

The CERCLA Process, Portland Harbor Superfund Site, and Liability Minimization for Shipyards

Howard L. Cumberland

Director of Ports and Harbors, Western Region

22 June 2010

Key Definition

Uncertainty

- Unpredictability
- Indefiniteness
- Need to Minimize Uncertainty to Maximize Success

“Everything Should be Made as Simple as Possible, but Not Simpler”

➤ Albert Einstein

CERCLA Process 101

- Remedial Investigation
 - Determine the contaminant drivers
- Risk Assessment
 - Assess the contaminant risk
- Feasibility Study
 - Determine what to do with the contaminants
- Record of Decision
- Allocate responsibility
- Remediate the contaminated areas
 - Source Control

CERCLA Process 101

- After all that time and expense

- **NRDA**

Shipyards Overview

- Contamination Known

- Primarily Metals, TBT and PAHs
- Possibly PCBs (suspect data for Shipyards as a major source)

- Sources Known

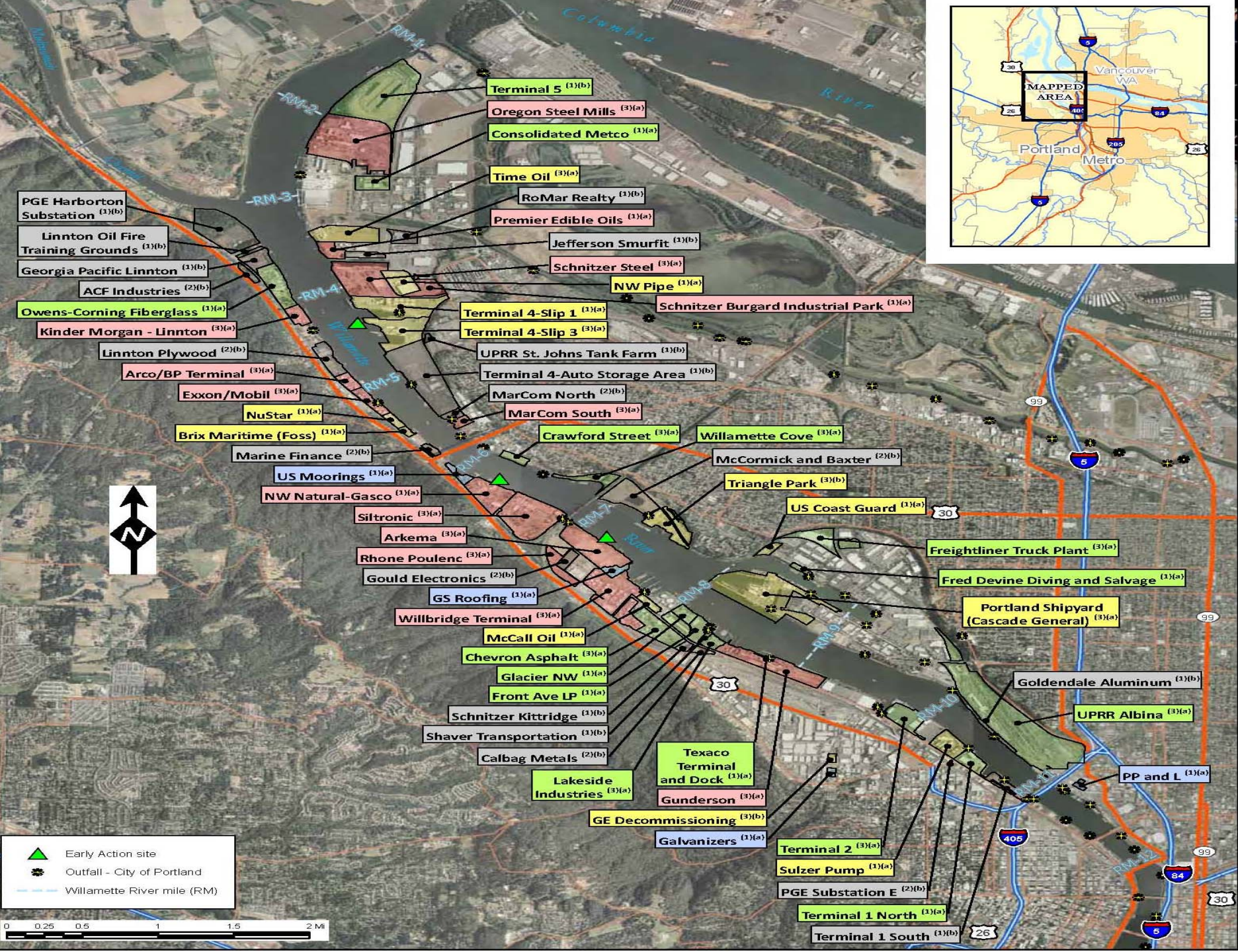
- Releases from Sand Blasting
- Spills
- Stormwater discharges

Sediment Remediation – Options are Simple

- Monitored Natural Recovery
- Dredging (Mechanical or Hydraulic)
- Confined Disposal Facilities (CDFs) – Nearshore or Upland Landfill
- Capping
- Contained Aquatic Disposal (CAD)
- Open Water Disposal (Clean only)
- Beneficial Use Applications (Broadly Defined)
- In-Situ (does not usually work) and Ex-Situ Treatment (Expensive)

Portland Harbor

- What do Shipyards Do with Co-mingled Contamination from 11 miles of River and Multiple Sources??
- Same Philosophy for other sites in major Ports or waterways



PGE Harborton Substation (1)(b)

Linnton Oil Fire Training Grounds (1)(b)

Georgia Pacific Linnton (1)(b)

ACF Industries (2)(b)

Owens-Corning Fiberglass (1)(a)

Kinder Morgan - Linnton (3)(a)

Linnton Plywood (2)(b)

Arco/BP Terminal (3)(a)

Exxon/Mobil (3)(a)

NuStar (1)(a)

Brix Maritime (Foss) (1)(a)

Marine Finance (2)(b)

US Moorings (1)(a)

NW Natural-Gasco (1)(a)

Siltronic (3)(a)

Arkema (3)(a)

Rhone Poulenc (3)(a)

Gould Electronics (2)(b)

GS Roofing (1)(a)

Willbridge Terminal (3)(a)

McCall Oil (1)(a)

Chevron Asphalt (3)(a)

Glacier NW (1)(a)

Front Ave LP (1)(a)

Schnitzer Kittridge (1)(b)

Shaver Transportation (1)(b)

Calbag Metals (2)(b)

Lakeside Industries (3)(a)

Texaco Terminal and Dock (1)(a)

Gunderson (3)(a)

GE Decommissioning (3)(b)

Galvanizers (1)(a)

Terminal 2 (3)(a)

Sulzer Pump (1)(a)

PGE Substation E (2)(b)

Terminal 1 North (1)(a)

Terminal 1 South (1)(b)

Terminal 5 (1)(b)

Oregon Steel Mills (3)(a)

Consolidated Metco (1)(a)

Time Oil (3)(a)

RoMar Realty (1)(b)

Premier Edible Oils (1)(a)

Jefferson Smurfit (1)(b)

Schnitzer Steel (3)(a)

NW Pipe (1)(a)

Schnitzer Burgard Industrial Park (1)(a)

Terminal 4-Slip 1 (1)(a)

Terminal 4-Slip 3 (3)(a)

UPRR St. Johns Tank Farm (1)(b)

Terminal 4-Auto Storage Area (1)(b)

MarCom North (2)(b)

MarCom South (3)(a)

Crawford Street (3)(a)

Willamette Cove (3)(a)

McCormick and Baxter (2)(b)

Triangle Park (3)(b)

US Coast Guard (1)(a)

Freightliner Truck Plant (3)(a)

Fred Devine Diving and Salvage (1)(a)

Portland Shipyard (Cascade General) (3)(a)

Goldendale Aluminum (1)(b)

UPRR Albina (3)(a)

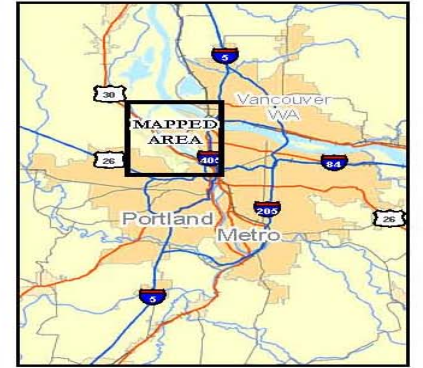
PP and L (1)(a)

Terminal 1 North (1)(a)

Terminal 1 South (1)(b)

▲ Early Action site
 * Outfall - City of Portland
 --- Willamette River mile (RM)

0 0.25 0.5 1 1.5 2 MI





Legend

- City Outfalls
- ⊙ Private Outfalls
- STORM GRAVITY MAIN
- Ditch
- Natural Channel
- Transition Channel
- MANHOLES
- INLETS
- Ⓜ PUMP STATIONS

Notes

1. 2009 Aerial photograph from Microsoft Virtual Earth dataset
2. Outfall locations from LWG dataset (Outfalls_Oct_08.shp)
3. Storm drain information obtained from the City of Portland, Oregon in March 2010

Affect of being lumped with multiple PRPs

- Disadvantage to Shipyards from multiple PRPs
- Introduction of Non-Shipyard specific chemicals
- More Difficult to assemble case (read costly, time consuming, not necessarily Shipyard friendly remedy)

The Portland Harbor - Status

- Significant Delays to the CERCLA Process
- Remedial Investigation Completed
- Draft Baseline Ecological Risk Assessment and Draft Human Health Risk Assessment Completed
- Feasibility Study underway (completion delayed until 2011)
- ROD to be Issued??
- NRDA process beginning could likely take 3-5 years

ECOLOGICAL RISK ASSESSMENT SUMMARY

From: LWG 2009 BERA

- **31 COCs identified, majority determined to not likely pose unacceptable ecological risks**
- **Potentially unacceptable ecological risks are primarily from PCBs, dioxins and furans, DDx, and PAHs**
- **Bioaccumulation of PCBs likely most majority of ecological risk; mink at greatest risk**
- **Risk identified for benthic invertebrate community for PAH and DDx (~ 5% of Study Area)**
- **Surface water and transition zone water exposures likely do not result in new areas of unacceptable ecological risk (e.g., co-located with sediment areas)**
- **Potentially unacceptable risk to bald eagles due to exposure to mercury; however, mercury is also a watershed issue for the Willamette**

Human Health Risk Assessment Summary

From: LWG 2009 BHHRA

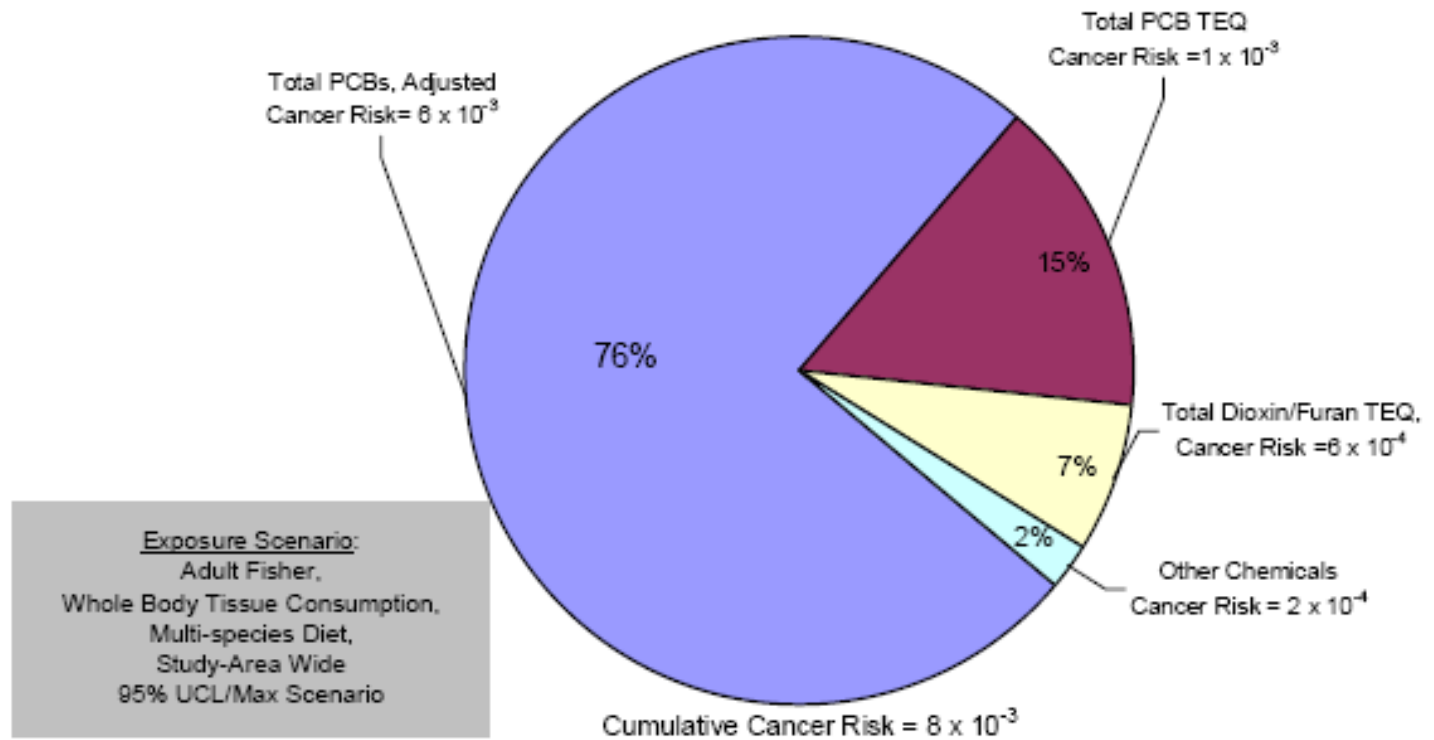
- Fish consumption appear to be the major risk driver for the Study Area
- PCBs appear to be the primary risk driver for fish consumption, and dioxins/furans appear to be a secondary risk driver
- On a regional basis, risks from exposure to bioaccumulative chemicals in fish tissue exceed EPA target risk levels
- The contribution of background sources of COCs is an important consideration in risk management decisions (e.g., arsenic)

	Beach Sediment: Ingestion and dermal absorption	In-water Sediment: Ingestion and dermal absorption	Surface Water: Ingestion and dermal absorption	Groundwater Seeps Ingestion and dermal absorption	Fish/Shellfish: Ingestion
Workers	●	●			
Transients	●		●	●	
Beach Users	●		●		
Fishers	●	●			●
Diver		●	●		

Human Health Risk Assessment Summary

From: LWG 2009 BHHRA

Figure E-4
Relative Contribution of Individual Analytes to Cumulative Site-Wide Risk For Representative Fish Consumption Scenario




Exposure Scenario:
Adult Fisher,
Whole Body Tissue Consumption,
Multi-species Diet,
Study-Area Wide
95% UCL/Max Scenario

Note: Total PCBs, adjusted includes total PCB congeners minus dioxin-like PCB congeners. Total PCB TEQ includes dioxin-like PCB congeners.


Human Health Fishery Advisories

Resident fish in Portland Harbor are more contaminated than other fish.


**A
V
O
I
D
O
R
L
I
M
I
T
I
N
T
A
K
E**



Carp



Bass



Catfish

**N
O
L
I
M
I
T
S
I
N
P
L
A
C
E**

No limits have been placed on eating migratory fish like salmon or steelhead. Research has shown that eating fish has numerous health benefits. It is recommended that people eat a balanced diet including seafood.



Salmon



Steelhead

From: ODHS 2005 Fish Fact Sheet

NRDA OVERVIEW

- **Injury Assessment: Measurable adverse change, long or short term, in the chemical or physical quality or viability of a natural resource**
 - **Causal link between release and damage must be substantiated**
 - **Loss compared to baseline condition**
- **Damage Assessment: Cost and loss of economic value due to the injury on the resource**
 - **Restoration costs**
 - **Compensable value**
- **Restoration: Identify restoration or replacement to get to baseline**

UPDATED TRUSTEE ASSESSMENT STATUS

- **Revised NRDA Assessment Plan with response to specific or combined Trustee understanding of comments issued June 1**
- **Restoration is the Goal for Damages**
- **Phase 1: Development of the Assessment Plan**
- **Phase 2: Implementation of the Settlement-oriented Work Plan**
 - **Collect new information as necessary to assess and estimate injury and damages, plan restoration and identify early settlement options**
 - **Settle early**
- **Phase 3: Completion of the NRDA**
- **Phase 4: Recovery of damages from non-settling PLPs**

NRDA TRUSTEES

- **Two Trustee Groups:**
 - **Trustee Council - Willamette River**
 - **Yakama Nation – Willamette River also Lower Columbia River and Multnomah Channel**

TRUSTEE CURRENT GOALS

- **Restore natural resources that have been injured lost, or destroyed to condition that would have of existed**
- **Replace or acquire equivalent thereof**
- **Recover for services lost**
- **Recover for cost of the injury assessment**

Major Issues to Contend with in PH

- PCB is Likely Cleanup Driver
 - Who is responsible?
 - What about Other COCs?
- How/Where do you dispose of Dredge Sediments?
 - Is someone going to make a profit on a disposal site?
- Will Capping or MNR really work in an industrial harbor?
- Source Control
 - Is it entirely possible in a large watershed?
 - What are discharge criteria?
- Restoration
 - How does it affect Industrial operations?

How do Shipyards Minimize Liability

- Stormwater Control
- BMPs

How do Shipyards Minimize Costs

- Develop a CSM that is Robust
- Sediment Complexities require a CSM that is based on total project goals
 - Business objectives
 - Regulatory and Stakeholder objectives
 - Short- and long-term goals

How do Shipyards Minimize Costs

- Go on your own based on your contaminants
- Early Actions with Quick Cleanup and deal with State rather than Feds
- Escape dealing with NRD Issues and costs