

The Baker logo consists of the word "Baker" in white, sans-serif font, centered within a solid blue rectangular background.**Baker Environmental, Inc.***A Unit of Michael Baker Corporation*

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November 3, 2004

U.S. Environmental Protection Agency - Region II
290 Broadway – 22nd Floor
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Attn: Mr. Adolph Everett, P.E.
Chief, RCRA Programs Branch

Re: Contract N62470-95-D-6007
Navy CLEAN, District III
Contract Task Order (CTO) 0271
U.S. Naval Activity Puerto Rico (NAPR), Ceiba, PR
RCRA/HSWA Permit No. PR2170027203
Navy Proposed Plan for SWMU 9

Dear Mr. Everett:

Baker Environmental, Inc. (Baker), on behalf of the Navy, is providing you with an alternative to evaluating the ecological risks at SWMU 9 (Area B) due to the inclusion of an interim corrective measure for removal of soil contaminated with lead. The results of surface soil sampling from SWMU 9 (Area B) have identified levels of lead in surface soils in excess of the US EPA Action Level (residential soil screening level) of 400 mg/kg. Due to these exceedances the Navy is evaluating the option of performing an interim corrective measure for the removal of soils contaminated with lead in excess of the EPA action level of 400 mg/kg. Therefore the Navy offers the following evaluation of surface soils at SWMU 9 (Area B) for ecological risks post remediation. The Navy is requesting USEPA concurrence that surface soil remediation at 9SS09, 9SS22, and 9SS28, using the USEPA human health action level of 400 mg/kg as a cleanup goal, would eliminate the need to perform a terrestrial baseline ERA at SWMU 9 (Area B).

A screening-level ecological risk assessment (ERA) and Step 3b of the baseline ERA was conducted at SWMU 9 using the process outlined in the Chief of Naval Operations (CNO) document entitled *Navy Policy for Conducting Ecological Risk Assessments* (CNO, 1999). The ERA, presented in the document entitled *Final Corrective Measures Study Investigation Report for SWMU 9, Naval Station Roosevelt Roads, Ceiba, Puerto Rico* dated April 25, 2003 (Baker, 2003), identified lead and zinc as ecological chemicals of concern (COCs) for terrestrial plants and/or invertebrates at SWMU 9 (Area B). These two metals also were identified as ecological COCs for upper trophic level avian herbivore (morning dove) and/or avian omnivore (American robin) exposures via the food web. In addition to potential ecological risks to terrestrial receptors, lead was identified as an ecological COC for aquatic invertebrate and avian invertebrate consumer (spotted sandpiper) exposures to lead in estuarine wetland sediment downgradient from Tank 214 (Area B).

ChallengeUs.

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Given the limited surface soil and sediment data available for these two metals, the Final CMS Report for SWMU 9 recommended the collection of additional surface soil samples from Area B (in the vicinity of Tank 214) for lead and zinc analysis, as well as the collection of additional sediment samples from the estuarine wetland system downgradient from Tank 214 prior to making a decision on whether the SWMU should move forward in the ERA process (i.e., the baseline risk assessment problem formulation). A work plan (dated April 25, 2003), presenting the technical approach for conducting the additional data collection effort, was prepared and submitted to the USEPA. The Work Plan, approved in a letter from the USEPA dated June 3, 2003, was implemented in July 2003. Results of the Additional Data Collection Field Investigation were presented in the *Final Additional Data Collection Investigation Report for SWMU 9, Naval Station Roosevelt Roads, Ceiba, Puerto Rico* (dated June 14, 2004). This document also contained risk calculations and a risk characterization for the lead and zinc surface soil data and lead sediment data. Based on the risk calculation and characterization, lead was retained as an ecological COC for terrestrial plants and avian omnivores. Lead also was retained as an ecological COC for aquatic invertebrate communities and avian invertebrate consumer populations. For this reason, it was recommended that SWMU 9 (Area B) move forward in the ERA process (Step 3b baseline ecological risk assessment problem formulation).

A figure showing the spatial distribution of lead concentrations in surface soil at SWMU 9 (Area B) is attached as Figure 1. As evidenced by the figure, lead concentrations range from 2.2 mg/kg at 9SS18 to 1,300 mg/kg at 9SS22 mg/kg (see Figure 1). An evaluation of human health risks using the IEUBK lead model indicates that unacceptable risks for residential children are present at the SWMU. Based on the residential action level of 400 mg/kg, removal of three 'hot spots' (670 mg/kg at 9SS28, 910 mg/kg at 9SS09, and 1,300 mg/kg at 9SS22) would mitigate human health risks. To determine if surface soil remediation to address human health would also address potential ecological risks present at the SWMU, risk estimates were calculated under two different scenarios:

1. Derivation of HQ values for terrestrial plant communities and avian omnivore populations assuming that lead concentrations at 9SS09, 9SS22, and 9SS28 would equal 196 mg/kg (current mean of lead in surface soil) following remediation.
2. Derivation of HQ values for terrestrial plant communities and terrestrial avian omnivore populations assuming that lead concentrations at 9SS09, 9SS22, and 9SS28 would equal the human health action level of 400 mg/kg following remediation.

The results of these risk estimates, as well as risk estimates under current (baseline) conditions are presented below. Screening values used in the risk calculations were as follows:

Surface soil screening value: 110 mg/kg (ecological SSL for terrestrial plants; USEPA, 2003)
Avian omnivore NOAEL: 1.13 mg/kg-BW/day
Avian omnivore LOAEL: 11.3 mg/kg-BW/day
Avian omnivore MATC: 3.57 mg/kg-BW/day

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Risk estimates under current conditions (no remediation)

- Mean lead concentration: 196 mg/kg
- Mean omnivore dose = 3.65 mg/kg-BW/day
- Mean HQ value based on the terrestrial plant ecological SSL = 1.78
- Avian omnivore NOAEL-based mean HQ = 3.23
- Avian omnivore LOAEL-based mean HQ = 0.32
- Avian omnivore MATC-based mean HQ = 1.02

Scenario No. 1: Risk estimates assuming a soil concentration of 196 mg/kg at remediated soil locations

- Mean lead concentration: 101 mg/kg
- Mean omnivore dose = 1.88 mg/kg-BW/day
- Mean HQ value based on the terrestrial plant ecological SSL = 0.92
- Avian omnivore NOAEL-based mean HQ = 1.66
- Avian omnivore LOAEL-based mean HQ = 0.17
- Avian omnivore MATC-based mean HQ = 0.53

Scenario No. 2: Risk estimates assuming a soil concentration of 400 mg/kg at remediated soil locations:

- Mean lead concentration: 126 mg/kg
- Mean omnivore dose = 2.34 mg/kg-BW/day
- Mean HQ value based on the terrestrial plant ecological SSL = 1.15
- Avian omnivore NOAEL-based HQ = 2.07
- Avian omnivore LOAEL-based HQ = 0.21
- Avian omnivore MATC-based HQ = 0.66

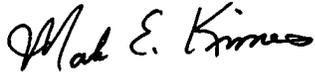
Risks estimates for terrestrial plant populations and avian omnivore populations assuming a soil concentration of 400 mg/kg at remediated surface soil locations would represent worst case estimates since it is likely that the actual concentrations would be less than the human health action level. Although worst-case risk estimates for terrestrial plant communities (HQ = 1.15) and avian omnivores populations (NOAEL-based HQ = 2.07) exceed 1.0, the Navy believes that these risks are acceptable, eliminating the need to perform a terrestrial baseline ERA. As such, the Navy is requesting USEPA concurrence that surface soil remediation at 9SS09, 9SS22, and 9SS28, using the USEPA human health action level of 400 mg/kg as a cleanup goal, would eliminate the need to perform a terrestrial baseline ERA at SWMU 9 (Area B). It is noted that terrestrial risk estimates will be recalculated following remediation using analytical data from confirmation samples and existing analytical data from locations undisturbed by the proposed remediation.

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If you have questions regarding this submittal, please contact Mr. Kevin Cloe, P.E. at (757) 322-4736. Additional distribution has been made as indicated below.

Sincerely,

BAKER ENVIRONMENTAL, INC.

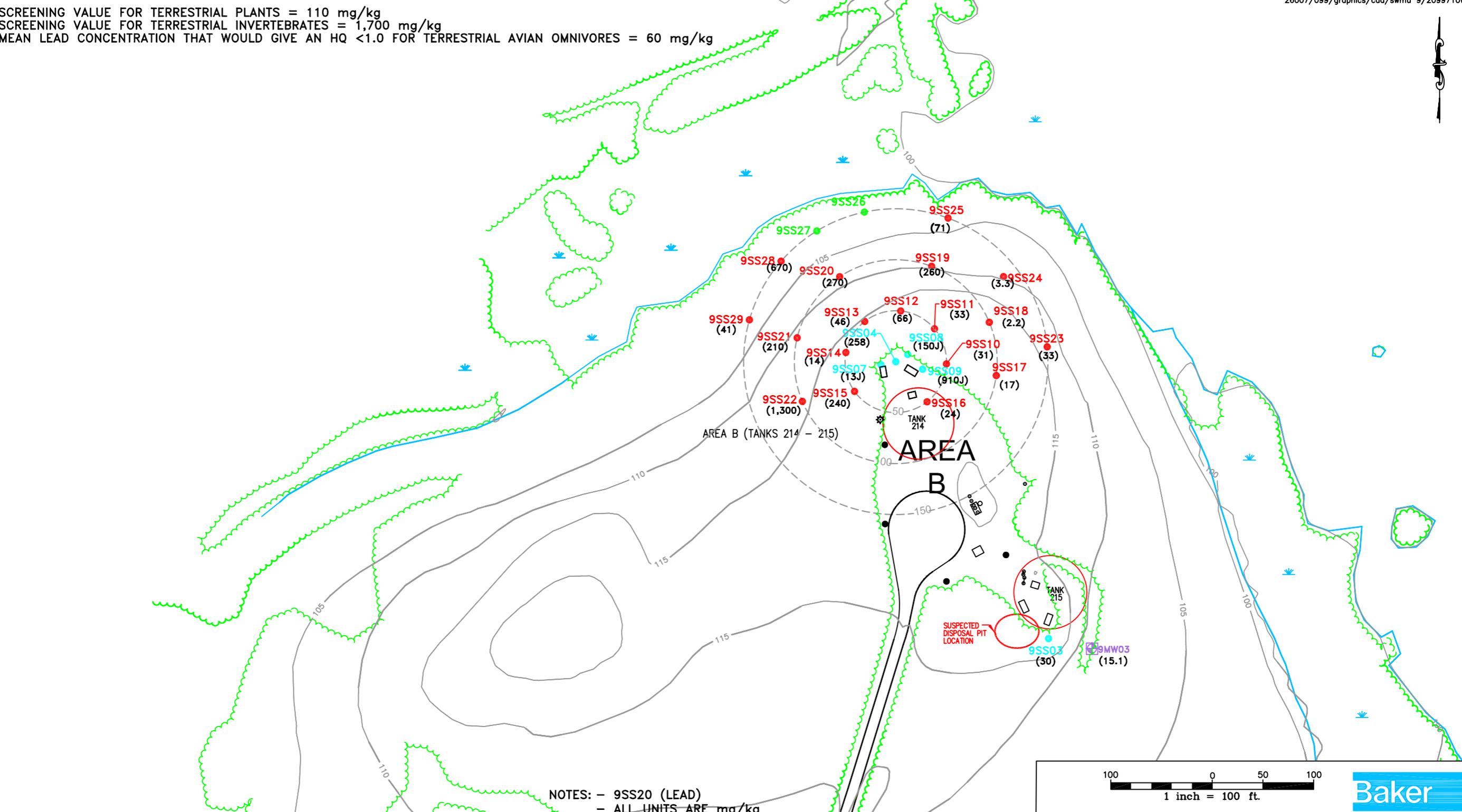


Mark E. Kimes, P.E.
Activity Manager

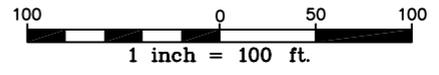
MEK/lp
Attachments

cc: Mr. Kevin R. Cloe, LANTDIV - Code EV24KC (1 hard copy and 1 e-copy via e-mail)
Mr. Peter Cummings, LANTDIV – Code AQ114 (letter only)
Ms. Madeline Rivera, NSRR (1 hard copy and 1 e-copy via e-mail)
Mr. Tim Gordon, US EPA Region II (1 hard copy and 1 e-copy via e-mail)
Ms. Kathy Rogovin, Booz Allen & Hamilton (1 e-copy via e-mail)
Mr. Carl Soderberg, US EPA Caribbean Office (1 hard copy)
Mr. Julio I. Rodriguez Colon, PR EQB (1 hard copy)
Mr. John Tomik, CH2M Hill Virginia Beach (1 e-copy via e-mail)

SCREENING VALUE FOR TERRESTRIAL PLANTS = 110 mg/kg
SCREENING VALUE FOR TERRESTRIAL INVERTEBRATES = 1,700 mg/kg
MEAN LEAD CONCENTRATION THAT WOULD GIVE AN HQ <1.0 FOR TERRESTRIAL AVIAN OMNIVORES = 60 mg/kg



NOTES: - 9SS20 (LEAD)
- ALL UNITS ARE mg/kg



- LEGEND**
- MONITOR WELL LOCATION (PHASE I-1996)
 - SEDIMENT SAMPLE LOCATION (ADDITIONAL DATA COLLECTION-2003)
 - SURFACE WATER/SEDIMENT SAMPLE LOCATION (CMS INVESTIGATION-2000)
 - SURFACE WATER/SEDIMENT SAMPLE LOCATION (PHASE III RFI-1999)
 - SURFACE SOIL SAMPLE LOCATION (PHASE I RFI AND CMS INV.-1996/2000)
 - SURFACE SOIL SAMPLE (ADDITIONAL DATA COLLECTION-2003)
 - PROPOSED SURFACE SOIL SAMPLE (ADDITIONAL DATA COLLECTION-2003) THAT WAS NOT COLLECTED DUE TO THE ESTUARINE WETLAND EXTENT.
 - SUSPECTED LOCATION OF DISPOSAL PIT
 - TELEPHONE POLE

FIGURE 1
POSITIVE DECTIONS OF LEAD
IN SURFACE SOIL - SWMU 9
AREA B (TANKS 214-215)
 NAVAL STATION ROOSEVELT ROADS
 PUERTO RICO

BRUSH