33-120	Acceptable
1,2,4,6-Tribromophenol	92	30-121	Acceptable
Terphenyl-d14	93	39-120	Acceptable

00019

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Fort James
 Project: NA
 Sample Matrix: Solid

Service Request: K2009556
 Date Collected: 12/5/00
 Date Received: 12/11/00
 Date Extracted: 12/18/00

Polyuclear Aromatic Hydrocarbons
 EPA Methods 3550B/8310
 Units: mg/Kg (ppm)
 Dry Weight Basis

Sample Name:	Primary Solids	Method Blank
Lab Code:	K2009556-001	K001218-SB
Date Analyzed:	12/25/00	12/23/00

Analyte	MRL		
Naphthalene	0.1	<0.5	ND
Acenaphthylene	0.1	<0.5	ND
Acenaphthene	0.1	<0.5	ND
Fluorene	0.02	<0.1	ND
Phenanthrene	0.01	0.22	ND
Anthracene	0.01	0.55	ND
Fluoranthene	0.02	<0.1	ND
Pyrene	0.02	<0.1	ND
Benzo(a)anthracene	0.01	<0.05	ND
Chrysene	0.01	<0.05	ND
Benzo(b)fluoranthene	0.02	<0.1	ND
Benzo(k)fluoranthene	0.01	<0.05	ND
Benzo(a)pyrene	0.01	<0.05	ND
Dibenz(a,h)anthracene	0.01	<0.05	ND
Benzo(g,h,i)perylene	0.02	<0.1	ND
Indeno(1,2,3-cd)pyrene	0.01	<0.05	ND

Approved By: _____ *TR* Date: 12/26/00

APPENDIX A
LABORATORY QA/QC RESULTS

00021

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Fort James
 Project: NA
 Sample Matrix: Solid

Service Request: K2009556
 Date Collected: 12/5/00
 Date Received: 12/11/00
 Date TCLP Performed: 12/15/00
 Date Extracted: 12/19/00
 Date Analyzed: 12/20/00, 1/2/01

Matrix Spike Summary
 Toxicity Characteristic Leaching Procedure (TCLP)
 EPA Method 1311
 Metals
 Units: mg/L (ppm) in TCLP Extract

Sample Name: Primary Solids
 Lab Code: K2009556-001MS

Analyte	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery*
Arsenic	5	ND	4.9	98
Barium	10	ND	10	100
Cadmium	1	ND	0.88	88
Chromium	5	ND	4.45	89
Lead	5	ND	4.47	89
Mercury	0.005	ND	0.005	100
Selenium	1	ND	1.0	100
Silver	1	ND	0.93	93

* Percent recovery information is provided in order to assess the performance of the method on this matrix.

Approved By: _____



Date: _____

1/3/01

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Fort James
Project: NA
Sample Matrix: Solid

Service Request: K2005556
Date Collected: 12/05/00
Date Received: 12/11/00
Date Extracted: 12/13/00
Date Analyzed: 12/16/00

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Prep Method: EPA 3546C
Analysis Method: 8082

Units: PERCENT
Basis: NA

Sample Name	Lab Code	Test Notes	Percent Recovery Decachlorobiphenyl
Primary Solids	K2005556-001		76
Method Blank	KWG2005762-4		83

CAS Acceptance Limits: D-143

Approved By: LJ Date: 12-28-00

6031/00007
COLUMBIA ANALYTICAL SERVICES, INC. - 1500 DUNBAR

U4023

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Fort James
Project: NA
Sample Matrix: Solid

Service Request: K2009556
Date Collected: 12/5/00
Date Received: 12/11/00
Date TCLP Performed: 12/18/00
Date Extracted: 12/20/00
Date Analyzed: 12/27/00

Surrogate Recovery Summary
Toxicity Characteristic Leaching Procedure (TCLP)
EPA Method 1311
Chlorinated Herbicides

Prep Method: METHOD
Analysis Method: 8151A

Units: PERCENT
Basis: NA

Sample Name	Lab Code	Test Notes	Percent Recovery 2,4-Dichlorophenylacetic Acid
Primary Solids	K2009556-001		82
Secondary Solids	K2009556-001MS		81
Method Blank	K081220-LB		81

CAS Acceptance Limits: 28-107

Approved By: _____
Date: _____

11 Date: 12/29/00

QA/QC Report

Client: Port James
 Project: NA
 Sample Matrix: Solid

Service Request: K2009556
 Date Collected: 12/5/00
 Date Received: 12/11/00
 Date TCLP Performed: 12/18/00
 Date Extracted: 12/20/00
 Date Analyzed: 12/27/00

Matrix Spike Summary
 Toxicity Characteristic Leaching Procedure (TCLP)
 EPA Method 1311
 Chlorinated Herbicides

Sample Name: Primary Solids
 Lab Code: K2009556-001MS
 Test Notes:

Units: mg/L (ppm)
 Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Spike Level	Sample Result	Spiked		Result Notes
						Sample Result	Percent Recovery	
2,4-D	METHOD	8151A	0.10	0.25	ND	0.21	84	
2,4,5-TP (Silvex)	METHOD	8151A	0.010	0.25	ND	0.22	88	

Approved By: _____

TV Date: 12/21/00

Client: Fort James
 Project:
 Sample Matrix: Solid

Service Request: K2009556

Surrogate Recovery Summary
 Semi-Volatile Organic Compounds by GC/MS

Preparation Method: EPA 1311
 Extraction Method: EPA 3510C
 Analysis Method: 8270C

Units: PERCENT
 Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3	Sur4	Sur5	Sur6
Primary Solids	K2009556-001	65	69	91	78	87	84
Method Blank	KWG2005871-3	69	70	95	88	92	93
Primary SolidsMS	KWG2005871-1	60	66	88	69	88	78
Lab Control Sample	KWG2005871-2	62	70	81	72	97	94

Surrogate Recovery Control Limits (%)

Sur1 = 2-Fluorophenol	19-107	Sur5 = 2,4,6-Tribromophenol	30-121
Sur2 = Phenol-d6	32-115	Sur6 = Terphenyl-d14	39-120
Sur3 = Nitrobenzene-d5	42-117		
Sur4 = 2-Fluorobiphenyl	33-120		

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: Fort James
 Project:
 Sample Matrix: Solid

Service Request: K2009556
 Date Prepared: 12/18/2000
 Date Extracted: 12/20/2000
 Date Analyzed: 12/30/2000

Matrix Spike Summary
 Semi-Volatile Organic Compounds by GC/MS

Sample Name: Primary Solids
 Lab Code: K2009556-001
 Preparation Method: EPA 1311
 Extraction Method: EPA 3510C
 Analysis Method: 8270C

Units: ng/L
 Basis: NA
 Level: Low
 Extraction Lot: KWG2005871

Analyte Name	Sample Result	Primary SolidsMS KWG2005871-1 Matrix Spike			%Rec	Limits
		Result	Expected	%Rec		
pyridine	ND	1.3	2.5	52	45-135	
Methylphenol	ND	0.40	0.50	80	45-135	
hexachloroethane	ND	0.42	0.50	84	45-135	
and 4-Methylphenol Coelution	ND	0.69	1.0	69	45-135	
nitrobenzene	ND	0.39	0.50	78	45-135	
hexachlorobutadiene	ND	0.38	0.50	76	45-135	
1,6-Trichlorophenol	ND	0.40	0.50	80	45-135	
Trichlorophenol	ND	0.41	0.50	82	45-135	
o-cresoluene	ND	0.35	0.50	70	45-135	
o-cresol	ND	0.42	0.50	84	45-135	
o-chlorophenol	ND	0.42	0.50	84	45-135	

Results flagged with an asterisk (*) indicate values outside control criteria.
 Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: Fort James
 Project:
 Sample Matrix: Solid

Service Request: K2009556
 Date Prepared: 12/18/2000
 Date Extracted: 12/20/2000
 Date Analyzed: 12/30/2000

Lab Control Spike Summary
 Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 1311/EPA 3510C
 Analysis Method: 8270C

Units: mg/L
 Basis: NA
 Level: Low
 Extraction Lot: KWG2005871

Analyte Name	Lab Control Sample KWG2005871-2 Lab Control Spike			%Rec Limits
	Result	Expected	%Rec	
Pyridine	0.96	2.5	38 *	45-135
2-Methylphenol	0.38	0.50	76	45-135
Hexachloroethane	0.36	0.50	72	45-135
1,4-Methylphenol Coelution	0.72	1.0	72	45-135
Toluene	0.40	0.50	80	45-135
Hexachlorobutadiene	0.33	0.50	66	45-135
Trichlorophenol	0.38	0.50	76	45-135
Dichlorophenol	0.42	0.50	84	45-135
1,3-Dinitrobenzene	0.34	0.50	68	45-135
Hexachlorobenzene	0.45	0.50	90	45-135
Pentachlorophenol	0.43	0.50	86	45-135

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Fort James
Project: NA
Sample Matrix: Solid

Service Request: K2009556
Date Collected: 12/5/00
Date Received: 12/11/00
Date Extracted: 12/18/00
Date Analyzed: 12/22-25/00

Surrogate Recovery Summary
Polynuclear Aromatic Hydrocarbons
EPA Methods 3550B/8310

Sample Name	Lab Code	Percent Recovery <i>p</i> -Terphenyl
Primary Solids	K2009556-001	75
Method Blank	K001218-SB	83

CAS Acceptance Limits: 47-108

Approved By: _____

TL

Date: _____

12/26/00

00029



ANALYTICAL SYSTEMS, INC.

1433 Impala Drive, Carlsbad, CA 92008 / (760) 931-8081 / (760) 931-1580 FAX

December 22, 2000

Ms. Lynda Huckerstein
CAS Kelso
1317 South 13th Ave.
Kelso, Washington 98626

Re: Toxicity Testing Results – Dangerous Waste Bioassays – WDOE (89-12), Rainbow Trout 96-Hour

Dear Ms. Huckerstein:

Enclosed please find the reports for the dangerous waste tests performed on test substances Primary Solids, Secondary Solids, Nutrilite Extra, Pump Shop Parts Washer Filter A, and Pump Shop Parts Washer Filter B received on the 14th of December, and processed between the 15th and 19th of December, 2000. The results of these tests are listed in the table below.

Test Substance Concentration	Test Number	Survival (%)	Mortality (%)
100 ppm	C001214.0111	100	96.7
100 ppm	C001214.0211	100	100
100 ppm	C001214.0311	100	100
100 ppm	C001214.0411	100	96.7
100 ppm	C001214.0511	100	93.3

Test substances Primary Solids, Secondary Solids, Nutrilite Extra, Pump Shop Parts Washer Filter A, and Pump Shop Parts Washer Filter B are not considered dangerous waste under criteria established under WDOE (89-12).

All testing was performed consistent with our laboratory's quality assurance program. All results are intended to be considered in their entirety, and MEC is not responsible for use of less than the complete report. Results apply only to the samples tested.

If you have any questions regarding these results, or require additional testing, please call me at (760) 931-8081. Thank you for using the aquatic testing services of MEC Analytical Systems Inc.

Sincerely,

Brian Hester
Environmental Analyst
Carlsbad Bioassay Laboratory
bhester@meccanalytical.com

Enclosed: 5 toxicity reports, raw data sheets for 5 toxicity reports; reference toxicity data sheets, statistical analysis and control chart; 5 chain of custodys, 5 purchase orders

MEC ANALYTICAL SYSTEMS, INC.

Analytical Report

Client: CAS Kelso
Project: K2009558
Sample Matrix: solid
Sample Name/ID: Primary solids
Date Received: 12/14/00
Date Test Started: 12/15/00
Date Test Ended: 12/19/00
Test ID No.: C001214.0111

Dangerous Waste Bioassay - WDOE (80-12)
MEC Testing Protocol No. B10010
Test Organism: Rainbow Trout

Test Solution	Number of Test Organisms at Start of Test	Number of Dead Organisms at End of Test	Percent Mortality
Control	30	0	0
100 ppm	30	1	3.3

Toxicity Statement: Test substance, Primary solids, did not express a toxic effect on Rainbow Trout exposed to concentrations of 100 ppm for 96 hours. Survival at 96 hours was 96.7 percent. This substance is not considered a dangerous waste under criteria established under WDOE (80-12).

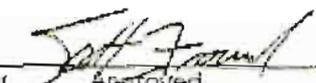
Protocol Deviation: Protocol required the fish to be quarantined and acclimated for a minimum of 7 days before used in tests. Due to the shipment receiving date, the fish were only allowed to be quarantined and acclimated for a period of 2 days before used in this test.



QA Unit

12/22/00

Date



Approved

12-22-00

Date

MEC ANALYTICAL SYSTEMS, INC.

Analytical Report

Client: CAS Kelso
 Project: K2009556
 Sample Matrix: solid
 Sample Name/ID: Primary solids

Date Received: 12/14/00
 Date Test Started: 12/15/00
 Date Test Ended: 12/19/00
 Test ID No.: C001214.0111

Dangerous Waste Bioassay - WDOE (80-12)
 MEC Testing Protocol No. BIO010

Test Organism: Rainbow Trout

Test Solution Physical and Chemical Data

Analyte:	Alkalinity as CaCO ₃	Conductivity	Dissolved Oxygen	Hardness as CaCO ₃	pH
EPA Method:	310.1	120.1	360.1	130.2	150.1
Method Reporting Limit:	2 mg/L	0,002 mS/cm	1% sat.	5 mg/L	-

Sample	Hardness (mg CaCO ₃ /L)	Alkalinity (mg CaCO ₃ /L)
Test Substance - 0 hour	88	68
Control Water - 0 hour	84	60
Test Substance - 96 hour	84	70
Control Water - 96 hour	80	62

Concentration	Stat.istic	Temperature (°C)	D.O. (% Sat.)	pH	Conductivity (µS/cm)
Control	Mean	12.7	80	7.0	0.30
Control	Minimum	12.4	69	6.5	0.30
Control	Maximum	13.0	103	7.5	0.31
100 ppm	Mean	12.5	81	7.2	0.30
100 ppm	Minimum	12.3	65	6.7	0.30
100 ppm	Maximum	12.7	97	8.1	0.31

MEC ANALYTICAL SYSTEMS, INC.

Analytical Report

Client:	CAS Kelso	Date Received:	12/14/00
Project:	K2009556	Date Test Started:	12/15/00
Sample Matrix:	solid	Date Test Ended:	12/19/00
Sample Name/ID:	Primary solids	Test ID No.:	C001214.0111

APPENDIX
Pertinent Test Data

TEST: Dangerous Waste Bioassay (WDOE 80-12), MEC Protocol No. BIO010

DILUTION WATER: Synthetic moderately hard water.

Hardness	84 mg/L CaCO ₃
Alkalinity	60 mg/L CaCO ₃
pH	7.5
Dissolved Oxygen	100% saturation
Temperature	13.0 °C

TEST ORGANISM: Rainbow Trout, *Oncorhynchus mykiss*, age 38 days old, purchased from Thomas Fish Company, 2 days acclimation at 12 ± 1 °C; 0.47 g average weight; 34.0 mm average length.

TEST CHAMBER: 8-L aquaria, 3 replicate samples and 3 replicate controls, brought to a 6 L final volume for a >14 cm depth.

EXPERIMENTAL DESIGN:

1. A sample was collected on December 5, 2000.
2. The test substance was mechanically shaken for 18 hours at 23 ± 2 °C prior to test initiation and rinsed into the test chambers with dilution water. The mixing containers were then placed into chambers for a final concentration of 100 ppm. "Blank" mixing containers were placed in the controls.
3. The test chambers were randomized.
4. The temperature of the test chambers was adjusted to 12 ± 1.0 °C.
5. Ten test organisms were placed into each aquarium. The ratio of grams of fish flesh to liters of bioassay test solution was 0.78 g/L.
6. Test chambers were held at 12 ± 1.0 °C for 96 hours with a photo period of 16 hours light; 8 hours darkness.

MORTALITY CRITERIA: Lack of respiratory movement and lack of reaction to gentle prodding.

ACCEPTABILITY CRITERIA: ≥ 90% survival in controls.

REFERENCE TOXICITY:
(Control Chart attached)

1. Toxicant: CuSO₄, Lot No.9196-03, received 08/23/99, expires 07/15/01
2. 96 Hour LC₅₀: 90.00 ppb
3. Laboratory Mean: 69.19 ppb, (within 95% confidence limits)
4. Test Date: 12/12/00

STUDY DIRECTOR: S. Fravel

INVESTIGATORS: M.A. Irwin, C.Osuch, S. Fravel

CLIENT: CAS Kelso
 PROJECT: L 7009556
 CLIENT SAMPLE ID: Pompa Solids
 MEC SAMPLE ID: 10024.011
 STUDY DIRECTOR: SF

DATE RECEIVED: 12-14-00
 DATE TEST STARTED: 12-15-00
 DATE TEST ENDED: 12-19-00
 MEC SOP NO.: B10010
 SPECIES: Oncorhynchus mykiss
 NO. ORGANISMS PER CHAMBER: 10

	Concentration	DO (%)			Temp (°C)			Conduct.			pH			Hardness (mg/L CaCO ₃)	Alkalinity (mg/L CaCO ₃)
		1	2	3	1	2	3	1	2	3	1	2	3		
Day 0 (0 Hours) Date: <u>12-15-00</u> Time: <u>1540</u> Technician: <u>NAI</u>	CONTROL	<u>100</u>	<u>103</u>	<u>101</u>	<u>13.0</u>	<u>12.9</u>	<u>13.0</u>	<u>0.30</u>	<u>0.30</u>	<u>0.30</u>	<u>7.5</u>	<u>7.5</u>	<u>7.5</u>	<u>84</u>	<u>60</u>
	100 ppm	<u>91</u>	<u>91</u>	<u>91</u>	<u>12.3</u>	<u>12.3</u>	<u>12.6</u>	<u>0.30</u>	<u>0.30</u>	<u>0.30</u>	<u>8.0</u>	<u>8.1</u>	<u>8.0</u>	<u>88</u>	<u>68</u>
24 Hours Date: <u>12-16-00</u> Time: <u>1030</u> Technician: <u>CR</u>	CONTROL	<u>87</u>	<u>80</u>	<u>84</u>	<u>12.8</u>	<u>12.7</u>	<u>12.8</u>	<u>0.30</u>	<u>0.30</u>	<u>0.30</u>	<u>7.1</u>	<u>7.1</u>	<u>7.1</u>		
	100 ppm	<u>92</u>	<u>97</u>	<u>99</u>	<u>12.7</u>	<u>12.7</u>	<u>12.7</u>	<u>0.30</u>	<u>0.30</u>	<u>0.30</u>	<u>7.3</u>	<u>7.4</u>	<u>7.3</u>		
48 Hours Date: <u>12-17-00</u> Time: <u>1210</u> Technician: <u>CR</u>	CONTROL	<u>74</u>	<u>70</u>	<u>72</u>	<u>12.6</u>	<u>12.6</u>	<u>12.6</u>	<u>0.30</u>	<u>0.30</u>	<u>0.30</u>	<u>7.0</u>	<u>7.0</u>	<u>7.0</u>		
	100 ppm	<u>75</u>	<u>84</u>	<u>65</u>	<u>12.3</u>	<u>12.4</u>	<u>12.6</u>	<u>0.31</u>	<u>0.30</u>	<u>0.30</u>	<u>7.2</u>	<u>7.4</u>	<u>7.2</u>		
72 Hours Date: <u>12-18-00</u> Time: <u>955</u> Technician: <u>JF</u>	CONTROL	<u>75</u>	<u>69</u>	<u>71</u>	<u>12.6</u>	<u>12.5</u>	<u>12.6</u>	<u>0.30</u>	<u>0.30</u>	<u>0.30</u>	<u>6.9</u>	<u>6.8</u>	<u>6.5</u>		
	100 ppm	<u>75</u>	<u>84</u>	<u>68</u>	<u>12.4</u>	<u>12.4</u>	<u>12.5</u>	<u>0.31</u>	<u>0.31</u>	<u>0.31</u>	<u>6.8</u>	<u>6.9</u>	<u>6.7</u>		
96 Hours Date: <u>12-19-00</u> Time: <u>905</u> Technician: <u>CR</u>	CONTROL	<u>75</u>	<u>71</u>	<u>73</u>	<u>12.4</u>	<u>12.8</u>	<u>12.5</u>	<u>0.30</u>	<u>0.31</u>	<u>0.30</u>	<u>6.5</u>	<u>6.5</u>	<u>6.5</u>	<u>80</u>	<u>62</u>
	100 ppm	<u>75</u>	<u>82</u>	<u>69</u>	<u>12.6</u>	<u>12.5</u>	<u>12.6</u>	<u>0.31</u>	<u>0.31</u>	<u>0.31</u>	<u>6.7</u>	<u>6.7</u>	<u>6.7</u>	<u>84</u>	<u>70</u>

SURVIVAL	Concentration	No. Alive R1		No. Dead R1		No. Alive R2		No. Dead R2		No. Alive R3		No. Dead R3	
		1	2	1	2	1	2	1	2	1	2	1	2
24 Hours Date: <u>12-16-00</u> Time: <u>1035</u> Technician: <u>CR</u>	CONTROL	<u>10</u>	<u>10</u>	<u>0</u>	<u>0</u>	<u>10</u>	<u>10</u>	<u>0</u>	<u>0</u>	<u>10</u>	<u>10</u>	<u>0</u>	<u>0</u>
	100 ppm	<u>9</u>	<u>9</u>	<u>1</u>	<u>1</u>	<u>10</u>	<u>10</u>	<u>0</u>	<u>0</u>	<u>10</u>	<u>10</u>	<u>0</u>	<u>0</u>
48 Hours Date: <u>12-17-00</u> Time: <u>1235</u> Technician: <u>CR</u>	CONTROL	<u>10</u>	<u>10</u>	<u>0</u>	<u>0</u>	<u>10</u>	<u>10</u>	<u>0</u>	<u>0</u>	<u>10</u>	<u>10</u>	<u>0</u>	<u>0</u>
	100 ppm	<u>9</u>	<u>9</u>	<u>0</u>	<u>0</u>	<u>10</u>	<u>10</u>	<u>0</u>	<u>0</u>	<u>10</u>	<u>10</u>	<u>0</u>	<u>0</u>
72 Hours Date: <u>12-18-00</u> Time: <u>1030</u> Technician: <u>JF</u>	CONTROL	<u>10</u>	<u>10</u>	<u>0</u>	<u>0</u>	<u>10</u>	<u>10</u>	<u>0</u>	<u>0</u>	<u>10</u>	<u>10</u>	<u>0</u>	<u>0</u>
	100 ppm	<u>9</u>	<u>9</u>	<u>0</u>	<u>0</u>	<u>10</u>	<u>10</u>	<u>0</u>	<u>0</u>	<u>10</u>	<u>10</u>	<u>0</u>	<u>0</u>
96 Hours Date: <u>12-19-00</u> Time: <u>1540</u> Technician: <u>CR</u>	CONTROL	<u>10</u>	<u>10</u>	<u>0</u>	<u>0</u>	<u>10</u>	<u>10</u>	<u>0</u>	<u>0</u>	<u>10</u>	<u>10</u>	<u>0</u>	<u>0</u>
	100 ppm	<u>9</u>	<u>9</u>	<u>0</u>	<u>0</u>	<u>10</u>	<u>10</u>	<u>0</u>	<u>0</u>	<u>10</u>	<u>10</u>	<u>0</u>	<u>0</u>

START TIME: 1600
 END TIME: 1540
 ORGANISM BATCH: TF 5154 38 days old
 HOBID TEMP. NO.: 1967
 TEST LOCATION: Room 1 Bath 2

DILUTION WATER BATCH: FW473
 pH: 7.5 DO: 100 TEMP: 13.0
 REF. TOX.: C990823.199 LOT NO.: 9146-03
 96-HR LC50: 90.00 TEST DATE: 12-12-00
 TEST ACCEPTABILITY: 80% SURVIVAL IN CONTROL

- ① WFL 12-17-00 CR
- ② 1E 12-17-00 CR

TEST SUBSTANCE DILUTION WORKSHEET

Date 12/11/00		Test ID No. Primary Solids		No. of Reps 3		Test WDOE 80-12		Initials SF	
Species/Common Name Rainbow Trout				D.W. Type Fresh		D.W. Batch FW 473		Organism Batch No. TF 5154	
REP 1								Initials	
Target Conc. mg/L A	Target TS weight (g) B	Actual TS weight (g) C	Actual wt shake D.W. (200 g target) D	Target D.W. (-200 g) E	Actual D.W. Weight (-200 g) F	Final Conc. mg/L $[C/(D+F+200)] \times 1000$			
100	.6	0.60	291.47	5708.53	5708.5	100			
10	.06								
0			260.57	5739.43	5739.4	0			
REP 2								Initials	
Target Conc. mg/L A	Target TS weight (g) B	Actual TS weight (g) C	Actual wt shake D.W. (200 g target) D	Target D.W. (-200 g) E	Actual D.W. Weight (-200 g) F	Final Conc. mg/L $[C/(D+F+200)] \times 1000$			
100	.6	0.60	294.04	5705.96	5706.0	100			
10	.06								
0			285.88	5714.12	5714.1	0			
REP 3								Initials	
Target Conc. mg/L A	Target TS weight (g) B	Actual TS weight (g) C	Actual wt shake D.W. (200 g target) D	Target D.W. (-200 g) E	Actual D.W. Weight (-200 g) F	Final Conc. mg/L $[C/(D+F+200)] \times 1000$			
100	.6	0.60	268.58	5731.42	5731.4	100			
10	.06								
0			285.02	5714.98	5715.0	0			

Note: Use six liters of water for final volume

Date: 12-19-00		Initials: CD	
Weight (g)	Length (mm)	Weight (g)	Length (mm)
1) 0.5401	36	6) 0.4706	34
2) 0.4350	34	7) 0.4295	33
3) 0.4345	34	8) 0.4099	33
4) 0.7110	36	9) 0.3575	32
5) 0.5237	36	10) 0.3986	32
Average Weight: 0.471		Average Length: 34.0	

NOTE: All fish taken from Rep 1 control unless otherwise noted.

APPENDIX F
HICKEY MARINE'S CAPPING PLAN

June 16, 2008

Terminal 4 Phase I Removal Action Work Plan

Port of Portland, Portland, Oregon

APPENDIX F- Hickey Marine Enterprises Capping Work Plan

- **Capping Work Plan (RE: 352025-1.7)**
- The Derrick Barge Seahorse will be utilized for the slip 3 capping. She is powered with a 1000 horsepower CAT 3508 main engine, 400 KW power generator for swing, heavy lift and bucket tag line hydraulics, and three hydraulically controlled spuds. She is a Dravo water crane on 142' by 58' by 12' ABS certified barge with state of the art GPS control and instant screen displays. All hydraulic units on the Sea Horse utilize biodegradable mineral oil. The unit is a complete reconstruct finished in 2007 with approximately 6000 hours of duty in steady use. The Certified lifting capacity of the unit at 40' is 135 tons. The Sea Horse will conduct the slip capping efforts utilizing an Atlas 10 yard re-handle clamshell bucket. The supplemental capping water crane will be the Derrick Barge Sea Hawk. She is a Manitowoc Vicon 3900B pedestal mounted unit on a 110' x 48' x 8' barge. Power is provide by a Cummins 250 HP Diesel engine. She is also equipped with two spuds for location stability. A 996c front end loader will be used for loading the Type 3 armor into a skip box on board the Ross Island Material barge. Identification of the flat deck barges from Ross Island is yet to be determined. Support equipment will be a twin outboard powered crew/ survey boat, "Piggy" equipped with a single beam recording fathometer to verify daily sediment removal has been achieved to the prescribed lines, grades and tolerances. In addition, two outboard powered work skiffs and the tug/tender Husky with 800 horsepower will be utilized at Terminal 4.

A walking excavator will be utilized for the Head of Slip 3 capping work for the upland capping section that will start at the existing timber wall. This unique piece of equipment utilizes a hydraulic walking mechanism that allows the unit to walk down slopes with grades up to 50%. In addition these machines can work in soft mud with minimal impact to existing conditions. The hydraulic boom and telescopic dipper stick can work at 70% downhill grade on a cross slope and 100% grade on a longitudinal hillside. Attached as Exhibit C is an equipment brochure illustrating a walking excavator.

Suppliers

The Supplier for all imported processed capping materials will be Ross Island Sand and Gravel, located on the Willamette River in Portland, OR. The aggregate materials, (sand layer and Type 2)) will be mined from their Avery, WA source located next to the Columbia River with a conveyed barge loading terminal. The unprocessed mine material is barged to Ross Island's southeast Portland facility for off loading and processing to produce material as specified.

Organoclay, a component of the Type 3 material, will be purchased by Ross Island and mixed to a homogeneous product @ 10% by weight added to the specified aggregate with a batch mixing plant. The quantities of this product have been verified by the engineer and the order has been made for the long lead production of the Organoclay by CETCO. Organoclay will be furnished as specified, by CETCO to Ross Island for the Type 3 material. The material will be shipped in 1500 LB bulk bags to Ross Island's Portland yard. This material will arrive in late August for processing and delivery to the job site by barge.

The Sand layer will be a blend of processed materials from the Avery source, processed at the southeast Portland facility to produce material at the gradations as specified.

Processed and or blended Cap materials produced as specified will be furnished to the job FOB Terminal 4 on barges loaded and transported by Ross Island for Hickey Marine's placement at Terminal 4.

The Avery source located just a few miles upstream of the The Dalles, Oregon is adjacent to the Columbia River on Native American land (The Yakima Tribe). This is Ross Island's aggregate source for all of their products. Materials from this source have been used on numerous environmental cap projects, most notably is the McCormick and Baxter Creosote Facility Upland cap which covered a 24 acre site with a RCRA and Non RCRA component sponsored by the EPA for the Oregon Department of Environmental Quality.

Riprap will be supplied by Rinker Materials from the historic Fisher Quarry source in Camas, WA. This source has been in operation for 100+ years providing armor and jetty rock for the major projects in Oregon and SW Washington along the Columbia River and Oregon coast. Rinker will deliver the material to the Hickey Marine Vancouver yard for load out onto one of Hickey Marine's flat deck barges for tow to the Terminal 4 location.

Sand Layer Placement

Sand layer placement will be performed during the second Kinder Morgan shut down as shown on the Preliminary Schedule in Exhibit D1, E Exhibit A.

For the placement of the sand layer, a grid pattern of cells will be drafted and downloaded to the computer in the dredge cab. The cell size will be determined by the size of the bucket and

the thickness of the sand layer. The Sand layer placement method will utilize a 10 cubic yard Atlas re-handle bucket with a width of 8'. Material for the sand layer will be furnished by Ross Island Sand and Gravel. The material will be loaded at their facility onto a flat deck barge and transported to the Terminal 4 project site. Ross Island Sand and Gravel weighed the material to approximately 2600 lbs per cubic yard. Placement of 1 ton (approx .80 cy) of the sand layer per 22 square feet of area will be accomplished by setting up the fill area into cells estimated to be 200 square feet (8'x25'). The cells will be displayed on the computer in the cab of the crane. The operator will push the capping target button once each cell has been filled, this will target a position of each filled cell and shade it with a selected color for display. The 200 square foot area will require approximately 7.3 cubic yards of sand layer. Hickey Marine will utilize a 10 yard Atlas re-handle clamshell bucket for placement throughout each cell, assuring at least the minimum coverage of 1 ton per 22 square feet.

Positioning the dredge to start the sand layer will be done in a manner to prevent the spuds of the dredge from settling into the recently placed layer. All work will begin in shore and work off shore covering 60' – 75' of width before repositioning the dredge.

To spread the sand layer evenly the bucket will be lowered to the water surface and then cracked open. The operator will then swing throughout the cell until all of the material is removed from the bucket. He will then position the bucket at the center of the covered cell and push the capping target button located near the swing control lever.

The capping target button will fill the cell selected with color and store the position to a saved file. Usage of this feature allows the operator to keep track of the area that has been covered.

Exhibit A of this Appendix illustrates the bucket and material in relation to the water prior to deployment of the capping materials.

Exhibit B of this Appendix illustrates the Sand Layer and Type 3 capping placement grid.

Slip 3 Cap Placement and Material Manufacturing

The head of slip capping will be completed during the second shut down period from approximately September 9th to September 15th. We are anticipating 3 days to complete the slip 3 cap working 8 -12-hours per day starting at 7:00 am.

Type 3 Cap Material Manufacturing

Base Cap Type 2 material will be barged to a Ross Island Ready-Mix plant in three separate sized aggregate piles, 1-1/2" to 3/4"; 3/8" to #4; and ODOT spec sand. Each aggregate pile will be fed separately into a weigh hopper until a predetermined weight is reached from each pile. Upon reaching the predetermined batch weight from each pile a computer will document each actual individual weights for an accumulated batch weight of Base Cap Type 2 material. The predetermined weight of Organoclay for the 10 parts of Base Cap Type 2 to 1 part Organoclay will be added to the batch. The Organoclay and Base Cap Type 2 material will then be dumped into the primary concrete drum batch mixing plant and blended to produce the specification Base Cap Type 3. Certified batch ticket weights will be provided for each batch blended, similar to what is practiced in producing high strength ready mix concrete. It is the practice at Ross Island to recertify the hopper scales every six months. For this project, recertification of the hopper scales will be performed immediately prior to producing the Base Cap Type 3 material.

Type 3 Cap Material Transport and Placement

Ross Sand and Gravel will furnish the Base cap type 3 material to the Terminal 4 jobsite by barge. The Armor type 3 material will be delivered by truck to the yard at Hickey Marine Enterprises; CEMEX of Vancouver Washington will be furnishing the product. Hickey Marine will re-handle the material with a 966c front end loader to a 10yd skip box to be hoisted by crane and dumped onto a flat deck material barge to be delivered to the Berth 411 jobsite.

Marine placement of the Base cap type 3 materials will begin riverward of the existing timber bulkhead. All marine placement will initiate in shore and work off shore covering 60' - 75' of width before repositioning the dredge. The spuds of the dredge will remain from penetrating the Base cap type 3 material at all times. A grid pattern of cells will be drafted and downloaded to the computer in the dredge cab. The cell size will be determined by the size of the bucket and the thickness of the Type 3 Base cap. We are planning to use a 10 cubic yard Atlas re-handle bucket a width of 8'. The anticipated area of coverage, with this bucket level filled will be 8' x 33' to the specified thickness (1').

To spread the Base cap type 3 materials evenly the bucket will be lowered to the water surface and then cracked open. The operator will then swing throughout the cell until all of the material is removed from the bucket. He will then position the bucket at the center of the covered cell and push the capping target button located near the swing control lever.

The capping target button will fill the cell selected with color and store the position to a saved file. Usage of this feature allows the operator to keep track of the area that has been covered.

Upon acceptance of the completed Base cap, work will commence of the Type 3 armor placement. This scope of work will be performed by the Derrick Barge Sea Horse or Derrick Barge Sea Hawk utilizing a 10 yd skip box for placement. A 966c front end loader will be placed on the loaded material barge to fill the skip box with the armor. A grid pattern will be generated for the dredge computer to aid the operator for placement. Cell size will be determined by the width of the skip box. Cells will be targeted once covered and a position will be stored into a saved file, a test dump of the skip box will be performed on the material barge before any armor is placed to determine a proper length for the cell for consistent coverage. A final survey will be performed for acceptance of the Type 3 armor placement.

Once the riverward side of the timber bulkhead is completed, work will begin on the upland side of the bulkhead. The upland side is estimated to take 3 – 5 days to complete, working 8 – 12 hours a day starting at 7:00 am. The land component will be performed in combination with the walking excavator and Type 3 material fed by a water crane relaying material from the material barge with a skip box for surgical placement and dressing in the sloped area. Initially, the walking excavator, equipped with a winch to tie off to a much heavier piece of mobile equipment at the top will carefully remove the Class 100 riprap in the area(s) of placement. The processed Type 3 material on the barge will be skip placed in the segment to be capped within reach of the walking excavator. Cap material will then be spread from the base of the slope upward in each segment. Upon completion of the placement and inspection, the riprap will be rehandled and carefully replaced as areas are complete. The plan is to finish a section, total width, in three to four 30' to 40' lengths completely then move to the next segment. This method does not open the entire upland sloped area up, which may be subject to failure of the upper slopes and will greatly reduce the potential to move in and out of the plantings area which can easily be damaged.

Best Management Practices for Capping (BMP's)

- HME will conduct daily safety meetings at the start of each day with all parties involved.
- Capping procedures shall commence from the head of the slip.
- Spuds shall not penetrate areas previously capped.
- HME will not drag areas to even out over-placements.
- HME will conduct a test of capping deployment on material barge prior to actual placement to verify appropriate coverage.
- All caps on slopes must be placed from the toe of the slope up towards the crest.

- Barge drafts shall be logged at the start and end of each day to verify capping material placed.
- Barges will not be overfilled.
- Grounding of construction barges will not occur.
- **Capping Quality Control (RE: 352025-3.2):**

Prior to any in-water placement of the cap materials a dry run will be performed on the barge to test swing speed and dimensions of bucket opening to dial in the rate of deployment and area coverage to produce the specified cover and depth. This will facilitate a visual inspection and verify the method proposed will produce the specified thickness and cover area. Capping quality control in-water will be managed by the area to volume completed on crane computer system and thoroughly inspected by Port of Portland's inspection Diver. Daily progress surveys will be performed by survey/crew boat "Piggy" equipped with an Odem single beam echo sounder operating a frequency of 200MHz with an accuracy of 0.01 meter +1- 0.1% depth. Survey results will be included in the daily report the following day for review. Daily placement volumes will be figured by using the barge displacement method, barge drafts to be taken at the start and end of each day. Copies of each day progress showing dredge location and location of each bucket dredged will also be included.

The upland component will be visually verified as areas are complete to confirm the desired coverage meets the specified requirements prior to replacement of the shoreline protection.

- **Conduct of Capping (RE: 352025-3.3):**

Crane operators will monitor marine traffic vhf channel #13 to remain in contact with all river traffic. HME Project Superintendent will review the Terminal 4 Berthing schedule throughout the course of each day. At least a one hour notice will be needed to allow time for Dredge plant and support equipment to move clear of the berth. HME tug "Husky" is to be secured to Derrick Barge Sea Horse throughout the project to perform if such move is needed. Operators will be in communication with river pilots and or tug captains to ensure Dredge plant is clear of inbound and outbound vessel traffic.

Absorbent Containment boom will be installed around the head of Slip 3 cap construction area prior to start up of capping operations. The capping operations will not commence until all dredging is complete. Under no circumstances with the exception of the land work will the cap

material be dragged to even out over placements. The land work will be performed to precision with the walking excavator taking special care to not touch the exposed uncapped areas with the bucket.

All fueling procedures will be performed in compliance with the HME Pollution Prevention and Emergency Response Plan. The Sea Horse is equipped with 450' of oil containment boom, 3 oil spill cleanup kits consisting of oil absorbent pads, oil absorbent sweep, PPE. Fueling procedures are posted at all fueling stations on board the Sea Horse. HME will provide an oil response trailer shore side at the Terminal 4 jobsite to aid in the event of such occurrence. Contents of the response trailer are listed in the HME Pollution Prevention and Response Plan.

Collateral damage to the plantings on the slopes will be minimal with specialty equipment selected to produce a high quality Type 3 cap as specified. The machine is capable of walking around and over the existing plantings for placement. The cable tie off will be located to minimize "clipping" the plantings. However, if a planting is damaged beyond usability and recovery, they will be replaced in like kind.

The type 3 Cap material in the event of inclement weather will be covered prior to the rains to keep moisture from consolidating the processed material prior to placement.

The riprap material will be carefully skip placed with visual verification the specified thickness and cover area are achieved.

Appendix F

EXHIBIT C

S 1

Walking Mobile Excavator

General Description



POWER & STATE-OF-THE-ART ENGINEERING

Operating weight: 8.5 t
Engine output: 58 kW (78 HP)
Bucket capacities: (20-270 l)

**Modern cab**

Spacious full-vision steel cab
Comfort features and panoramic view

**Joystick**

Ergonomically designed

**Undercarriage**

Tough and perfectly located
with integrated 100-litre reserve fuel tank

**Telescopic outriggers**

Hydraulically adjustable

Attachments:**Stone pickup bucket**

Further attachments available on request

**Rock bucket****Hydraulic tilt humus bucket****Hydraulic winch**

Technical data

Operating weight:	approx. 6500 kg	
Reach:	approx. 6770 mm	
Digging depth:	approx. 4570 mm	
Digging height:	approx. 8030 mm	
Swing radius:	2060 mm	
Lifting power:		
3 m:	3.8 t	
4 m:	2.6 t	
5 m:	1.6 t	
Ripping force:	43 kN	
Breakout force:	54 kN	
Sound-pressure level:	L_{pA} 82 dB(A)	
Sound-power level:	L_{wA} 97 dB(A)	

Engine:

- 58 kW (78 HP) Doutz diesel engine

Hydraulic system:

- consisting of 3 independent hydraulic pumps with summation control: 226 l/min total (140 - 65 - 20 l/min)
- Hydraulic cylinders with end-position damping
- Joystick-controlled outriggers

Power transmission:

- Hydraulic wheel drive with two-stage planetary gear and oil-immersed multi-disc brakes
- Infinitely variable speed control 0 - 7 km/h

Swing system:

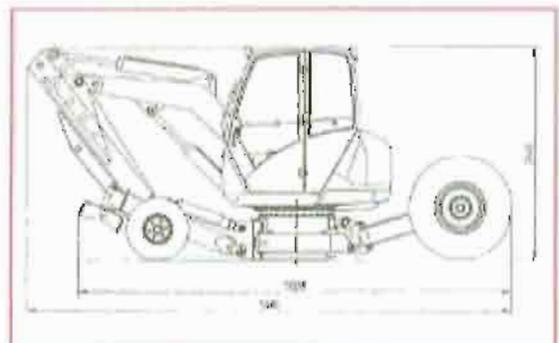
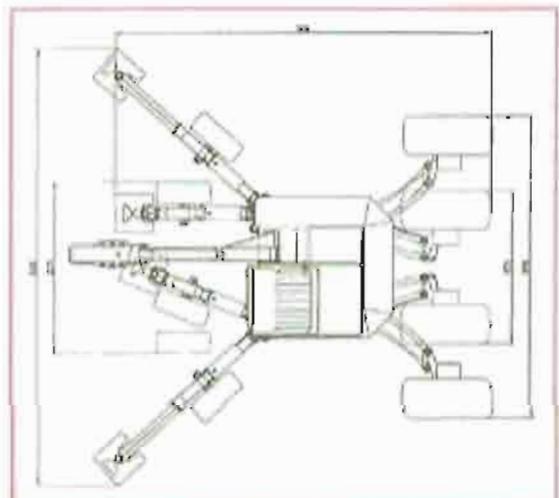
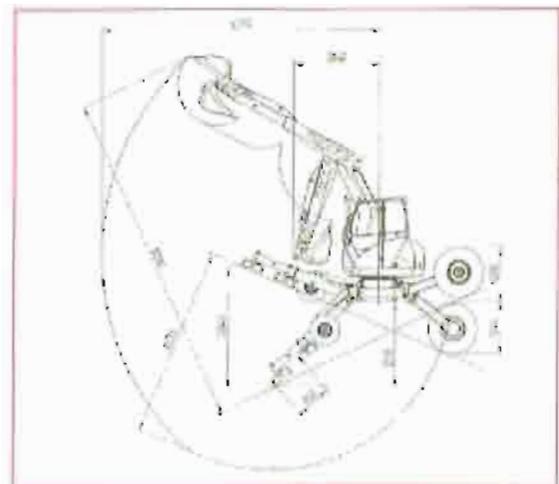
- torque-controlled swing motion for smooth acceleration (0 - 9 gpm)
- Planetary gear motor with brake damping and disc brake

Cab:

- ROPS/FOPS-cab for best panoramic view and safe driving
- Spacious interior and multi-adjustable comfort seat

Special boom:

- boasting enormous lifting power, minimum turning radius, maximum digging depth and digging height as well as an enormous reach
- Quick fix system for easy and quick change of buckets



www.terexce.com

Terex Compact Equipment

Scaleforth Way

01745 451200

01745 451201

01745 451202

* HME may utilize a larger (in weight) unit.

TEREX S1 Wheeled Mobile Excavator - The market leader in the 6-ton class

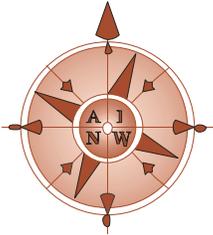
1/2

- ◆ **Optimized working area**
provided by maximum reach at minimum swing radius
- ◆ **Quick fix system and quick couplers**
allowing convenient and quick change of buckets
- ◆ **Low operating weight**
coupled with high performance
- ◆ **Safe work provided by firm footprint**
regardless of terrain through impressive reach of outriggers and variety of configurations
- ◆ **High-performance hydraulic system**
3 independent hydraulic pumps with performance control and additional power switch
- ◆ **Terex-Schaeff performance**
Powerful 4-cylinder engine featuring high torque

... greater comfort, ...greater mobility, ...greater efficiency!



APPENDIX G
ARCHEOLOGICAL PROTOCOL PLAN



Archaeological Investigations Northwest, Inc.

2632 S.E. 162nd Ave. • Portland, Oregon 97236
Phone (503) 761-6605 • Fax (503) 761-6620

Vancouver Phone (360) 696-7473
E-mail: ainw@ainw.com
Web: www.ainw.com

MEMO

Date: June 19, 2008

To: Elizabeth Appy
Anchor Environmental, LLC

From: John L. Fagan

Re: Port of Portland Terminal 4 Phase 1 Removal Action
Archaeological Monitoring Protocol

My review of the Port of Portland Terminal 4 Archaeological Monitoring Protocol dated December 2006 indicates that there are specific coordination and monitoring requirements for the proposed removal action that is expected to extend into archaeological sensitive areas where native soil will be removed within Slip 3. As noted in the protocol, the Port is to notify the six interested Tribes two weeks in advance of any planned ground-disturbing actions. The Port will also retain the services of a professional archaeologist to provide on-site monitoring when work occurs within the sensitive areas and when the removal action is expected to extend into native soil.

As discussed with you, I anticipate that the actual monitoring would be conducted from the shore by a hazmat qualified professional archaeologist using binoculars to examine the dredge materials as they are deposited on a barge. If suspicious items thought to represent archaeological materials are observed, the archaeologist may request that a sample of the material be retrieved from the barge for closer inspection on the shore, or in the adjacent field laboratory building. If artifacts or other types of cultural materials are found, then the provisions noted in the protocol will be followed to allow for the archaeologist to confirm the discovery and recommend appropriate action. If human remains are found, then the specific actions noted in the protocol will be followed.

ARCHAEOLOGICAL PROTOCOL

TERMINAL 4 PORTLAND, OREGON

December 2006

**Port of Portland
Portland, Oregon**

BACKGROUND

The Port of Portland operates three marine terminals on the Willamette and Columbia rivers, one of which is Terminal 4 located on the east bank of the Willamette River at about River Mile 4.4-5.7. As a state port district and in connection with its investigation and cleanup of contamination, the Port has responsibilities under state law to properly manage the archaeological, historical, and other cultural resources that may be located at Terminal 4. The cultural resources survey of Terminal 4 (Ellis and O'Brien 2003) has identified locations within Terminal 4 that are considered to have a high potential for archaeological resources. In addition to its responsibilities under state law and several agreements with Oregon Department of Environmental Quality ("DEQ") under the Oregon Voluntary Cleanup Program, the Port has responsibilities under federal law arising out of the Port's Administrative Order on Consent for Removal Action at Terminal 4 with the United States Environmental Protection Agency ("USEPA") and the Port's Administrative Order on Consent for an RI/FS of the Portland Harbor, also with USEPA.

Six Tribal governments are also interested in the protection of cultural resources at Terminal 4:

- Confederated Tribes of the Grand Ronde Community of Oregon,
- Confederated Tribes of Siletz Indians of Oregon,
- Confederated Tribes of the Warm Springs Reservation of Oregon,
- Confederated Tribes of the Umatilla Indian Reservation,
- Confederated Tribes and Bands of the Yakama Indian Nation, and
- The Nez Perce Tribe.

Conducting archaeological surveys prior to any ground-disturbing activity associated with contamination investigation and cleanup projects is intended to determine if the proposed activity is likely to affect significant archaeological resources. There is, however, a possibility that archaeological resources may be encountered during project-related activity, even with a thorough and systematic survey, through inadvertent discovery. In addition, it is important that any "discovered" human remains, including the remains of Native Americans, and associated cultural materials and deposits be treated with care and respect and protected from further disturbance and exposure to weather, as outlined in these protocols. These clarify and establish mutually acceptable protocols to process inadvertent discoveries of possible historic properties, human remains, funerary objects, objects of cultural patrimony, and other cultural items during ground-disturbing activities undertaken at Terminal 4.

FORMALIZING PROTOCOLS

These protocols are modeled after the protocols developed for the cleanup of the McCormick and Baxter Superfund Site in the lower Willamette River. They have been developed with input from affected stakeholders. It is the intent of the Port to seek

letter acknowledgements from the stakeholder regulatory agencies and governments to assure that all agree to abide by these protocols for future ground-disturbing activity at Terminal 4.

ARCHAEOLOGICAL SENSITIVITY AREAS

The archaeological sensitivity areas at Terminal 4 are those defined in the 2003 archaeological survey report, subsequently refined with the results of additional research, and shown in Figure 1. The Port may retain the services of a professional archaeologist to periodically update the definition of the sensitivity areas as new information comes to light. Revisions of boundaries of these areas will be made by the Port in consultation with affected stakeholders.

ON-SITE PROCEDURES WITHIN TERMINAL 4 ARCHAEOLOGICAL SENSITIVITY AREAS

To assure compliance with the National Historic Preservation Act (16 USC 470) and applicable Oregon statutes (ORS 97.740 et seq., 358.905 et seq., and 390.235 et seq.), the following procedures have been developed to address potential discoveries, including inadvertent discoveries, of cultural materials and deposits (including sacred objects, funerary objects, and objects of cultural patrimony as defined in ORS 358.905) and Indian burials and human remains (as defined in ORS 358.905) during ground-disturbing contamination investigation and removal or remedial actions within the archaeological sensitivity areas at Terminal 4. These procedures also apply to ground-disturbing activities that are associated with or an outcome of removal or remedial actions (e.g., construction of new outfalls or removal of existing outfalls) for which the Port is responsible.

Ceremonies Prior to Ground-Disturbing Activity

Tribal governments may desire to perform ceremonies prior to ground-disturbing removal or remedial actions at Terminal 4. The Port will give two weeks notice, by e-mail or by letter, of planned ground-disturbing removal or remedial actions that are considered likely to encounter or extend into native soils or sediments. Tribes will coordinate with the Port so that scheduling and logistics of such ceremonies will not delay project schedules.

Notification of Ground-Disturbing Activity

The Port will notify the six interested Tribes by e-mail or by letter in advance of any planned ground-disturbing removal or remedial actions that are expected to encounter or extend into native soils or sediments within the archaeological sensitivity areas at Terminal 4.

The notice will be given in as much advance of the activity as is possible. Attachment A provides the list of Tribal members and who will be notified by the Port and their contact information. Changes to this list will be made if requested by the respective Tribes.

Professional Archaeologist On-Site

The Port will retain the services of a professional archaeologist as defined in ORS 97.740 and ORS 390.235(6) (b) to provide on-site monitoring when ground-disturbing activity is conducted within the boundaries of the archaeological sensitivity areas at Terminal 4 (Figure 1) and is expected to encounter or extend into native soils or sediments.

Tribal Representatives On-Site

Interested Tribes are welcome to provide Tribal monitors during on-site activity within the archaeological sensitivity areas on Figure 1. Since the planned activity will likely occur at locations that are known or considered likely to be contaminated with hazardous substances, Tribal representatives will be required to comply with OSHA requirements provided in 29 CFR 1910.120 (aka, HAZWOPER). The application of these requirements will vary, depending on the type of activity at the site, and the proximity of the monitors to the activity. The requirements may include:

- Supervision by someone who is appropriately trained for hazardous substance sites, a briefing on Health and Safety issues, and sign-in;
- Restriction from the immediate area of the work;
- Prohibition of handling contaminated material;
- Use of personal protective equipment (PPE) such as rubber booties, that will be provided at the site; and
- 24- or 40-hour Hazardous Waste Operations (HAZWOPER) health and safety training.

Additionally, all on-site personnel, including Tribal monitors, are subject to the directions of the on-site Health and Safety Officer at all times.

Discovery

At the discretion of the on-site monitoring archaeologist, excavation or other ground-disturbing activities may be slowed or halted at any time a suspected archaeological object or archaeological site (as defined in ORS 358.905) is encountered. The objective of this slowing or halting of ground-disturbing cleanup activity is to allow the archaeologist to confirm and/or make a preliminary assessment of the discovery. All requests for such slowing or halting of construction activity must be communicated to the contractor's personnel through the Port's on-site personnel and must be cleared with the Port's project manager.

Figure 2 identifies the steps to be taken in the event of a potential discovery. Should the on-site monitoring archaeologist determine that a possible significant cultural resource has been encountered, he or she may direct the immediate cessation of all ground-disturbing activity in the vicinity of the discovery. The monitoring archaeologist will work with Port's contractor and Port personnel to determine when and where work may continue.

For discovery situations in which CERCLA does not provide the chief legal framework, the monitoring archaeologist will promptly apply for a State of Oregon Archaeological Permit on behalf of the Port requesting an expedited review process and permit per

OAR 736-51-080(9). Further excavation and/or recovery of artifacts or other archaeological deposits will not proceed until the permit has been issued.

At the request of the monitoring archaeologist, the Port's contractor and Port personnel will either:

- assist in securing access to the location of the discovery and take appropriate measures to protect the location of the discovery from rain, stormwater, and other possible disturbances, or
- assist the archaeologist in moving the artifacts to a protected and secure area of the site away from the immediate construction area.

The monitoring archaeologist will immediately notify the Port's project manager of the discovery. The Port will also promptly notify the Oregon State Historic Preservation Office, and representatives of the six Tribes – through the contacts listed below – of any discovery of likely or demonstrated cultural materials or deposits.

It has been suggested that there may be Native American remains in the Terminal 4 area. In the event that likely or confirmed human remains are encountered, the monitoring archaeologist will be responsible for immediately notifying the Port project manager. The Port will then notify the Oregon State Police, the Oregon State Historic Preservation Office (SHPO), the six Tribes referenced above, and the Commission on Indian Services (pursuant to ORS 97.745(4)).

The Port will also promptly notify the Multnomah County Medical Examiner if it cannot be clearly determined that the remains are those of a prehistoric individual. Human remains and associated funerary objects shall remain in place, with minimal disturbance by the county medical examiner in completing his or her work.

If the site is determined not to be a crime scene, and the human remains are identified as Native American, the Port shall continue to secure the remains and any associated funerary objects in place, until a decision is made regarding the appropriate course of action to address the discovery. The Port shall give due consideration to and honor, to the extent practicable, any request by the Tribe to leave the remains and/or other cultural items in place.

ON-SITE PROCEDURES FOR CERCLA-RELATED GROUND-DISTURBING ACTIVITY WITHIN TERMINAL 4 ARCHAEOLOGICAL SENSITIVITY AREAS

To assure compliance with the National Historic Preservation Act (16 USC 470) and applicable Oregon statutes (ORS 97.740 et seq., 358.905 et seq., and 390.235 et seq.), the following procedures have been developed to address potential discoveries, including inadvertent discoveries, of cultural materials and deposits (including sacred objects, funerary objects, and objects of cultural patrimony as defined in ORS 358.905) and Indian burials and human remains (as defined in ORS 358.905) during

remedial investigations and removal and remedial actions at Terminal 4. These procedures will also apply to CERCLA-related field sampling activities.

Media Samples

A professional archaeologist will examine core samples collected as part of removal or remedial actions from within the archaeological high-probability areas (Figure 1) at Terminal 4. This examination will consist of inspecting the samples as they are opened as described in the appropriate Field Sampling Plan (FSP). The archaeologist will determine if evident or likely artifacts are present or if other deposits are present that are likely to be cultural in origin. If artifacts or likely archaeological deposits are present, the archaeologist will record the location of the materials within the sample and photograph and sketch the materials in place in such a manner to provide information on provenience within the sample.

The evident or suspected artifact(s) or archaeological deposits and surrounding matrix totaling 1 liter in volume will be removed and screened through a set of nested sieves (12.7-, 6.3-, and 3.3-mm mesh) to recover any artifacts or archaeological materials that may be present. All recovered artifacts and other archaeological materials will be placed in an appropriate container or containers, labeled with all pertinent provenience information, and sealed. The recovered materials will be stored in a secure location pending disposition. The inspection, documentation, and removal of any archaeological materials present will be completed prior to the subsampling procedure outlined in the appropriate FSP. If artifacts or archaeological deposits are clearly associated with modern activity or with activities associated with use of Terminal 4, the archaeologist will document the materials but no collection will occur.

Should archaeological deposits be encountered that appear to total more than 1 liter in volume, a 1-liter sample will be extracted for screening and the remaining deposit will be removed in a manner that does not compromise the remedial investigations subsampling and placed in an appropriate container or containers, labeled with all pertinent provenience information, and sealed. The recovered materials will be stored in a secure location pending disposition.

Geotechnical Samples and Monitoring Wells

A professional archaeologist will monitor the geotechnical borings and monitoring wells excavated as part of cleanup activities within the archaeological high-probability areas on Figure 1. The monitoring will consist of on-site inspection of the excavations as they occur to determine if evident or likely artifacts are present or if other deposits are present that likely to be cultural in origin. If artifacts or likely archaeological deposits are present, the archaeologist will record the depth and—if appropriate—the thickness of any artifacts or archaeological deposits encountered in the excavations. The archaeologist will also photograph any materials as they are discovered and provide a written description. Artifacts and a sample of any archaeological deposits exposed in the excavations will be collected and placed in an appropriate container or containers, labeled with all pertinent provenience information, and sealed. The recovered materials will be stored in a secure location pending disposition.

At the discretion of the monitoring archaeologist and based on his or her professional judgment, excavations for a geotechnical boring or monitoring well may be slowed to

allow a more thorough examination of possible archaeological materials or may be halted if it is clear that the excavations are encountering archaeological materials or deposits that are clearly significant.

On-Site Staging and Coordination

An area of Terminal 4 will be designated as a staging area for the archaeologist and Tribal representatives to more closely examine artifacts. If artifacts are associated with contaminated deposits, the Port and the archaeologist will consult with the Tribes regarding whether artifacts are to be decontaminated and what decontamination options are available. Also, a location will be identified in consultation with the Tribes for reburial of discovered artifacts that are contaminated and unlikely to successfully undergo decontamination procedures, such as textiles and basketry. The location of this area would be known only to the Tribes, the Port, the SHPO, and the USEPA and/or DEQ, depending on which agency has jurisdiction over the investigation and cleanup.

Removal and Remedial Actions

When planned removal or remedial actions have been determined or are considered likely to affect archaeological resources, the Port will consult with the Tribes and the SHPO to define an appropriate course (or courses) of action to avoid or mitigate for adverse project effects. Courses of action may include archaeological monitoring that is implemented within the framework of this protocol or may require a protocol that is specific to the proposed remedial action and the archaeological resources known or considered likely to be present. Use of the present protocol or a project-specific protocol should be implemented within the framework of a Memorandum of Understanding (MOU) with Tribes, the SHPO, and other appropriate agencies or of a Memorandum of Agreement (MOA) if significant resources will be adversely affected by the planned actions.

If planned removal or remedial actions at Slip 1 would require removal of piers or pilings, the Port will have any of these structures that are known or likely to be 50 years or older in age recorded as historical or archaeological resources and evaluated to determine if any are eligible for listing in the National Register of Historic Places (unless they have been previously recorded and evaluated). If any piers or pilings are considered eligible, appropriate mitigation measures will be developed in consultation with the appropriate Tribes, the SHPO, and appropriate agencies.

If planned removal or remedial actions would affect any buildings or structures at Terminal 4 that have been recommended as eligible for listing in the National Register of Historic Places, the Port will have Section 106 Documentation Forms prepared for the affected building(s) or structure(s) and will submit these forms to the SHPO for review. The Port will coordinate and consult with the appropriate Tribes, the SHPO, and appropriate agencies to define appropriate measures as needed to address effects to the eligible buildings and structures.

Human Remains

If evidence of human remains is observed in any of the samples, no further processing will occur with the specific sample. After documentation of the find, the sample will be closed, sealed, and stored at a secure location. If evidence of human remains is

encountered in the geotechnical boring or monitoring well excavations, the monitoring archaeologist will immediately halt the excavations and no further excavation will occur at that location. Provenience data on the evidence of human remains will be recorded and then the remains and any associated funerary objects and soil matrix placed in an appropriate container, labeled, sealed, and placed in a secure location.

If evidence of human remains is encountered in any of the samples or excavations, the monitoring archaeologist will immediately notify representatives of the contractor directing the excavations and the Port's project manager. A representative of the Port will then promptly notify the Oregon State Police, the appropriate Tribes, the Legislative Commission on Indian Services, and the Oregon State Historic Preservation Office to comply with ORS 97.745(4), through the contacts below. The Port will then coordinate with these agencies and the appropriate Tribes to define a response to the discovery.

Other Issues

When the presence of artifacts or other archaeological deposits is confirmed, the appropriate Tribes and the SHPO will be notified and an appropriate response to the discovery defined by the Port in consultation with the appropriate Tribes and the SHPO. The materials observed will be documented as archaeological isolates or sites on the appropriate SHPO forms. The Oregon Department of State Lands (DSL) will be notified of any archaeological resources encountered on lands administered by DSL.

Artifacts and other archaeological deposits recovered during investigation and removal or remedial actions will be stored in a secure location as noted above. Those materials that can be successfully decontaminated (if necessary) will be curated at the Oregon Museum of Anthropology in accordance with ORS 358.920 and 390.235, with the exception of human remains, funerary objects, sacred objects, and objects of cultural patrimony. Alternative curation arrangements may be made by the Port in consultation with the Oregon State Museum of Anthropology, the appropriate Tribes, and the SHPO in accordance with ORS 390.235-390.240. Disposition of human remains, funerary objects, sacred objects, and objects of cultural patrimony will be determined in accordance with ORS 390.235-390.240. Alternative procedures for the disposition of contaminated human remains, funerary objects, sacred objects, objects of cultural patrimony, and other artifacts, including on-site reburial, will be developed by the Port in consultation with the appropriate Tribes, the Oregon State Museum of Anthropology, and the SHPO.

PROCEDURES FOR INADVERTENT ARCHAEOLOGICAL DISCOVERIES AT TERMINAL 4 OUTSIDE ARCHAEOLOGICAL SENSITIVITY AREAS

The Port recognizes that while the previous archaeological research has identified areas within Terminal 4 considered to have a moderate to high potential for archaeological resources, artifacts and other archaeological deposits may be encountered during ground-disturbing investigation and removal or remedial actions elsewhere at Terminal 4. This section of the protocol addresses procedures to be

followed for inadvertent discoveries outside of the archaeological sensitivity areas on Figure 1.

Should suspected or evident artifacts or other archaeological deposits be encountered during ground-disturbing investigation and removal or remedial actions at Terminal 4 that are not being monitored by a professional archaeologist, further ground-disturbing activity will be halted in the immediate vicinity of the discovery and the location secured from further disturbance. The Port will arrange for the location of the discovery to be examined by a professional archaeologist in a timely manner. If the archaeologist confirms the presence of artifacts or other archaeological deposits, the procedures defined above for discoveries made during ground-disturbing activity monitored by an archaeologist will be implemented.

The procedures defined for responding to inadvertent discoveries of human remains or suspected Indian burials will be implemented for similar discoveries that may occur outside of the designated archaeological sensitivity areas.

CONFIDENTIALITY

The Port shall make its best efforts, in accordance with state and federal law, to ensure that its employees and investigation and cleanup contractors keep the discovery of any found or suspected human remains, other cultural items, and potential historic properties confidential. Pertinent Port employees and contractors will be instructed that they are prohibited from contacting the media or any third party or otherwise sharing information regarding the discovery with any member of the public, and that they should immediately notify the Port of any inquiry from the media or public. To the extent permitted by law, prior to any release of information, the Port, the SHPO, and the Tribes shall concur on the amount of information, if any, to be released to the public, any third party, and the media and the procedures for such a release.

DISPUTE RESOLUTION

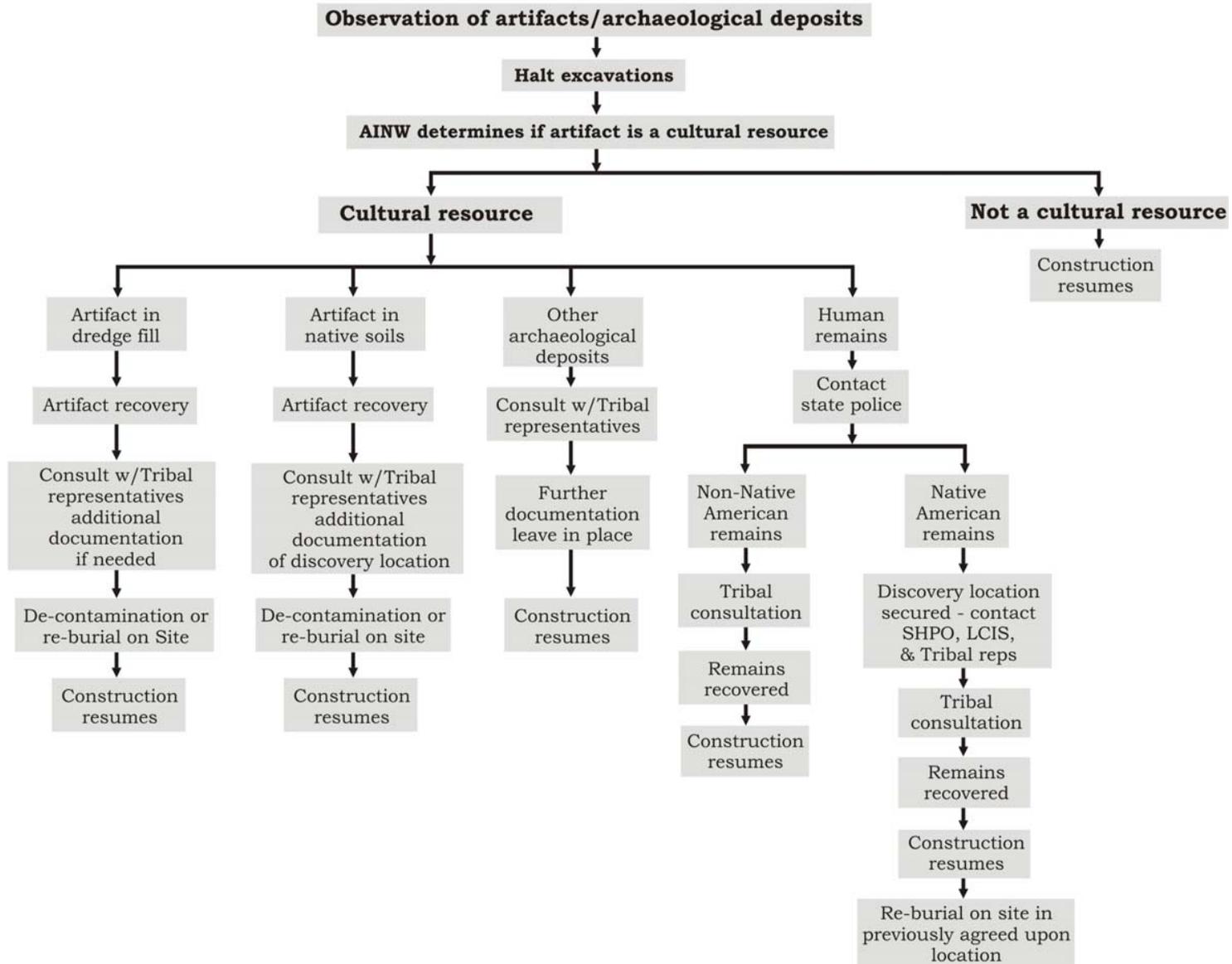
All Parties will strive to address and resolve disagreements informally and with the Port project manager. In the event agreement is not reached to the satisfaction of the regulatory agency and Tribal representative(s), the matter will be raised to the level of the Port's Marine Director and equivalent regulatory agency and Tribal management. Should the matter remain unresolved, the matter will be raised to the Port's Executive Director, the heads of the regulatory agencies, and the Chair of the Tribe(s). Each Party reserves any and all rights it may otherwise have to enforce its rights or seek resolution of the dispute under applicable law.



Figure 1. Terminal 4 area showing archaeological sensitivity areas.
 (Base aerial photograph 2002.)

Figure 2

**Archaeological Protocol Flow Chart
Terminal 4, Portland, Oregon**



**Attachment A
Contact Information for Archaeological Protocol
Terminal 4, Portland, Oregon**

Tribe/Agency	Contact Name	Email Address	Phone Number
AINW	John Fagan	john@ainw.com	503-761-6605
SHPO	Dennis Griffin	dennis.griffin@state.or.us	503-978-0674
Oregon State Police	Steve Lane (NWR Office in Woodburn)	Not applicable	503-682-0208 x 228 (phone) 503-370-1114 (pager) 503-931-7273 (cell)
EPA	Chip Humphrey	humphrey.chip@epa.gov	503 326-2678
	Eric Blischke	blischke.eric@epa.gov	503 326-3250
DEQ	Thomas E. Roick	roick.tom@deq.state.or.us	503 229-5502
	Jim Anderson	anderson.jim@deq.state.or.us	503 229-6825
Commission on Indian Services	Karen Quigley	Karen.m.quigley@state.or.us	503-986-1068
Grand Ronde	Steve Kelly	stephen.kelly@grandronde.org	503-879-2339
	Khani Schultz	khani.schultz@grandronde.org	503 879-2185
Siletz	Tom Downey	tomd@ctsi.nsn.us	
	Robert Kentta	rkentta@ctsi.nsn.us	541-444-8244
	Billy Barquin	wbarquin@lwilder.com	503-242-0705
Warm Springs	Sally Bird	sbird@wstribes.org	541-553-2006
	Brian Cunninghame	cunninghame@gorge.net	541-490-2009
Umatilla	Audie Huber	audiehuber@ctuir.com	541-966-2334
	Catherine Dickson	CatherineDickson@CTUIR.com	541-276-3629
Yakama	Johnson Meninick	johnson@yakama.com	509-865-5121
	Paul Ward	ward@yakama.com	509-865-5121
Nez Perce			
	Kevin Cannell	kevinc@nezperce.org	208-843-7400

APPENDIX H

WATER QUALITY MONITORING PLAN (WQMP)

**(APPENDIX B FROM THE DAR—
WILL BE INCLUDED IN THE FINAL RAWP)**

APPENDIX I

SAMPLING AND ANALYSIS PLAN (SAP)

**(APPENDIX H FROM THE DAR—
WILL BE INCLUDED IN THE FINAL RAWP)**

APPENDIX J

QUALITY ASSURANCE PROJECT PLAN (QAPP)

**(APPENDIX I FROM THE DAR—
WILL BE INCLUDED IN THE FINAL RAWP)**
