



## DEPARTMENT OF THE NAVY

ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
1510 GILBERT ST  
NORFOLK, VA 23511-2699

TELEPHONE NO:

(757) 322-4816

IN REPLY REFER TO:

5090

1822:CTP:cag

**JUL 13 2000**

U. S. Environmental Protection Agency  
Region II  
Attn: Ms. Nicoletta DiForte  
Chief, RCRA Caribbean Section  
290 Broadway-22nd Floor  
New York, New York 10007-1866

SUBJECT: U.S. NAVAL STATION ROOSEVELT ROADS, PUERTO RICO  
RCRA CORRECTIVE ACTION PROGRAM  
RCRA/HSWA PERMIT NO. PR2170027203 EPA  
COMMENTS ON REVISED FINAL CMS WORK PLANS  
FOR SWMUs 1 AND 2 and SWMU 45 AND REVISED  
DRAFT RFI FOR SWMU 9

Dear Ms. DiForte:

This letter is in response to your comment letter, dated May 4, 2000, pertaining to the above listed U.S. Navy Submittals previously transmitted to the United States Environmental Protection Agency, Region II (USEPA) on March 10, 2000. The U.S. Navy has reviewed both EPA's and Booz Allen & Hamilton (BAH) comments pertaining to the Revised Final CMS Work Plan for SWMUs 1 and 2, the Revised Final CMS Work Plan for SWMU 45, and the Revised Draft RFI Report for SWMU 9 dated March 10, 2000. The enclosure to this letter provides the Navy's responses to your comment letter. It should be noted that these response to comments incorporate the items discussed and agreed to during the conference call conducted on June 7, 2000 between the Navy's consultant, Baker Environmental, EPA and BAH. Please note that the Navy responses are provided in bold type following each comment for ease of review.

Please be advised that Baker Environmental is scheduled to submit the Revised Final II CMS Work Plan for SWMUs 1 and 2, the Revised Final II CMS Work Plan for SWMU 45, and the Draft CMS Work Plan for SWMU 9 on 14 July 2000. All three of these documents are being submitted in accordance with your comment

SUBJECT: U.S. NAVAL STATION ROOSEVELT ROADS, PUERTO RICO  
RCRA CORRECTIVE ACTION PROGRAM  
RCRA/HSWA PERMIT NO. PR2170027203 EPA  
COMMENTS ON REVISED FINAL CMS WORK PLANS  
FOR SWMUs 1 AND 2 and SWMU 45 AND REVISED  
DRAFT RFI FOR SWMU 9

letter dated May 4, 2000, which was received by the Navy on May 15, 2000. It should be noted that the schedules included in these work plans are dependent upon EPA approval of these documents within 45 days. Once the Navy receives EPA approval of these documents the associated work plans will then be initiated.

Please do not hesitate to call me at (757) 322-4815 if you have any questions or desire further clarification of any of the points discussed in the enclosure.

Sincerely,



C. T. PENNY, REM  
Navy Technical Representative  
Installation Restoration Section  
(South)  
Environmental Programs Branch  
Environmental Division  
By direction of the Commander

Enclosures

Copy to:

EPA Region II (Mr. Tim Gordon)  
US EPA Caribbean Office (Mr. Carl Soderberg)  
Booz Allen & Hamilton (Ms. Constance Crossley)  
NAVSTA Roosevelt Roads (Ms. Madeline Rivera)  
PREQB (Mr. Jose J. Lajara, Ms. Luz Muriel-Diaz)  
Baker Environmental, Inc. (Mr. Mark E. Kimes)  
CH2M Hill Virginia Beach (Mr. John Tomik)

**NAVY RESPONSES TO EPA COMMENTS/BOOZ ALLEN & HAMILTON  
COMMENTS ON THE REVISED FINAL CORRECTIVE MEASURES STUDY  
WORK PLAN FOR SWMUS 1 AND 2 AND THE REVISED FINAL CORRECTIVE  
MEASURES STUDY WORK PLAN FOR SWMU 45**

**EPA/BAH GENERAL COMMENTS**

1. The Corrective Measures Study Work Plan for SWMU 45 states (p. 3-15) that manatee risks will only "be evaluated if sea grass habitat is observed." On p. 3-8 the Corrective Measures Study Work Plan for SWMU 45 acknowledges that sea grass occurs "in the marine environment surrounding Naval Station Roosevelt Roads," but the locations are not specified. Ecological risks to manatees should be evaluated in the baseline risk assessment as the habitat assessment in the screening phase of the risk assessment may be too limited to adequately evaluate the presence of manatee habitat. Additionally, historical activities at the site may have limited sea grass development in areas contaminated with site contaminants (i.e., sea grass may develop in contaminated areas in the future). The spatial extent of sediment contamination in Puerca Bay is unclear, so it is inappropriate to exclude manatees based on the statement "if sea grass habitat is observed."

**NAVY Response:**

Section 3.2.1.4 (Selection of Ecological Receptors) and Figure 3-1 (Preliminary Conceptual Model) of the Revised Final CMS Work Plan for SWMU 45 has been revised to include herbivorous marine mammals (i.e., West Indian manatee) as potential ecological receptors. It is noted that the existing analytical data is deemed insufficient to evaluate the West Indian manatee during Step 1 and Step 2 of the EPA and Chief of Naval Operations (CNO) guidance for conducting ecological risk assessments (ERA). This receptor will be retained for evaluation in a subsequent step of the ecological risk assessment (ERA) process once all data gaps identified during the screening-level ERA have been addressed through additional sampling. Because the West Indian manatee will not be evaluated in the Screening-Level ERA, revisions to the Revised Final CMS Work Plan will not include methodology for evaluating potential risks to this marine mammal. Methodology will be presented in a future work plan developed to address analytical data gaps identified during the screening-level ERA.

**EPA/BAH COMMENT**

2. The Corrective Measures Study Work Plan for SWMUs 1 and 2 states (p. 3-16) that manatee risks will only be evaluated if there are indications that chemicals migrate to Ensenada Honda. The information summarized in the Corrective Measures Study Work Plan for SWMUs 1 and 2 is not adequate to determine the potential for chemical migration and bioaccumulation. Ecological risks to manatees should be evaluated in the baseline risk assessment as the information developed and evaluated in the screening phase of the risk assessment may be too limited to adequately determine chemical migration to Ensenada Honda.

**NAVY Response:**

Section 3.2.1.4 (Selection of Ecological Receptors) and Figure 3-1 (Preliminary Conceptual Model) of the Revised Final CMS Work Plan for SWMUs 1 and 2 has been revised to include herbivorous marine mammals (i.e., West Indian manatee) as potential ecological receptors. It is noted that the lack of surface water and sediment data for the Ensenada Honda will prevent an evaluation of this receptor during the screening-level ERA (Step 1 and 2 of the EPA and CNO guidance). This receptor will be retained in a subsequent step of the ERA process once all data gaps identified during the

screening-level ERA have been addressed through additional sampling. Because the West Indian manatee will not be evaluated in the Screening-Level ERA, revisions to the Revised Final CMS Work Plan will not include methodology for evaluating potential risks to this marine mammal. Methodology will be presented in a future work plan developed to address analytical data gaps identified during the screening-level ERA.

#### **EPA/BAH SPECIFIC COMMENTS**

1. Table 3-2 of the Corrective Measures Study Work Plan for SWMUs 1 and 2 and Table 3-2 of the Corrective Measures Study Work Plan for SWMU 45 both contain a few errors. Specifically, the assessment endpoint for benthic invertebrates references protection from surface water but should reference sediment. In addition, the risk hypothesis for the earthworms to robins pathway indicates earthworms are arthropods, when in actuality they are annelids. Finally, the assessment endpoint for soil lists "SWMU 9" surface soils, rather than the appropriate (e.g., 1, 2, or 45) SWMU under consideration.

#### **NAVY Response:**

Table 3-2 of the Revised Final CMS Work Plan for SWMUs 1 and 2 and the Revised Final CMS Work Plan for SWMU 45 has been revised.

#### **EPA/BAH SPECIFIC COMMENTS**

2. The Corrective Measures Study Work Plan for SWMUs 1 and 2 states (p. 3-12) that bioaccumulation of chemicals migrating to Ensenada Honda is unlikely. However, based on the limited sampling data for this area, it does not appear there is sufficient information to evaluate chemical migration and bioaccumulation.

#### **NAVY Response:**

It is acknowledged that the lack of surface water and sediment data for the Ensenada Honda prevents an evaluation of chemical migration to this water body at this time. As such, statements regarding chemical migration to the Ensenada Honda has been removed from Sections 3.2.1.3.2 and 3.2.1.4 of the Revised Final CMS Work Plan for SWMUs 1 and 2. Note that the Revised Final CMS Work Plan did not state or infer that bioaccumulation of chemicals migrating to the Ensenada Honda is unlikely. The CMS work plan simply stated that it is unlikely that bioaccumulative chemicals are migrating or have migrated to the Ensenada Honda based on the depth to groundwater at the upland/mangrove forest interface and the physical and chemical properties of bioaccumulative chemicals (i.e.,  $K_{ow}$  and  $K_{oc}$ ).

#### **EPA/BAH SPECIFIC COMMENTS**

3. The preliminary conceptual models presented in both the Corrective Measures Study Work Plan for SWMU 45 and the Corrective Measures Study Work Plan for SWMUs 1 and 2 omit pathways to aquatic mammals (e.g., manatee). The conceptual models developed during the screening level assessment should contain this pathway unless the pathway can be shown to be incomplete. Furthermore, exposure to aquatic mammals should include incidental sediment ingestion unless literature information is available that indicates that sediment exposure is unlikely for manatees.

**NAVY Response:**

The preliminary conceptual model (Figure 3-1) presented in the Revised Final CMS Work Plan for SWMUs 1 and 2 and the Revised Final CMS Work Plan for SWMU 45 has been revised to show the presence of potential complete exposure pathways for the West Indian manatee. The preliminary conceptual models will include incidental sediment ingestion as a potential exposure route.

**EPA/BAH SPECIFIC COMMENTS**

4. The preliminary conceptual model for SWMU 45 shows that the surface runoff to surface water pathway is incomplete. This pathway should be reevaluated during the screening level assessment.

**NAVY Response:**

Rational for designating the surface runoff to surface water pathway as incomplete was presented in Section 3.2.1.3.1 of the Revised Final CMS Work Plan for SWMU 45. As such, the preliminary conceptual model for SWMU 45 will not be revised at this time to reflect a complete pathway. It is noted that if the screening-level ERA indicates that the surface runoff to surface water pathway is complete, the preliminary conceptual model will be revised to reflect a potential complete pathway. Section 3.2.1.3.1 has been revised to include this language.

# NAVY RESPONSES TO EPA/BOOZ ALLEN & HAMILTON COMMENTS ON THE ECOLOGICAL RISK ASSESSMENT PORTION OF THE REVISED DRAFT RCRA FACILITY INVESTIGATION REPORT FOR SWMU 9

## EPA/BAH GENERAL COMMENTS

1. Review of the Revised Draft RCRA Facility Investigation Report (RFI Report) has identified several concerns regarding the conclusions of potential ecological risks at SWMU 9. Specifically, the analytical detection limits used for some analytes appear to be higher than their respective toxicity benchmark, the background sampling locations do not appear appropriate or representative, and the number of samples used to eliminate specific contaminants as contaminants of potential concern (COPCs) appear to be low.

### NAVY Response:

It is acknowledged that the existing analytical data presents a level of uncertainty to the screening-level ERA contained in the Revised Draft RCRA RFI Report for SWMU 9. To address uncertainties associated with the sediment and surface water analytical data, the Navy is proposing to collect a total of 21 surface water and sediment samples from the mangrove forest adjacent to SWMU 9. Fifteen surface water and sediment samples will be collected from Areas A and C and the background station (5 samples from each location), while 6 surface water and sediment samples will be collected from Area B. Surface water samples will be analyzed for total and dissolved Appendix IX metals and BTEX, while the sediment samples will be analyzed for Appendix IX metals and PAHs. The sampling program will reduce uncertainties associated with the number of surface water and sediment samples previously collected from the mangrove forest. The selection of chemicals for analysis was based on the results of the screening-level ERA, as well as historical site activities.

To address uncertainties associated with sample quantitation limits, the sediment samples collected from the mangrove forest will be analyzed for PAHs using a SW-846 Method 8270 (low level method). The quantitation limit for this method is 0.0067 mg/kg. It is noted that sample quantitation limits reported by the analytical laboratory will be influenced by a number of factors, including the sample matrix. As such, the actual sample quantitation limits reported by the laboratory may be higher.

With regard to the site-specific background samples, the CMS Study will include an evaluation to determine their appropriateness. This will include a comparison of the site-specific background data to background data previously established at the Base perimeter.

Additional surface soil samples will not be collected at SWMU 9 for the following reasons:

- Release sources (underground storage tanks, fuel transfer piping, and the suspected sludge disposal pits are located below ground (the subsurface soil exposure pathway is incomplete for terrestrial receptors).
- With the exception of potential risks presented by lead to plants at Area B (HQ = 2.02), all chemicals presenting a risk to terrestrial receptors at SWMU 9 also presented a risk to terrestrial receptors at the background station. In many cases, the background HQ values exceeded the SWMU 9 HQ values (see Tables 7-50, 7-51, 7-52, and 7-53 of the Revised Draft RCRA Investigation Report of SWMU 9).

It is noted that all investigations performed at SWMU 9 and the methodologies used, including number of samples collected, background sampling locations, and analytical methodology were in accordance with EPA approved RFI Work Plans. These Work Plans are listed below.

- **Baker Environmental, Inc. 1995. Final RCRA Facility Investigation Work Plan, Naval Station Roosevelt Roads, Ceiba, Puerto Rico. September 1995.**
- **Baker. 1997. Final RCRA Facility Investigation Work Plan, Naval Station Roosevelt Roads, Ceiba, Puerto Rico. Addendum 3. Additional Investigation at SWMU 9. May 15, 1997.**
- **Baker. 1998. Draft RCRA Facility Investigation Work Plan, Naval Station Roosevelt Roads, Ceiba, Puerto Rico. Additional Investigations at SWMU 9. September 4, 1998.**

### **EPA/BAH SPECIFIC COMMENTS**

1. Review of the RFI Report indicates that potential site contaminants were excluded as COPCs if they were not detected (p. 7-8). Two concerns regarding this COPC screening process are: (1) only a relatively few samples were collected (1 to 4 samples in each area and media; Tables 7-1 to 7-3), and (2) detection limits of some potential site contaminants (e.g., polycyclic aromatic hydrocarbons (PAHs)) were higher than screening level benchmarks.

Potential site contaminants should not have been excluded as COPCs based on an absence of detections given the very limited number of samples collected. Additionally, potential contaminants should not have been excluded as COPCs if their analytical detection limits were greater than their protective ecological screening benchmarks. Because of the historical storage of petroleum in SWMU 9, and the huge mass of sludge disposed of in pits adjacent to the storage tanks, these issues are of particular concern for PARs. PAHs have not been included as COPCs for SWMU 9, yet most of the PAH detection limits in sediment (Report Volume II, Appendix H.31) exceeded their sediment toxicity benchmarks (e.g., see <http://response.restoration.noaa.gov/cpr/sediment/squirt/squirt.html>). Additional justification should be provided to support the results of the COPC screening process.

#### **NAVY Response:**

As discussed in the response to General Comment No. 1, additional surface water and sediment samples will be collected from the mangrove forest adjacent to SWMU 9 to reduce uncertainties associated with the number of samples previously collected and sample quantitation limits for potential site-related chemicals. It is noted that if sample quantitation limits exceed threshold screening values, affected chemicals will be retained as ecological COPCs.

### **EPA/BAH SPECIFIC COMMENTS**

2. Background sample results were used to conclude that several contaminants in site media (e.g., chromium, selenium, copper, mercury, lead) were not site related (p. 7-34). However, the background samples were collected on site, in proximity to contaminated areas of SWMU 9 (p. 3-21; p. 5-2; Figures 5-1 to 5-28). Because the samples were collected proximal to the SWMU, and because only a relatively few background samples were collected, it is unclear whether the samples were representative of background conditions. Furthermore, it is unclear based on the existing background sample data whether contaminants of potential

concern (COPC) have been appropriately excluded from further evaluation. Generally, background data used to exclude COPCs should be sufficient to allow a statistical comparison with assessment sample data. In addition, some of these background samples exhibited high potential risks (e.g., hazard quotient greater than 100 for avian predators). Despite these uncertainties associated with many of the background samples, the Navy is only proposing to collect additional surface water background samples (Section 8.3). Additional rationale and justification should be provided to support the selection and use of the background data.

**NAVY Response:**

It is noted that background data were not used to eliminate chemicals from the list of COPCs as inferred by Specific Comment No. 2. Background data were only used to determine if risks presented by chemicals detected in SWMU 9 surface water, sediment, and surface soil samples were site-related.

To support the appropriateness of the background data, the CMS will include a comparison of site-specific background data previously established at the Base perimeter. Identical to the screening-level ERA presented in the Revised Draft RCRA Facility Investigation for SWMU 9, chemicals detected in surface water and sediment will not be eliminated from the list of COPCs based on a comparison to background data.

**EPA/BAH SPECIFIC COMMENTS**

3. The RFI Report concludes that several ecological risk assessment pathways are incomplete. However these conclusions are not adequately justified. For example, Table 7-51 shows the mercury pathway to earthworms and birds as incomplete; however, no data to support the elimination of this pathway is provided. Exposure pathways should be considered complete unless site-specific data show they are not complete.

Furthermore, absence of a detection of an analyte in site media does not necessarily mean the exposure pathway is incomplete unless contamination has been adequately characterized (e.g., adequate number of samples, detection limits lower than protective benchmarks). Additional justification for the elimination of the ecological risk assessment pathways should be provided.

**NAVY Response:**

A summary of the analytical data for site media was provided in Tables 7-1, 7-2, and 7-3 for sediment, surface water, and surface soil, respectively. Although not specifically stated in the screening-level ERA, for a given chemical and receptor, a pathway was identified as incomplete in Tables 7-50, 7-51, 7-52, and 7-53 if that chemical was not detected in site media. Based on results from the sampling and analytical program discussed in the response to General Comment No. 1, pathways identified as incomplete in the Revised Draft RCRA Facility Investigation Report for SWMU 9 may be re-designated as complete pathways. This re-designation would occur if chemicals previously not detected were detected, or if sample quantitation limits still exceed threshold screening values.

**EPA/BAH SPECIFIC COMMENTS**

4. The conclusion that ecological risks have likely been overestimated (p. 7-50) is not fully supported. The ecological risks of site contaminants may be greater than estimated in the screening level risk assessment because of both the limited number of samples, and the fact that the detection limits for many potential site contaminants (e.g., PAHs) were greater than their respective toxicity benchmarks. These issues should be considered as additional sources of uncertainty (p. 7-37) in the RFI Report. Furthermore, it should be noted that the recommendations of the RFI Report to collect a limited number of additional surface water samples (Section 8.3) will not reduce the uncertainties and concerns associated with ecological risks in soil and sediment.

**NAVY Response:**

**See Response to General Comment No. 1.**