



Draft Proposed Plan Pier 23

**United States Army Reserve
88th Regional Support Command
401 Alexander Avenue, Tacoma, Washington**



**United States Army Environmental Command
1 Rock Island Arsenal
Bldg 90, 3rd Fl, Room 30A
Attn: IMAE-CDN (Mr. Rich Mendoza)
Rock Island, IL 61299**

Table of Contents

| | | |
|----|--|---|
| A. | INTRODUCTION | 1 |
| B. | SITE BACKGROUND | 2 |
| C. | SITE CHARACTERISTICS..... | 3 |
| D. | SCOPE AND ROLE OF RESPONSE ACTION..... | 4 |
| E. | SUMMARY OF SITE RISKS..... | 4 |
| F. | REMEDIAL ACTION OBJECTIVES..... | 5 |
| G. | SUMMARY OF ALTERNATIVES..... | 5 |
| H. | EVALUATION OF ALTERNATIVES | 7 |
| I. | THE PREFERRED ALTERNATIVE | 8 |
| J. | COMMUNITY PARTICIPATION | 8 |

A. INTRODUCTION

This document presents the Proposed Plan (PP) for the US Army Reserve (USAR) 88th Regional Support Command (RSC) (formerly 70th Regional Readiness Command), Pier 23 site (AMSA 137), located at 401 East Alexander, Tacoma, Washington. The purpose of this Proposed Plan is to inform and solicit public input on the preferred alternative for environmental site cleanup. To facilitate public input, the Proposed Plan presents the site background and provides a description of the site characteristics, summarizes the remedial alternatives developed, and provides rationale for selection of the preferred alternative. Based on the findings of the site investigations, the Army is proposing a remedial action under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) for the sediments and slag at the Pier 23 site.

This PP identifies Sediment Dredging and Slag Removal as the preferred remedial alternative for the submerged portion of the Pier 23 site. The Army has demonstrated through its authority under CERCLA that there are no releases from the Pier 23 upland portion of the property that pose an unacceptable risk to human health or the environment and has therefore satisfied its responsibilities under CERCLA with respect to the upland portion of the property.

Contaminated sediments and the slag material that is in contact with the marine water at the Pier 23 site have metals, polycyclic aromatic hydrocarbons (PAHs), and polychlorinated biphenyls (PCBs) that pose an unacceptable risk to human health and the environment. The Army is proposing to dredge in-water sediments, and to remove slag material that is in contact with the marine water. Impacted sediment and slag will be transported off-site to a permitted disposal facility. Sediment Quality Objectives (SQOs) used for the neighboring Commencement Bay Nearshore/Tideflats (CB/NT) Superfund Site will be used as the remediation cleanup values.

In accordance with CERCLA, this PP provides information about the preferred alternative that has been developed by the Army. This document is required to fulfill public participation requirements under CERCLA §117(a) and the National Contingency Plan (NCP) §300.430(f)(2). The purpose of the PP is to:

- Provide basic background information;
- Identify the preferred cleanup approach;
- Describe why this alternative was selected;
- Describe the other cleanup alternatives considered;
- Request public review and comment on all alternatives considered;
- Explain how the public can get involved in the cleanup alternative selection process.

Community input is an important part of the cleanup process. The public is encouraged to participate in the decision-making process. Comments provided by the public are valuable in helping the Army select the final cleanup approach for this site. This PP summarizes key information from other documents that have been prepared for the Pier 23 site. These documents, which include the Sediment Characterization Report (KEMRON, October 2005) and Uplands Investigation Report (KEMRON, January 2009) and the Feasibility Study (FS) (KEMRON, December 2008), are available for public review in the Information Repository that is currently being maintained by the Army at:

Tacoma Public Library
1102 Tacoma Avenue South
Tacoma, Washington 98402
(253) 591-5666

B. SITE BACKGROUND

History

Since the early 1920s, the eastern shoreline of Commencement Bay has been intensely industrialized. The waterfront of the bay has been altered by dredging waterways for shipping and filling adjacent areas for industrial use. Industries located in this area once included sawmills, fuel refineries, smelters, chemical manufacturers, boat builders and the U.S. Navy.

The Department of Defense has had a presence at Pier 23 dating back to the World War II era. In the early 1940s, Todd Pacific Shipyard included Pier 23 and the surrounding area. Post-World War II, the U.S. Navy reportedly moored surplus aircraft carriers and other military equipment at this site. The Port of Tacoma acquired title to the area, known as the "Industrial Yard Complex," in 1961 from the Navy. Since 1961, the Port of Tacoma has leased portions of the Industrial Yard Complex that includes Pier 23 to various tenants including Zydels Corporation, Coast Engineering and Equipment Corporation, Tacoma Boatbuilding and AKWA Ship Repair.

The Washington Army National Guard leased the seaward concrete half of Pier 23 from the Port of Tacoma from 1964 to 1991. The pier was used for vessel moorage and maintenance and as a training site for National Guard personnel. The remainder of Pier 23 was leased for moorage to other tenants, often for the purpose of ship repair. In 1991, the National Guard negotiated a 50 year lease with the Port of Tacoma for the entire (submerged and upland) 10.4 acre site. In 1995, the lease was transferred to the USAR.

Directly southwest of Pier 23 site, a number of rails once used to launch large ships are located in the intertidal area running perpendicular to the shoreline. Similar to the Pier 23 site, the surrounding upland property is owned by Port of Tacoma and leased out to industrial/commercial tenants.

Slag material is found in various areas of the Commencement Bay shoreline. It has been used in the past to fill low-lying areas and to extend the landmass into the bay. A mass of fused metal and other material referred to as slag is present along the north-eastern shoreline of the Pier 23 site (Figure 1).

Previous Investigations

SCS Engineers completed a Final Preliminary Assessment (PA) and Final Site Investigation (SI) for Pier 23 and Building 580 in 1991 (Building 580 was demolished in 2002). The SI stated that there were no underground storage tanks at the site and that a 12,000-gallon above-ground storage tank (AST) installed in the mid 1970s was used to collect waste oil, and was removed in 1989. The report concluded that the site had total petroleum hydrocarbons (TPH) and heavy metals in soil that exceeded Ecology's Model Toxics Control Act (MTCA) standards and mercury, polychlorinated biphenyls (PCBs) and polycyclic aromatic hydrocarbons (PAHs) which exceeded Ecology's Marine Sediment Quality Criteria in sediment samples. Pacific Western Services completed a Final Sampling and Analysis Report for Pier 23 in 1995. The report further defined extent of contamination and contaminants of concern (COCs) and concluded that the upland soils and sediments were contaminated with petroleum hydrocarbons, metals, and semi-volatile compounds. Weston completed a Sediment Data Evaluation in July 1996 that identified intertidal samples having metals and PCBs exceeding the CB/NT Superfund SQOs.

Pacific Northwest National Laboratory (PNNL) completed a Remedial Investigation/Feasibility Study (RI/FS) specific to the sediments at the site in 2000. Based on the results of the screening assessment and the primary risk pathway to humans (represented by the consumption of marine life), the primary

media of concern for the site was determined to be the marine sediment. Soil and groundwater were not found to represent significant pathways to humans or the environment.

Kemron Environmental Services, Inc. (KEMRON) completed a Sediment Characterization Report in 2005. The report summarized previous investigations and presented the sediment sampling analyses performed by KEMRON. Native sediments were identified to be approximately eight to nine feet (ft) below the mudline. Depth of contamination was shown to vary across the site from surface contamination to at least nine feet below the mudline.

KEMRON also completed a Slag Characterization Report in 2005. The report presented results of samples collected by KEMRON and estimated the volume of the slag and underlying waste material to be about 1,100 cubic yards. Toxicity Characteristic Leaching Protocol (TCLP) metals analysis were below hazardous waste designation criteria but leachate tests showed copper, lead, and mercury concentrations that exceeded the surface water criteria.

Following the RI/FS by PNNL, construction on the uplands portion of the Pier 23 site raised concerns of contamination in the upland portion of the site. KEMRON collected field data for an investigation of the uplands at the Pier 23 site (including the slag mass) in June/July 2008. The objective of the investigation was to:

- determine if there are contaminants in the uplands that pose a risk to human health,
- determine if an upland source of contamination exists and if so, if it is contributing to the sediments at concentrations that would exceed SQOs,
- gather data related to the in-water slag mass via samples of slag, sediment and marine water for a weight of evidence risk evaluation of the slag mass.

The Uplands Investigation Report (KEMRON, January 2009) documents the installation and sampling of 19 soil borings, ten monitoring wells, four slag samples, four marine water samples and six near-shore sediment samples at the site. (See Section E for results).

C. SITE CHARACTERISTICS

Pier 23 is located between the Hylebos and Blair Waterways along the shoreline of Commencement Bay, Tacoma, Washington. The property consists of a 1,216 ft long by 56 ft wide pier on 7.4 acres of submerged land, and 3 acres of headland. The inboard 606 ft of the pier consists of timber construction built around 1940 and the outboard 610 ft consists of concrete construction built in 1946. The timber section is supported by timber piles many of which are in poor condition. Sediments in the area were described in boring logs as being generally loose, soft, very soft sandy silt overlying material that was generally dense fine silty sand at depths of four to nine ft below the mudline.

The upland portion of the site is relatively flat and the vast majority is covered with buildings and impervious pavement (Figure 1).

Slag material, located in the intertidal zone adjacent to the sheet pile wall along the north shore of the Pier 23 property, consists of a dark red-brown to black granular material that is mixed with debris. The debris is consistent with ship demolition activities and includes primarily metal pipes, cables and bolts, ceramics, glass, and wood (KEMRON, 2005a).

The waters surrounding the pier are sufficiently deep to allow large vessels easy access to the pier with the exception of the first 40 to 50 ft of pier that is in the intertidal area. The mudline elevation at the end

of the pier is approximately -35 ft mean lower low water (MLLW). A shoreline restoration project was completed in 2005 on the south side of the pier. An intertidal zone composed of gently sloping mudflat is located on the southwest portion of the site.

The 3-acre upland area is relatively flat and predominantly covered by new buildings and pavement. Rainfall at the upland area is captured by a series of storm water drains that flow through an oil-water separator before discharging into Commencement Bay through the outfall under the pier. The facility has a Storm Water Pollution Prevention Plan (SWPPP) and a National Pollutant Discharge Elimination System (NPDES) permit (# WAR00A27F) for the outfall.

D. SCOPE AND ROLE OF RESPONSE ACTION

Before selecting the preferred final remedial option for the Pier 23 site, the Army carefully considered the results of site investigations of both the submerged portion and the upland portion of the site. This included analytical data for the sediments and slag samples located in the submerged property and for the upland portion; it included results of soil and groundwater samples, modeling and human health risk assessment.

Investigation results indicate the remedial action is necessary for the submerged portion of the site (an area of the intertidal and subtidal land). The response action for the Pier 23 site described in this PP is for sediment dredging and slag removal for the applicable submerged portion of the site (Figure 2) and No Action for the upland portion of the site due to no unacceptable risk to upland receptors nor infiltration from soils to groundwater.

E. SUMMARY OF SITE RISKS

Based on the results of site investigations, the risk pathway to humans (represented by the consumption of marine life and, therefore, the primary media of concern for the site) has been determined to be marine sediment and slag.

Contaminants of concern (COCs) in the sediment are similar to the CB/NT Superfund COCs. Screening of the Pier 23 sediment data against the SQOs indicate that the following are COCs for the sediment at Pier 23:

- Copper
- Mercury
- Zinc
- PAHs
- PCBs

Based on results of the Slag Characterization Report (KEMRON, 2005) and samples collected and analyzed in 2008 as part of the Uplands Investigation, metals are present in the slag above SQOs. Furthermore, sequential batch leaching tests on slag samples resulted in positive detections of metals above marine water criteria. Sediment samples collected near the toe of the slag also exceeded the SQO for arsenic.

The slag material at Pier 23 is potentially contributing to unacceptable risks to aquatic receptors at the site. COCs for the slag at Pier 23 are:

- Arsenic
- Cadmium
- Copper
- Lead
- Mercury
- Zinc

Based on the soil and groundwater samples collected for the Uplands Investigation Report (KEMRON January, 2009), there are no unacceptable risks for the uplands receptors. A few contaminants were found in soil and groundwater that exceeded screening value criteria. Groundwater modeling demonstrated that contaminants in groundwater are relatively low and would not migrate to the marine sediments at concentrations above SQOs. Results of the human health risk assessment indicate that for both the construction worker and commercial/industrial worker the cancer risk is within or below the acceptable risk range. This indicates that intrusive excavation/construction work at the Pier 23 site is associated with health risks that do not exceed USEPA risk management criteria.

Ecological risks associated with the upland portion of the site are negligible due to the limited habitat at the USARC upland property and absence of exposure pathways to affected media.

Therefore, soil and groundwater at the Pier 23 site were not found to represent significant pathways to humans or the environment in accordance with CERCLA.

F. REMEDIAL ACTION OBJECTIVES

The overall Remedial Action Objective (RAO) for the sediment and slag at Pier 23 site is the reduction of unacceptable risk to humans (from fish consumption) and aquatic ecological receptors. Specifically, the RAOs for the sediment and slag at the Pier 23 site would be to eliminate the exposure of marine biota to concentrations of sediment and slag that represent an unacceptable risk.

The Sediment Quality Objectives (SQOs) are site-specific cleanup objectives that were developed for the adjacent CB/NT Superfund site and that have been used consistently for CERCLA sediment remedial actions in Commencement Bay since the CB/NT ROD was signed in 1989. The risks posed by the sediment and slag at Pier 23 are similar in that both media are in submerged portions of the site that have the potential to negatively impact ecological receptors. Both media have been shown to exceed criteria for protection of marine biota, and human health through ingestion of marine biota. The CB/NT SQOs will be the cleanup objectives at the Pier 23 site for both the sediment and the slag material that is exposed to marine biota.

G. SUMMARY OF ALTERNATIVES

The location of the Pier 23 site is adjacent to the CB/NT Superfund site and the Army has agreed to cleanup this site in accordance with the CB/NT ROD requirements and protocols. The alternatives developed for the Pier 23 site are consistent with the alternatives developed for the CB/NT Superfund site. Considerations for development of alternatives included:

- General site conditions

- Subtidal sediment areas
- Intertidal sediment areas
- Under pier sediments
- Continued, ongoing use of pier by the Army and limited interruption of service or limitations on future use
- Endangered species considerations
- History of the projects in the CB/NT (evaluation of effective and ineffective remedies)

The four remedial alternatives developed for evaluation included:

- No Action
- Monitored Natural Recovery (MNR)
- Capping All Areas
- Sediment Dredging and Slag Removal with Off-site Disposal

The No Action Alternative does not provide overall protection of human health and the environment.

The MNR alternative was not retained for detailed analysis for several reasons. There is much uncertainty as to the effectiveness of MNR with the mooring of watercraft within areas of contaminated sediments that may be resuspended by propeller wash and/or wave action. Routine maintenance and construction would also result in resuspension of contaminated sediment. Furthermore, one of the COC's, PCBs, is a bioaccumulator which means they can accumulate in marine organisms, move up the food chain and eventually pose a risk to humans from eating fish containing the contaminant.

Capping All Areas consists of installation of a 3 foot isolation sand cap over all of the impacted sediment and slag. The isolation cap would be protected from prop scour and wave action using a thick armoring layer (24-inch rocks). Habitat material would be placed over the armoring layer to provide a habitat enhancement that supports recolonization of marine life. Institutional Controls would be required to limit construction work that may penetrate the cap and control boat traffic that may damage the cap. Since contaminated materials would be left in place, long-term monitoring (LTM) (assumed to be period of 30 years) would be required.

Sediment Dredging and Slag Removal with Off-site Disposal entails removal of all impacted sediments and slag material (Figure 2) with off-site disposal at a permitted Subtitle D landfill. The dredging would be performed using conventional mechanical cable dredge. To minimize resuspension, a closed environmental clamshell would be used for removal of the sediment unless debris, obstructions, or other hard materials are encountered. If obstructions are encountered, a conventional clamshell would be used.

To remove the slag, a new sheet pile would be installed between the existing wall and the building to a depth of approximately 60 ft below the existing asphalt grade. The new sheet pile will provide structural stability during removal of the seaward and landward slag and current sheet pile and protect the integrity of the building. The new wall will minimize movement of the soils in the area that could become fluid during remediation (causing movement of soils underlying the building). The removal would occur using an excavator/dredge from a barge on the water side of the sheet pile. Removed materials would be loaded onto a barge, dewatered, and transported to an off-loading facility for off-site disposal. Dewatering entails removing the bulk of the water that is brought up in the clamshell buckets with the sediments.

Prior to dredging of the sediments and slag, the existing timber pier would be removed as part of the pier demolition/reconstruction project to provide access to the under-pier area. The pier removal, remediation, and pier replacement work would all occur during the fish window (Aug 15 to Feb 15) to minimize impacts to fish and aquatic receptors.

Sediment Dredging and Slag Removal are anticipated to meet the RAOs and result in overall protection of human health and the environment. Additionally, both alternatives incorporate habitat enhancement that would provide additional benefits to the ecological receptors.

H. EVALUATION OF ALTERNATIVES

CERCLA requires that each remedial alternative be compared to nine criteria developed by the USEPA for evaluation of the remedial alternatives.

The evaluation criteria have been divided into three groups (based on the function of the criteria in remedy selection) and are threshold, primary balancing, and modifying criteria. The threshold criteria relate to statutory requirements that each alternative must satisfy in order to be eligible for selection and inclusion. Threshold criteria includes: overall protection of human health and the environment and compliance w/ applicable or relevant and appropriate requirements (ARARs).

The primary balancing criteria are the technical criteria upon which the detailed analysis is primarily based.

Balancing criteria includes: long-term effectiveness and permanence, reduction of toxicity, mobility, or volume through treatment, short-term effectiveness, implementability, and cost.

The third group is made up of the modifying criteria and includes state/support agency acceptance and community acceptance. This criteria (state/support agency acceptance and community acceptance) is assessed formally after the public comment period.

Three alternatives were retained for detailed analysis:

- Alternative 1 – No Action,
- Alternative 2 – Capping All Areas (present value cost of \$6.8M)
- Alternative 3 – Dredging All Areas (present value cost of \$8.6M)

The No Action Alternative was retained to provide a baseline alternative for comparison purposes in accordance with the NCP. It does not provide overall protection of human health and the environment. It does not comply with ARARs, and would not provide significant long-term effectiveness and permanence.

Both Alternative 2 and Alternative 3 provide overall protection of human health and the environment, comply with ARARs and are anticipated to meet the RAOs and result in overall protection of human health and the environment.

Alternative 2 (capping) is anticipated to have less risk associated with movement of materials than Alternative 3 (dredging). Short-term water quality impacts area also expected to be lower with the capping than dredging. However, Alternative 3 would provide much greater long-term effectiveness and

permanence over the capping option. No LTM is anticipated for Alternative 3 since all of the contaminated material would be removed.

Both Alternatives 2 and 3 are implementable, and are consistent with remedial actions previously approved for the CB/NT Superfund site under the CB/NT ROD. Both alternatives require the removal and replacement of the portion of the pier blocking access to the area.

Alternative 2 – Capping All Areas will cost approximately \$6,800,000 and Alternative 3 – Sediment Dredging and Slag Removal with Upland Disposal will cost approximately \$8,600,000. The difference in costs between Alternatives 2 and 3 is approximately \$1.6M with Alternative 2 – Capping All Areas the less expensive alternative.

I. THE PREFERRED ALTERNATIVE

Alternative 3 – Sediment Dredging and Slag Removal with Upland Disposal is the preferred alternative for Pier 23. This alternative will achieve substantial risk reduction and attain the RAO, resulting in overall protection of human health and the environment. Additionally, this alternative is expected to comply with all ARARs. Sediment dredging and slag removal with upland disposal provides the greatest degree of effectiveness and permanence since the contaminated sediment and slag is permanently removed from the water and contained in a permitted off-site landfill in an upland area. Incorporating habitat enhancement in the intertidal zone would provide additional long-term benefits to the ecological habitat. Although Alternative 3 – Sediment Dredging and Slag Removal with Off-Site Disposal is more expensive than Alternative 2 (Capping), Alternative 3 - is the only alternative that meets the Army's preference for a permanent remedial action without a lengthy LTM component.

J. COMMUNITY PARTICIPATION

The USAEC, USAR and 88th Regional Support Command (88th RSC) encourage the public to comment on this PP. **A 30-day public comment period will be held from March 3, 2009 through April 2, 2009.**

During this time, comments on the PP will be accepted. You may e-mail, or mail written comments to Mr. Richard Mendoza, USAEC Environmental Restoration Manager, 1 Rock Island Arsenal, Bldg 90, 3rd Fl, Room 30A, Attn: IMAE-CDN (Mr. Richard Mendoza), Rock Island, IL 61299; Email: richard.r.mendoza@us.army.mil. **Comments must be postmarked no later than April 2, 2009.**

The Army will hold a public meeting at the Fabulich Center, 3600 Port of Tacoma Road, Tacoma, WA from 6:30 PM to 8:30 PM on March 24, 2009 to present the PP and answer community questions. In advance of the meeting, the Army will publish a public notice to provide information about when and where the meeting will be held.

After all public comments have been reviewed, the USAEC and 88th RRC, in consultation with Washington Department of Ecology, will make a final decision on the remedy for the site that will protect human health and the environment. The preferred alternative could change based on public input. This final decision will be announced in the Decision Document, which will include the Army's response to comments from the public.

How to Obtain Additional Information

Anyone interested in learning more about environmental cleanup or community involvement for the Pier 23 site is encouraged to contact the USAEC Environmental Restoration Manager, Mr. Richard Mendoza, or review documents in the Information Repository at the Tacoma Public Library. Contact information for Mr. Mendoza and the Tacoma Public Library are provided below.

USAEC Inquiries

For additional information, please contact:

Mr. Richard Mendoza, USAEC Environmental Restoration Manager
United States Army Environmental Command
1 Rock Island Arsenal
Bldg 90, 3rd Fl, Room 30A
Attn: IMAE-CDN (Mr. Rich Mendoza)
Rock Island, IL 61299
Phone: (309) 782-1871
Email: richard.r.mendoza@us.army.mil

INFORMATION REPOSITORY

1102 Tacoma Avenue South
Tacoma, WA 98402
(253) 591-5666

Hours of Operation:

Monday through Thursday 9:00 a.m. to 9:00 p.m.
Friday and Saturday 9:00 a.m. to 6:00 p.m.

Sundays Closed

Glossary

Applicable or Relevant and Appropriate Requirements (ARARs): Federal or State laws or regulations that pertain to protection of public health and the environment in addressing specific site conditions or using particular technologies.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): A Federal law passed in 1980, also known as Superfund, that created a trust fund to investigate and cleanup abandoned or uncontrolled hazardous substance sites. It is the governing law under which the Army is conducting the Site-07 investigation and remediation.

Contaminants of Concern (COCs): The chemicals in the contaminated media that require cleanup to protect human health and the environment.

Decision Document: A legally binding public document that explains the cleanup alternative that will be used at a site.

Feasibility Study (FS): A CERCLA process of identifying and evaluating cleanup alternatives.

In-situ: Something that takes place in its original position or location. For example, treating soil in-situ means the soil does not need to be excavated.

Information Repository: A file that contains information that is considered important in the decision-making process. The file is currently available for public review at the Tacoma Public Library located at 1102 Tacoma Ave. South, Tacoma, Washington 98402.

PP: A document that summarizes key information about the site, presents the preferred remedial action, and provides the rationale for the preferred action. The PP is provided to solicit public review and comment on the preferred remedial action.

Remedial Alternative: A cleanup method evaluated to address contamination at the site.

Remedial Action: The actual construction or implementation phase of the selected remedy for a site.

Remedial Investigation (RI): An in-depth study to gather the necessary data to determine the nature and extent of contamination at a site.

Risk Assessment: A calculated estimate of the potential for adverse health impacts due to exposure to contaminants.

Sediment Quality Objectives (SQOs): Chemical specific cleanup goals based on regulatory requirements.

FIGURES