

**Baker**

**Baker Environmental, Inc.**  
*A Unit of Michael Baker Corporation*

May 14, 2003

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Attn: Mr. Adolph Everett, P.E.  
Chief, RCRA Caribbean Section

Re: Contract N62470-95-D-6007  
Navy CLEAN, District III  
Contract Task Order (CTO) 0033  
U.S. Naval Station Roosevelt Roads (NSRR), Puerto Rico  
RCRA/HSWA Permit No. PR2170027203  
Addendum to the Draft Ecological Risk Assessment for SWMUs 1 and 2  
Response to EPA Comments dated October 4, 2001

Dear Mr. Everett:

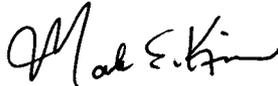
Baker Environmental, Inc. (Baker), on behalf of the Navy, is providing you with two copies of the Addendum to the Draft Screening-Level Ecological Risk Assessment Problem Formulation (Step 1) and Exposure Estimate for SWMUs 1 and 2 that was submitted on August 10, 2001. This addendum is being submitted in accordance with the letter from your office dated October 4, 2001 from Mr. Michael Poetzsch. This addendum was delayed due to funding constraints as presented in the Navy's letter to the EPA dated November 28, 2001. The funding has become available, and therefore, the addendum to the Draft Ecological Risk Assessment for SWMUs 1 and 2 was prepared and submitted.

Attached please find the Navy Responses to your comments dated October 4, 2001 on the Screening-Level Ecological Risk Assessment Problem Formulation for SWMUs 1 and 2. The Draft Ecological Risk Assessment for SWMUs 1 and 2 has been modified as outlined in the attached response to comments.

If you have any 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 EV23KRC (1 copy)  
Ms. Madeline Rivera, NSRR (4 copies)  
Mr. Tim Gordon, US EPA Region II (2 copies)  
Mr. John Tomik, CH2M Hill Virginia Beach (1 copy)  
Ms. Kathy Rogovin, Booz Allen & Hamilton (1 copy)  
Mr. Mace Barron, Booz Allen & Hamilton (1 copy)  
Mr. Carl Soderberg, US EPA Caribbean Office (1 copy)  
Mr. Carmelo Vasquez, PREQB (2 copies)

**Challenge Us.**

**NAVY RESPONSE TO EPA COMMENTS ON THE DRAFT SCREENING-LEVEL  
ECOLOGICAL RISK ASSESSMENT PROBLEM  
FORMULATION (STEP 1) AND EXPOSURE ESTIMATE FOR SWMUs 1 AND 2  
NAVAL STATION ROOSEVELT ROADS  
CEIBA, PUERTO RICO**

**EPA COMMENTS**

*EPA requested our contractor, Booz Allen and Hamilton (BAH), to review the above documents. Although the above documents were determined to be well organized and thorough, several limited issues need to be further addressed and/or clarified. These are discussed in the enclosed Technical Reviews dated August 9 and September 5, 2001, respectively.*

1. *Because of the voluminousness and complexity of the above documents, it is not necessary to resubmit revised copies of the entire documents, but only addendums to the original documents. Therefore, within 45 days of your receipt of this letter, please submit an addendum to the Corrective Measures Study [Ecological] Investigation Report for SWMU #9, addendums to the Screening-Level Ecological Risk Assessment Problem Formulation for SWMUs 1 and 2, and an addendum for SWMU 45, addressing comments given in the two enclosed Technical Reviews. Furthermore, the Additional Data Collection Work Plans for SWMUs 1 and 2, and for SWMU #45 (Appendix B of both of the August 10, 2001 submittals) are approved as submitted.*

**Navy Response to EPA Comments**

Comment noted. The responses presented below pertain to those comments specific to SWMUs 1 and 2.

**BOOZ ALLEN HAMILTON COMMENTS**

***I GENERAL COMMENTS***

1. *EPA has reviewed the Naval Station Roosevelt Roads (NSRR) August 10, 2001 Draft Screening-Level Ecological Risk Assessment Problem Formulation (Step 1) and Exposure Estimate for SWMU 45, and the Draft Screening-Level Ecological Risk Assessment Problem Formulation (Step 1) and Exposure Estimate for SWMUs 1 and 2, as well as the revised tables to these documents, subsequently submitted to EPA on August 30, 2001. These interim ecological risk assessment (ERA) reports and work plans are acceptable, contingent on incorporation of the revisions identified in the specific comments below.*

**Navy Response to BAH General Comment No. 1**

Comment noted. Please see the responses to the specific comments pertaining to SWMUs 1 and 2 (Specific Comment Nos. 8 through 14) presented below.

**BOOZ ALLEN COMMENTS**

***II Specific Comments***

***4.1.2 Exposure Pathways and Routes, page 4-2***

1. *Figure 4-1 presents the conceptual site model (CSM), but does not show an uptake/bioaccumulation pathway from sediment to biota. The sediment to biota uptake pathway is discussed in Section 4.1.2 and shown in Figure 3-1 of the July 2000 Revised Final II Corrective Measures Study Work Plan. The CSM should be revised to show the sediment to biota uptake pathway as complete.*
8. *Figures 4-1 and 4-2 presents the CSMs for these SWMUs, but do not show an uptake/bioaccumulation pathway from sediment to biota. See Specific Comment 1.*

#### **Navy Response to BAH Specific Comment No 8.**

Figures 4-1 and 4-2 have been revised to show the sediment to biota pathway as complete.

#### ***4.1.3 Endpoints and Risk Hypotheses, page 4-3***

9. *Table 4-1 contains typographical errors in the endpoint and risk hypothesis for aquatic mammals. EPA understands that the aquatic mammal endpoint is for the manatee.*

#### **Navy Response to BAH Specific Comment No 9.**

Table 4-1 has been revised to correct the typographical errors in the endpoint and risk hypothesis statements for aquatic mammals. The EPA understanding is correct, the aquatic mammal endpoint is for the manatee.

#### ***5.1 Media-Specific Screening Values, page 5-1***

10. *Tables 5-1, 5-2, and 5-3 present soil, sediment, and surface water screening values, and generally contain a comprehensive list of benchmarks. To further reduce the number of chemicals with no screening values, additional sources of screening values should be considered, as well as the use of values for surrogate chemicals (e.g., use the screening value for a chemical with a similar chemical structure). A potential source of additional screening values is EPA (1999) (see references below). Additionally, Suter (1996) contains surface water benchmarks for freshwater biota that should be considered. Although the applicability of these freshwater values to marine organisms is uncertain, using these values would likely create less uncertainty in the ERA than if no screening value is used.*

#### **Navy Response to BAH Specific Comment No 10.**

Tables 5-1, 5-2, and 5-3 have been revised to provide a more comprehensive list of media-specific benchmarks. The text in Sections 5.1.1, 5.1.2, and 5.1.3 has also been revised to provide a description of the process used to select surface soil, surface water, and sediment screening values, respectively, from the literature. Notable revisions include the following:

- Freshwater thresholds and toxicological data were identified from the literature for use as surface water screening values for those chemicals lacking a marine value.
- Surface water screening values based on National Ambient Water Quality Criteria

(NAWQC) contained in EPA 1999a were replaced with updated NAWQC contained in EPA 2002.

- EqP-based thresholds developed by Di Toro and McGrath were considered for use as sediment screening values in accordance with the recommendations contained in an email from Mr. Timothy Gordon (EPA Region II) to Mr. Mark Kimes (Baker Activity Coordinator) dated May 7, 2003.
- Toxicity Reference Values (TRVs) contained in EPA 1999b were considered for use as surface soil, surface water, and sediment screening values.

*References:*

Environmental Protection Agency (EPA). 2002. National Recommended Water Quality Criteria: 2002. Office of Water and Office of Science and Technology. EPA-822-R-02-047.

EPA. 1999a. National Recommended Water Quality Criteria-Correction - 1999. Office of Water. EPA 822-Z-99-001.

EPA. 1999b. Screening Level Ecological Risk Assessment Protocol for Hazardous Waste Combustion Facilities. EPA/530/D-99/001A.

Di Toro, D.M. and J.A. McGrath. 2000. Technical Basis for Narcotic Chemicals and Polycyclic Aromatic Hydrocarbon Criteria. II. Mixtures and Sediments. Environ. Toxicol. Chem. 19 :1971-1982.

**6.3.1 Exposure Point Concentrations, page 6-6**

11. *Table 6-2 lists bioaccumulation factors (BAFs) for soil to small mammals. The majority of the values in this table are listed as "see text." Page 6-7 presents a good explanation of the rationale for using a default assumption of 1 for the BAF. An acceptable alternative procedure would be to use the BAFs presented in EPA (1999). Rather than listing "see text," Table 6-2 should be completed using the default BAF value or alternative values.*

**Navy Response to BAH Specific Comment No 11.**

Comment noted. If appropriate soil-to-invertebrate and soil-to-small mammal BAF values are identified from EPA 1999, Table 6-2 will be revised accordingly prior to implementation of the screening-level risk calculation.

Please note that the text on Page 6-7 does not state that a soil-to-small mammal BAF of 1.0 will be assumed. In the absence of literature-based soil-to-small mammal BAFs, a prey-to-small mammal BAF of 1.0 will be used to estimate small mammal tissue concentrations. In this approach, it is assumed that concentration of a chemical in the tissue of a small mammal is equal to the chemical concentration in its diet.

*References:*

Environmental Protection Agency (EPA). 1999b. Screening Level Ecological Risk Assessment Protocol for Hazardous Waste Combustion Facilities. EPA/530/D-99/001A.

12. *Table 6-3 presents sediment BAFs and shows that a default value of 1 was used in the absence of chemical-specific information. EPA (2000) is a useful source of biota to sediment uptake factors, and may reduce the need to use a default value of 1 for many chemicals.*

#### **Navy Response to BAH Specific Comment No 12.**

Comment noted. If appropriate sediment-to-invertebrate and sediment-to-fish BAF values are identified from EPA 2000, Table 6-3 will be revised to include these values prior to implementation of the screening-level risk calculation.

#### *References:*

Environmental Protection Agency (EPA). 2000a. Bioaccumulation Testing and Interpretation for the Purpose of Sediment Quality Assessment. Status and Needs. Office of Water and Office of Solid Waste, Washington, D.C. EPA-823-R-00-001.

6. *Page 6-7 indicates that sediment to aquatic plant BAFs will be assumed to be equal to the soil to plant BAFs shown in Table 6-1. The applicability of the terrestrial plant BAFs to aquatic plants is unknown, and thus would represent a substantial uncertainty in the risk assessment. Because of the importance of protecting individual endangered manatee, a more conservative approach is warranted. A default BAF of 1 for aquatic plants is recommended, unless the value in Table 6-1 is greater than 1. Additionally, the ERA report should discuss any available literature information on the bioaccumulation of contaminants from sediment to sea grass or similar species. Alternatively, samples of sea grass from potential manatee feeding areas (e.g., co-located with planned sediment sampling) could be collected to determine site-specific BAFs and dietary contaminant levels. It is possible that BAFs determined from samples from Puerca Bay could be applied to other site locations, potentially reducing uncertainties and sampling requirements.*
13. *Page 6-8 indicates that sediment to aquatic plant BAFs will be assumed to be equal to the soil to plant BAFs shown in Table 6-1. See Specific Comment 6.*

#### **Navy Response to BAH Specific Comment No 13.**

Appendix C of the document entitled Screening Level Ecological Risk Assessment Protocol for Hazardous Waste Combustion Facilities (EPA 1999) lists various media-to-receptor bioconcentration factors. Table C-2 lists soil-to-plant and sediment-to-plant BCF values. The values listed were for the most part derived using the methodology presented in the draft report and are intended by the EPA to be interchangeable (i.e., they can be used as soil-to-plant and sediment-to-aquatic plant BCF values). Furthermore, the application of soil-to-terrestrial plant BCFs to sediment-to-aquatic plant BCFs has been used by LANTDIV at numerous Installation Restoration (IR) sites located within EPA Region III without comment. For these reasons, the Navy does not intend to change the approach presented in Section 6.3.1 to estimate sediment-to-aquatic plant BCF values.

The Navy agrees that site-specific BAFs would reduce the uncertainty associated with this approach; however, samples of sea grass will not be collected as part of the screening-level ecological risk assessment (ERA). If additional evaluation of the West Indian manatee is warranted beyond the screening-level ERA and Step 3a of the baseline ERA, generation of site-

specific BAFs would be a likely approach to further evaluate potential risks to this receptor. The Navy also agrees that literature-based BAFs would also reduce the uncertainty of the approach presented in Section 6.3.1; however, information on the bioaccumulation of chemicals from sediments to sea grass or similar species was not identified from the literature.

*References:*

Environmental Protection Agency (EPA). 1999. Screening Level Ecological Risk Assessment Protocol for Hazardous Waste Combustion Facilities. EPA/530/D-99/001A.

**6.3.3 Ingestion-Based Screening Values**

14. *Table 6-7 and 6-8 present toxicity reference values (TRVs) for birds and mammals, and contain numerous missing values. Additional reference sources should be considered in order to limit the number of chemicals without benchmarks. Two useful sources include EPA (1999) and Schafer et al. (1983).*

**Navy Response to BAH Specific Comment No 14.**

Tables 6-7 and 6-8 have been revised to include ingestion-based screening values from EPA 1999. Note that toxicity values (LD<sub>50</sub>s) contained in Schafer et al. (1983) are expressed as a concentration (mg/kg). The authors did not provide body weights or ingestion rates for the test species. As such, ingestion-based screening values expressed as a dose (mg/kg-BW/day) could not be derived from the available information. For this reason, Schafer et al. (1983) could not be used as a source of Toxicity Reference Values (TRVs). Other than EPA 1999, additional reference sources could not be located from the literature to further reduce the number of chemicals lacking an ingestion-based screening value.

*References*

Schafer, E.W., Jr., W.A. Bowles, Jr., and J. Hurlbut. 1983. The Acute Oral Toxicity, Repellency, and Hazard Potential of 998 Chemicals to One or More Species of Wild and Domestic Birds. Arch. Environ. Contamin. Toxicol. 12:335-382.

Environmental Protection Agency (EPA). 1999. Screening Level Ecological Risk Assessment Protocol for Hazardous Waste Combustion Facilities. EPA/530/D-99/001A.